ANALYSIS OF LENDER-BORROWER CHOICE AND IMPLICATIONS FOR FEDERAL FARM CREDIT POLICY

Charles B. Dodson

Proceedings of a Seminar sponsored by
North Central Regional Project NC-207
"Regulatory, Efficiency and Management Issues Affecting Rural Financial Markets"
Kansas City, Missouri
October 16-17, 1995

Department of Agricultural Economics And Rural Sociology
221 Agriculture Building
Fayetteville, Arkansas 72701

January 1996

Analysis of Lender-Borrower Choice and Implications for Federal Farm Credit Policy

Charles B. Dodson[1]

Abstract: A binomial logit model is used to investigate lender-borrower choice among commercial-sized farms using farm- level financial data on indebted farms obtained from the Farm Costs and Returns Survey. The results show evidence that farm lenders ration credit according to operator age, location, and repayment ability. Younger operators or those with limited repayment ability are less likely to be FCS borrowers while operators located in metropolitan regions or in states with restrictive jurisdictional laws are less likely to be commercial bank borrowers.

Keywords: Farm Credit System, Federal credit policy, binomial logit, Farm Costs and Returns Survey, credit rationing

Assuring an adequate supply of capital to agriculture has been a key objective of U.S. farm policy. The Federal Government has played an important role in financing farm businesses as shown by the involvement of the Farm Credit System (FCS) and the USDA's Farm Service Agency (FSA) which, together supply about one-third of the $150 billion of U.S. farm debt.[2] The ongoing consolidation of production agriculture combined with changes in the financial sector contribute to a need to further examine the role of these institutions in agricultural credit markets.

Agricultural production and farm operator debt is increasingly dominated by fewer and larger farms. USDA data shows that by 1993, one-fourth of all farm operator debt was owed by millionaire farmers (Koenig and Dodson, 1995). The entry into farm real estate lending by large regional banks and multi-bank holding companies with ample liquidity to finance farm real estate has contributed to banks' increased market share primarily at the expense of the FCS. The FCS market share of outstanding farm real estate debt has steadily declined since 1985 reflecting greater competition faced from banks (USDA, February 1995). Recently, the FSA's lending has moved from direct to guaranteed loans. As a result, the credit needs of smaller, younger, and limited equity operators are increasingly served by commercial banks. Among commercial operators with less than $250,000 net worth, commercial banks supplied about 40 percent of all

---

[1]Charles Dodson is a Financial Economist in the Rural Economy Division of USDA's Economic Research Service.

[2]Credit programs of the former Farmers Home Administration were transferred to USDA's Consolidated Farm Service Agency in late 1994. As of November 1, 1995, the Consolidated Farm Service Agency will be known as the Farm Service Agency.

farm operator debt (Dodson and Koenig, 1995). Banks were the primary supplier of credit to commercial sized operators under 40 years of age.

These trends raise important questions concerning the future direction of Federal farm credit policy. Most farms with net worths exceeding $1 million would probably have access to adequote credit even without the existence of Federal credit programs. Access to farm mortgage credit does not appear to be as much of a problem in the 1990s as in previous decades. Until the 1980s, most commercial banks lacked the liquidity to make farm real estate loans. Consequently, FCS has played an important role as a reliable source of farm mortgage credit. However, that role appears to be changing as banks become a more important source of farm real estate credit. It is also likely that USDA's guaranteed lending program is enabling commercial banks to lend to younger and limited resource operators who, in the past, may have been unable to obtain credit from traditional sources and relied on FSA direct loans.

Given the increasing importance of banks as a source of farm credit, what is the current and future role of FCS and of direct lending programs by FSA? Justification for Federal outlays to FSA or continuing status as a government sponsored enterprise (GSE) for FCS should require that some public purpose is being served. For example, is FSA direct lending and FCS programs serving farmers who may otherwise be rationed out of the market? Policy makers should also address whether achieving the national policy goals with respect to farm credit require the existence of a guaranteed lender, direct lender, and a GSE. These are important questions as Federal policy makers re-examine the Federal government's role in all aspects of the economy. This analysis should provide insights useful in addressing the aforementioned questions. Specifically, the paper attempts to determine if the probability of a farm operator borrowing from a specific type of lender is influenced by the structural, financial, and demographic characteristics of borrowers. These results should provide insight on the existence of credit rationing and the need for Federal intervention in farm credit markets. The analysis is undertaken using a lender-borrower choice model applied to Farm Costs and Returns Survey (FCRS) data from 1991-93.

Conceptual Framework

The FCRS loan data represents equilibrium contracts between borrowers and lenders. The loan contract between a farm operator and a lender reflects preferences of the lender as well as the borrower. Also, the choices made by the borrower and lender may have been unique to the time period in which the loan contract was initiated. This makes it difficult to differentiate whether results are a consequence of lender or borrower's decision or of the time period in which the loan was originated. Alternative data sources which would allow a differentiation of these factors were not available (i.e. data on farm loan applications for all lenders). Conceptual models were presented and used to select dependent variables for inclusion in a qualitative choice model applied to farm-level data.

Credit Rationing and Lender Choice

Credit market studies, especially in residential housing, have focused on how credit rationing influences lender choice. In their seminal article Stiglitz and Weiss defined credit rationing:

> "..among observationally identical borrowers some receive loans and others do not. Potential borrowers who are denied loans would not be able to borrow even if they indicated a willingness to pay more than the market rate or to put up more collateral than is demanded of the recipients of loans".

That is, certain groups of borrowers may not receive credit from private lenders at any price even though many within the group may be credit-worthy. The perception that credit rationing exists has contributed to the enactment of special credit programs by Congress to serve farmers, homeowners, and students.

Previous studies (Gale; Smith and Slutz; Williamson) have shown that credit markets are characterized by certain factors making them vulnerable to rationing. These factors are: (1) asymmetric information and costly acquisition of borrower information by lenders, (2) costly default, and (3) adverse selection and incentive effects.

In credit market equilibrium the supply of funds from depositors (investors) to financial intermediaries (lenders) equals the entrepreneurs derived demand for loan funds. *Asymmetric information* simply means that the lender has less than perfect information concerning the borrower. Borrowers are identified by two types of information: their group identity and location within the group. Group identity is assumed to be public information and will provide a (noisy) signal of the borrower's riskiness. Location within a group refers to the riskiness of the individual's projects and is known only to the individual borrower. Because of *costly default*, lenders will seek to find out as much as possible about the borrower's location within the group, (i.e. repayment ability). A lender may find that while some good credit risks may exist within a group, the cost of acquiring borrower information may be greater than any benefits. Because of adverse selection and incentive effects, lenders would be unable to use interest rates or collateral requirements to all borrowers within a group to limit their risk. *Adverse selection* occurs when for a given level of collateral, an increase in the interest rate results in only borrowers with riskier investments applying for a loan. Similarly, for a fixed rate of interest, an increase in the collateral requirements results in more risk-averse borrowers dropping out of the market. *Incentive effects* occur when managers respond to higher interest rates by choosing riskier projects which display higher potential payoffs but also higher potential for default. These sets of circumstances may lead lenders to ration or "redline" certain groups of borrowers. Redlining refers to a

prohibition on lending to particular groups while rationing refers to limiting the total amount of funds to a group.[3]

Federal credit programs are primarily designed to lessen credit rationing primarily by reducing or eliminating the costs of default. If there were no default costs, lenders would have less of an incentive to screen and consequently be less likely to ration debt. Gale (1990) notes that since Federal credit programs target groups thought to be rationed or redlined, Federal credit programs should be more prevalent among groups of borrowers with greater repayment difficulties and, thus, higher expected default costs. Also, it would be expected that federal credit programs should be more prevalent among groups or regions where the costs of screening out poor risks may be high.

Model of Borrower-Lender Choice

According to Williamson, optimal loan contracts between lenders and borrowers should make choices which maximize the expected utility of the borrower, subject to the constraint that the lender receive a return, ($\hat{\rho}$) from the contract that is at least equal to the expected return, r, that could be obtained from other credit markets. Borrower choice of a given lender by borrowers can be represented by a random utility model (Greene). For the ith individual faced with j choices, the utility of choice of j is:

(1) $Max\ \{U_{ij}\} = \beta' x_i + \epsilon_{ij}$,

where x_i is a vector of characteristics for individual i, and ϵ_{ij} represents the unexplained elements of the utility function. If an individual makes lender choice j, it is assumed that individual utility is maximized by that choice. Hence, the statistical model is driven by the probability that choice j is made which is : Prob[$U_{ij=1} > U_{ij=0}$). A borrower's choice of lenders should be related to their goals which are known to vary by characteristics of the farm operator. In the context of an equilibrium, the random utility model is constrained by the requirement that lenders receive a minimun return. It is the relationship between a lenders minimum return and expected return that results in credit rationing.

Reflecting asymmetric information, borrowers are divided into groups based on 2 pieces of information: their group identity and their location within a group. Each lender has access to a technology with which to observe a borrower's type at a cost of γ, where $\gamma \geq 0$. Thus, the expected lender return, $\hat{\rho}_I$, for lending to group i (i=1, ...n) is : .

---

[3]It should be noted that redlining is frequently associated with prohibition of lending in neighborhoods based on their racial or ethnic composition. However, redlining can be based on any distinguishing characteristic and in this study refers mostly to age, wealth, income, regional location and production specialization.

$$(2)\ \hat{\rho}_i = \phi_i r_i - \gamma_i - (1-\phi_i) * D_i,$$

Thus, the expected return to a lender is a function of interest rates, r, repayment rate, ϕ, screening costs, γ, and default costs,

$$(3)\ \hat{\rho} = f(r_i, \phi_i, \gamma_i, D_i).$$

How the differences between a lender's expected and required return can result in credit rationing is shown by figure 1 for two groups of borrowers. Borrower groups are characterized by two behavioral assumptions. First, the demand for loans is a decreasing function of the interest rate (r) charged by lenders. Second, the repayment rate (ϕ) falls as r rises reflecting adverse selection. For group i, the bank's expected return increases as the interest rate increases to r_i. At rates above r_i, expected lender returns decline as low-risk borrowers choose not to borrow reflecting adverse selection and remaining borrowers choose riskier projects reflecting incentive effects. The maximum return to lenders for lending to borrowers in group i is $\bar{\rho}_I$ which is termed the "optimal lender rate". If the lender's required return was greater than $\bar{\rho}_I$, group i would be

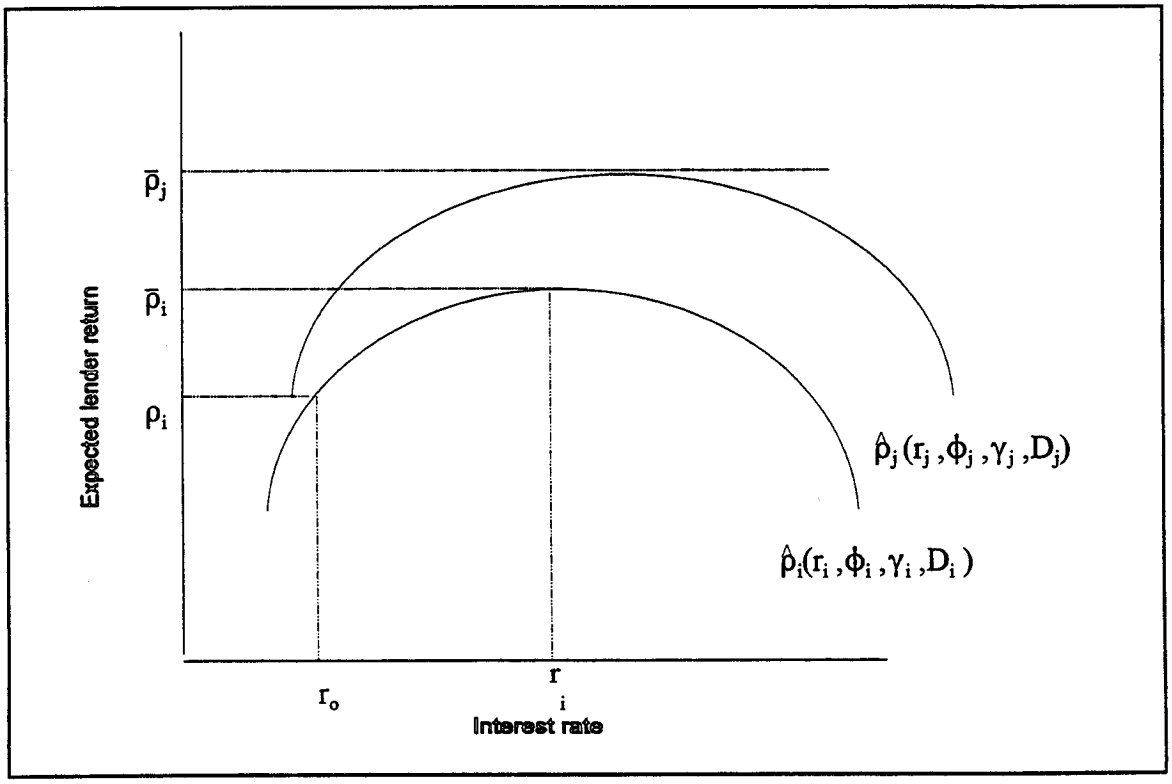

Figure 1. Relationship between expected lender return and interest rate to specific borrower groups.

redlined--that is they would not receive *any* loan funds. At a rate equal to $\bar{\rho}_I$, group i would be rationed--that is they would not be able to receive any *additional* loan funds. Consider group (j) whose expected return ($\hat{\rho}_j$) is greater than group i at all levels. At a required return of $\bar{\rho}_I$, group i would be rationed while group j's credit demand would be met. In this circumstance, group i would be considered targets for Federal credit programs.

Lender choice was, thus, hypothesized to be a function of the relationship between a lender's required return for borrowers within a given group, $\rho^*(r_i,s)$ and the lender's expected return from lending from that group, $\hat{\rho}\ \ (r_i, \phi_i, \gamma, D)$.

$$(4) \qquad P_i(EY_{ij}=1) = \mathbf{f}\left(\frac{\hat{\rho}\ \ (r_i, \phi_i, \gamma, D)}{\rho^*(r_i',s)}\right).$$

In equation (4), r_i represents the interest rate charged to the borrower while r_i' is market rate of return on investments of comparable risk. The lenders required rate of return, $\rho^*(r_i,s)$, includes the market rate of interest and any subsidies provided the lender. The dependent variable, Y_{ij}, is equal to 1 if lender j, (j=1,. . . n), selects borrower i, (i=1,. . . .k), and 0 otherwise.

A major departure from the competitive framework is that in addition to caring about aggregate demand, lenders differentiate among borrower groups. Based on equation (4), one can see that this differentiation is likely related to the borrower repayment ability, lender's screening costs, default costs, and subsidies provided the lender. Groups perceived to be high risk or where the screening cost is high would be more likely obtain credit through Federal credit programs. This may be augmented by the fact that lenders may have legislative mandates to serve particular groups. For example, the FSA is expected to target beginning or limited resource farmers and is not expected to lend to part-time operators with significant off-farm incomes nor those with large net worth. Thus, an analysis of existing loans such as provided by the FCRS data should show differences among lender groups in the structural, financial, and demographic characteristics of their borrowers. However, since these many of these differences can also be a attributable to borrower choice, results can only provide an indication and not proof of credit rationing by lenders.

Data and Variables

Farm-level financial data was provided by the expenditure version of FCRS. The FCRS is a multiple frame stratified random sampling survey that provides farm expense, income, and balance sheet estimates along with operator characteristics for a calendar year. Estimates discussed represent averages of combined year-end data for 1991-93. The averaging of three years of data was done to increase the reliability of estimates. The expenditure version was the only one which included data on debt by lender as well as

loan purpose and terms.[4] The 1994 survey did not include detailed debt data. The FCRS samples roughly 10,000 farms annually, of which about half would receive the expenditure version. The expenditure version of the FCRS included detailed data on debt by farm. Data was collected each loan owed by a farm business. Included was year-end balance, interest rate, year loan was acquired, lender, term, and loan purpose (secured by real estate, secured by nonreal estate, or operating loan). Data concerning metro and nonmetro counties was developed using a classification system developed by USDAs Economic Research Service (Butler and Beale). Data concerning county level land values was provided by the Census of Agriculture.

Repayment Ability and Borrower Characteristics

Since default is costly, lenders have an incentive to choose borrowers with limited risk. Farms likely to experience repayment problems and face credit rationing include those with limited income, lower wealth, less production, and higher debt levels. Lenders typically limit their risk by requiring an upper limit on the amount that can be used for debt service and minimum down payment ratios. An increase in wealth decreases the likelihood that down payment constraints are binding, reducing the likelihood of rationing. Operators with greater wealth would be likely to fully collaterize their loans and have the capacity to meet all obligations. As profitability and farm size increases, the likelihood that income constraints are binding is reduced. If credit history and creditworthiness rise with age, younger operators credit demands would more likely be rationed. Because of the higher risk of default, farms with high debt-asset ratios would be considered stronger candidates for rationing. While government payments reduce income variability, a reliance on them can indicate low value of production due to either low yields or low prices. Thus, operations more dependent on direct Government payments were expected to be candidates for credit rationing. The FCRS included farm-level data for each of these variables: net worth, value of farm production, return on assets (profitability & income), operator age, debt-asset ratio, and the ratio of government payments to gross cash income.

In addition to influencing lender choice, wealth, age, profitability, farm size, and operator age also represent borrower characteristics which can influence borrower behavier. For example, older more established operators may choose sources of credit based on past lending relationships while younger operators may be more willing to use nontraditional sources of credit.

---

[4]Other versions included a cost of production survey which was designed to estimate the total per acre cost of producing specific crops and a farm operator resource version. The expenditure version was chosen because it included data on debt by lender.

High screening costs

Some lenders may find it difficult to screen out poor agricultural credits because the fixed lending costs may be considered too high. In metropolitan regions where agriculture represents a small share of the economy, lenders may find that the market potential for agricultural credits to be too small to justify the allocation of any bank resources toward farm lending. The FCRS data base included information on the county in which the farm was located. This information was matched with the Butler and Beale typology to classify farms as to whether they were located in metro or nonmetro regions.

Another possible case where it may be difficult for lenders to filter risky loans is among unique agricultural enterprises. For example, non-traditional enterprises such as nursery and greenhouse or Kansas cotton growers may be avoided by some lenders. Data from USDAs Economic Indicators of the Farm Sector-State Financial Summary was used to identify commodities which contributed less than 5 percent of total cash receipts within a given state. If the FCRS sample farm specialized in the production of these commodities, it was classified as unique. Farms specializing in nursery/greenhouse or fruit/vegetable production were also classified as unique.

Default costs

Some regions may be characterized by lower land appreciation and thus require greater securitization to minimize lender losses associated with default. However, the credit rationing model would suggest that increasing securitization would result in adverse selection and incentive effects. That is, those who choose to borrower would be more likely to adapt riskier projects while more risk averse individuals would be more likely to choose not to borrow. Rather than accept these risks many lenders may ration credit to these regions. County level data from the Census of Agriculture was used to identify counties which had the greatest drop in average land values since the last Census (USDA Economic Research Service, 1995). This was combined with FCRS data concerning county and the year in which a majority of debt was acquired to classify farms according to land value stability.

Another example of items which can increase default costs and could increase credit rationing are state laws affecting lending. Previous studies in residential housing which incorporated jurisdictional laws have shown that judicial foreclosure and . prohibition of deficiency judgements all increase default risk in residential housing (Clauretie and Herzog). Borrowers in states with more restrictive jurisdictional laws would have less repayment ability and higher expected default costs, thus encouraging credit rationing.

Jurisdictional laws specifically deal with the foreclosure process, deficiency judgements, and rights of redemption. There are, in general, two main foreclosure processes used by various States: judicial and non-judicial foreclosures. In a judicial

foreclosure, a court orders the foreclosure and supervises the sale and disbursement of proceeds. Judicial foreclosure implies a period of equitable redemption during which the borrower may prevent foreclosure by paying off his entire indebtedness. About one-half of all indebted farms were located in states where judicial foreclosure was the only available foreclosure process (table 2; table 3). Due to its complexity, judicial foreclosure is generally more costly and time-consuming than non-judicial foreclosure.

A deficiency judgement arises when the property's liquidation value is insufficient to pay off the loan balance. Equipped with a deficiency judgement, a lender may seek a recovery of the difference through attachment of a borrower's personal assets. Obviously, lenders would expect greater loan losses if deficiency judgements were not available. The statutory right of redemption gives the borrower the right to redeem his property after the foreclosure sale. The existence of a statutory right of redemption may lower bids at a foreclosure sale since a buyer would have to wait the specified period before obtaining clear title. This effectively raises the costs of foreclosing to a lender because the longer liquidation period adds to carrying costs. States were identified where: (1) judicial foreclosure was the only available foreclosure remedy, (2) redemption periods were greater than 90 days, and (3) deficiency judgements were restricted (Durham). About one-half of all indebted farms were located in States where deficiency judgements were restricted or redemption periods exceeded 90 days (table 2; table 3). The expectation was that farm borrowers in States which either required judicial foreclosure, restricted deficiency judgements, or had longer redemption periods would be more likely to utilize Federal credit programs or nontraditional sources of credit.

Period of Debt Acquisition

As profit maximizers farm operators would choose the lowest cost of credit available. Either through subsidies or loan pricing policies, some institutions have provided lower cost sources of credit, increasing the likelihood that these lenders may be used during certain periods. For example, the FCS followed an average pricing policy until the late 1980's which, during periods of rising interest rates, enabled them to charge borrowers rates which were lower than other lenders. This would result in a greater likelihood that farm real estate borrowers who acquired debt prior to 1985 obtained credit from FCS. Credit policy can also change as was the case for FSA who has moved from direct to guaranteed lending. Consequently, those who obtained real estate credit prior to 1985 would be considered more likely to obtain credit from FSA. Commercial bank presence in real estate lending increased during the late 80's, increasing the likelihood that borrowers who acquired debt in more recent years utilized commercial banks. FCRS data on the year in which each loan was originated was used to calculate a weighted average year of debt acquisition for each sample farm. The year of origination for each loan was weighted by the outstanding loan balance.

Empirical Specification and Model

Logit and probit models represent preferred specifications of qualitative choice models. A binomial logit model was developed where the probability that a borrower owes a given lender is a function of financial, structural, or demographic variables which were chosen based on the theoretical models presented for borrower and lender choice. Independent variables measuring farm equity, farm size, profitability, operator age, and indebtedness were included to reflect repayment ability. Screening costs were represented using geographic location and production specialty. Default costs differences were represented using data on state jurisdictional laws. Dummy dependent variables reflecting time of debt acquisition were included to capture some of the effects of interest rate cycles and changes in credit policy. Separate models were developed for real estate (5) and nonreal estate plus operating loans (6) with individual regressions run for each lender as in the following (see table 1 for variable description). The two models were basically the same with differences in how debt-asset ratio, land value stability, and period of debt acquisition were defined.

$$(5)\quad P_i(Y_{ij}=1) = \alpha + B_1 NETW + B_2 VPRODTOT + B_3 ROA + B_4 AGE + B_5 DAR2 + B_6 RISKLAND + B_7 GOVDEP + B_8 UNIQUE + B_9 METRO + B_{10} JUDFORE + B_{11} DEFJUD + B_{12} REDEMP + B_{13} ACQ90 + B_{14} ACQ85 .$$

$$(6)\quad P_i(Y_{ij}=1) = \beta_0 + \beta_1 NETW + \beta_2 VPRODTOT + \beta_3 ROA + \beta_4 AGE + \beta_5 DAR + \beta_6 RISKLAND + \beta_7 GOVDEP + \beta_8 UNIQUE + \beta_9 METRO + \beta_{10} JUDFORE + \beta_{11} DEFJUD + \beta_{12} REDEMP + \beta_{13} ACQ90NR.$$

Farms which reported less than $50,000 in total farm production were excluded making commercial farms the focus of the analysis. Equation (5) was applied to farms with real estate debt while (6) was applied to farms with nonreal estate debt, including operating loans. Real estate lenders analyzed included FCS, commercial banks, individuals, FSA and life insurance companies (LICs). LICs were dropped and merchants and dealers included for the nonreal estate debt analysis. Since lender-borrower choice was not defined as mutually exclusive, separate models were run for each lender. Empirical results show the probability of a farm operator owing a given lender relative to all other lenders.

Regression analysis is complicated when the data are from a complex survey design, such as FCRS, because the estimation and accuracy of parameters are not simple. This model was estimated using a weighted maximum-likelihood binomial logit

procedure with the error structure modified to account for the stratified sampling in the FCRS. The log-likelihood function is the standard textbook function (for example, see Maddala) which was maximized with an iterative Newton-Raphson routine written in SAS matrix language[5]. Stratified sampling affects only the standard errors and not the coefficients themselves (Fuller). Standard errors with stratified sampling can vary greatly compared to those from simple random sampling. Differences between the actual values of the dependent variable and the predicted values were processed in a manner similar to the standard errors presented earlier. This, plus an additional matrix calculation on the design matrix given by Fuller, yielded the standard errors for the coefficients. Linear probability and binomial probit models with the same structure were also estimated and produced very similar results.

Expected Results

Credit rationing increases the likelihood that FCS, FSA or nontraditional lenders such as individuals will be used. Thus, it would be expected that borrowers with less repayment ability, higher screening costs, and located in states with greater default costs would be more likely to be FCS customers. Because they are private institutions, commercial banks would be considered the lender most likely to ration credit. It would be expected that credit rationing would be more likely among farms near metropolitan regions, with unique enterprises, and in states with more restrictive jurisdictional laws concerning foreclosure. Therefore, farms in these locations would be expected to be more likely to borrow from individuals, merchants & dealers, or FCS and less likely to borrow from banks.

The FSA direct lending programs are targeted toward limited resource and young farmers. Thus, it would be expected that highly indebted, limited equity, and younger operators would more likely to borrow from FSA. It is well known that LICs target large credits which typically have large net worth, high incomes, and high production. Financing by merchants and dealers as well as individuals would be expected among groups most subject to credit rationing. Because of the incentive to sell a product, these lenders are likely to provide their own terms to credit-worthy borrowers who are less likely to obtain conventional financing.

Results

The means of the dependent variables indicated distinct differences in the clientele of the different lenders. FCS borrowers were more wealthy and older than average for both the real estate and nonreal estate market (table 2; table 3). As would be expected FSA borrowers were smaller, less wealthy, and less profitable than average. The focus of LICs on large operations is also apparent with an average net worth for LIC

---

[5]This procedure was developed for applications using the FCRS by Robert Dubman, Agricultural Economist, who is with the Rural Economy Division of USDAs Economic Research Service, Washington, D.C.

borrowers of $1.080 million which was nearly twice the average. The analysis represents 277,104 commercial-sized farms with real estate debt and 303,512 commercial farms with nonreal estate debt.

Real Estate Debt

Results of the binomial logit model provide little evidence of credit rationing by commercial banks on the basis of repayment ability. On the other hand, results also provide little evidence that FCS serves a group of borrowers rationed out of the market due to their lack of repayment ability. FCS mortgage customers were older and more profitable than other farms with real estate debt. The results were especially dramatic for age where a 65 year old indebted farmer was over 20 percent more likely to obtain funds from FCS than a 35 year old (figure 2). The data points for figure 3 were generated by calculating the dependent variable at different ages given the slope parameters in table 4. All other parameters were held constant at the means (table 2).

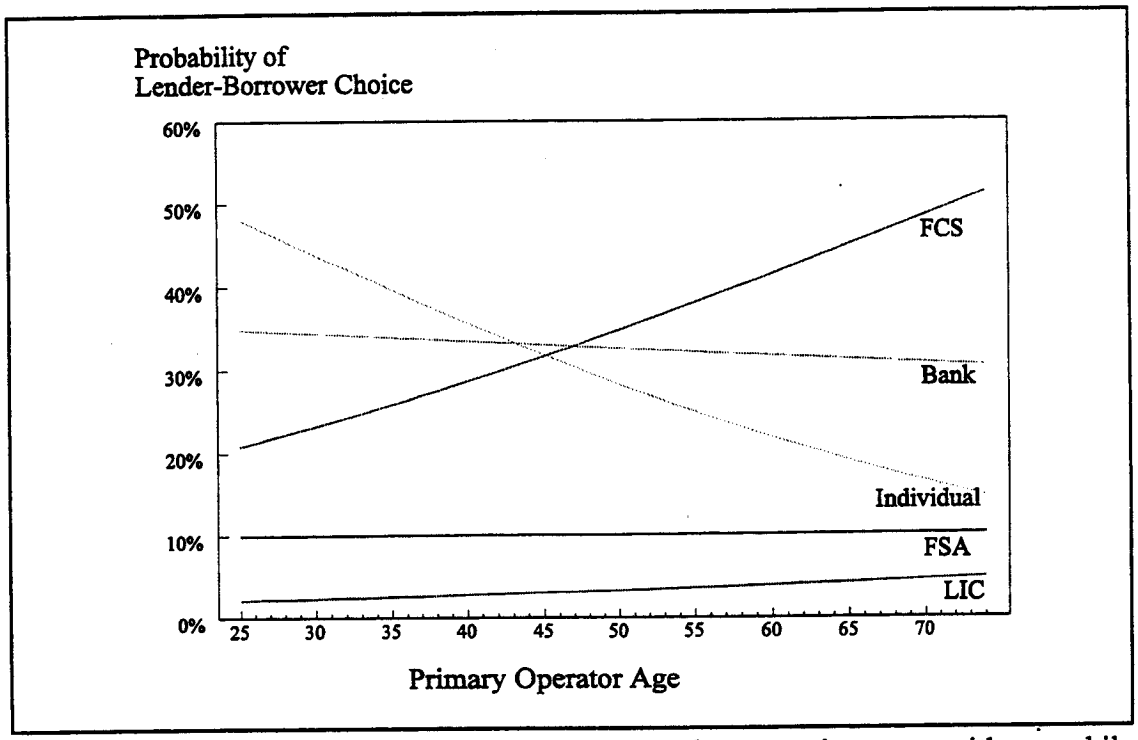

Figure 2. The probability of being an FCS mortgage borrower increases with age while the probability of borrowing from individuals decreases.

A different story emergences, however, when one examines repayment variables associated with geographic factors rather than borrower characteristics. A farm business located in a county with unstable land values, (RISKLAND), was 10 percent more likely to be an FCS mortgage loan customer than farms in other counties. In contrast, indebted farm operators were significantly less likely to be a bank mortgage loan customer in these

regions. Also, farms heavily reliant on government payments were 16 percent more likely to borrow from FCS. The importance of FCS in regions with less stable land values and a heavy reliance on Government farm programs suggests that FCS serves regions deemed either too costly or too risky by other lenders.

As expected, farm businesses with less wealth and higher debt levels were more likely to be FSA mortgage loan customers. This indicates FSA direct lending programs are consistent with their public purpose and may be serving borrowers rationed out of alternative credit sources because of their poor repayment ability. It was noteworthy that operator age did not significantly affect the probability of being a FSA borrower suggesting that a large share of FSA's mortgage borrowers may be older operators. Based on the average age of FSA mortgage debt it was likely that these were long term borrowers who have never graduated. According to FCRS, the average age of FSA mortgage debt was 9.9 years compared to 7.2 for all mortgage debt.

Net worth was the only repayment variable which was significant for banks, though the parameter had an unexpected negative sign. This could reflect either a rationing of farms with large net worths, a tendency to finance low equity farms, or a consequence of borrower choice. One possible explanation is that despite banking consolidation, many banks still lack the liquidity to make large real estate loans demanded by farms with high net worths. Also, utilization of the FSA guaranteed loan program enables banks to finance low equity farms. Another explanation is that larger operations may prefer to do business with instititions which have greater expertise in mortgage lending such as LICs or FCS. The parameters for RISKLAND, GOVDEP, and DEF were all negative and significant for bank mortgage credits. In addition, the parameter for REDEMP was negative though not significant at the 0.10 level. Thus, farm operators which were more dependent on Government payments, or located in regions with less stable land values, dependent on Government program payments, or with restrictive foreclosure laws would be less likely to owe mortgage debt to commercial banks.

For most lenders, screening costs were not significant in determining real estate lender-borrower choice. One possible reason that METREG was not significant is that collateral values tend to be stronger in metropolitan regions making mortgage lending more attractive. METREG was significantly negative for FSA and indicated that real estate borrowers in metropolitan regions were 6 percent less likely to borrow from FSA. This would be expected, however, given that collateral values and, therefore, equity, is typically higher in metro regions.

Restrictive jurisdictional laws did not significantly affect the probability of being an FCS mortgage borrower. Location in a state which did not allow non-judicial foreclosure reduced the likelihood of being an FCS customer though this was not significant at the 10 percent level.

Rationing or redlining of real estate loans by banks in States with deficiency judgement restrictions and/or long redemption periods does not necessarily imply a shortage of credit. In such regions, individuals are frequently important sources of credit. Borrowers in States with deficiency judgement restrictions and/or long redemption periods were 8 - 10 percent more likely to borrow from an individual.

It was evident that real estate lender-borrower choice is strongly influenced by the period of debt acquisition. For FSA and commercial banks, the parameters for ACQ90 and ACQ85 were both significant and as expected. Farm operators with real estate debt acquired prior to 1985 were more likely to owe FSA if their debt was acquired prior to 1985 and less likely if debt was acquired after 1990. Those who acquired debt prior to 1985 were 13 percent more likely to have borrowed from FSA while those who acquired debt after 1990 were 12 percent less likely to have borrowed from FSA. This is consistent with the change in policy toward more guaranteed and less direct lending.

The greater presence of commercial banks in real estate financing since 1985 is apparent. Indebted farm operators who acquired debt prior to 1985 were 23 percent less likely to have borrowed from commercial banks while those acquiring debt after 1990 were 10 percent more likely to borrow from banks. Those who acquired debt prior to 1985 were 19 percent more likely to be an FCS borrower. This reflects the lack of competition FCS faced from banks and the pricing advantages provided by the average cost pricing strategy. The fact that many FCS borrowers are older and that much of their debt was acquired prior to 1985 suggests than many of FCS current real estate customers may be easing into retirement, thus providing limited opportunities for loan market growth. Acquiring debt after 1990 decreased the possibility of borrowing from an individual, probably reflecting greater availability of mortgage credit from commercial banks.

Nonreal Estate Debt

Results indicated nonreal estate borrowers who were wealthier, more profitable, older, and had lower debt-asset ratios were more likely FCS borrowers (table 5). As was the case for real estate, there was little indication that FCS serves groups rationed out of credit markets because of a lack of repayment ability. For banks, the only repayment variable which was significant was returns on assets, though this parameter had un unexpected negative sign. A likely explanation is that banks' greater use of FSA's guaranteed loan programs enables them to serve a large number of the smaller, less profitable commercial operations. The general lack of significance of other variables would be consistent with a scenario in which bank nonreal estate lending reflects the underlying characteristics of all farms with nonreal estate debt.

FSA nonreal estate borrowers tended to be less wealthy, smaller, and have higher debt-asset ratios, which would be consistent with their purpose. As was the case with real estate debt, it was interesting that the parameter for operator age was insignificant

suggesting that despite programs to serve younger and beginning farmers, FSA still maintains a fairly sizable portfolio with older farm operators.

Younger and more indebted borrowers were more likely to borrow from merchants and dealers. A possible explanation is that because of efforts to market product or equipment, merchants and dealers are providing financing to operators who may have difficulty obtaining credit from the more traditional sources. For operators obtaining nonreal estate credit from individuals, operator age was significantly negative while return on assets was significantly positive. These results could be explained by low tenure operators with low asset bases generating higher returns on assets.

In contrast to the results for real estate debt, there was support for the high screening cost hypothesis. Nonreal estate borrowers in metro counties were more likely to borrow from FCS but less likely to borrow from banks. This could reflect a restriction by banks on nonreal estate lending in metro regions because the high costs of monitoring and screening farm loans. As compared to real estate financing, nonreal estate loans require greater servicing, are riskier (higher loan-value and less stable collateral values). With ample alternative lending opportunities, commercial banks in metro regions may be less willing to allocate such resources to nonreal estate farm lending.

Merchants and dealers were less likely to lend to unique enterprises (i.e. greenhouse/nursery, fruit/nut, or an enterprise uncommon to the region). This may not be due as much to credit rationing as to marketing efforts by merchants and dealers which are likely targeted to the traditional grain or livestock operators. Also, borrowers with unique enterprises tended not to borrow from FCS. This would be consistent with the observation that FCS has historically not been a major supplier of credit to nursery and greenhouse operations (Johnson and Johnson, p.27).

The existence of judicial foreclosure requirements appeared to adversely impact the availability of nonreal estate credit to farm operators from banks. In contrast, the existence of long redemption periods increased the probability of being a bank borrower. The probability of being as FCS customer was not affected by the existence of judicial foreclosure laws but was affected negatively by the existence of long redemption periods. Iindividuals, however, were shown to be a source of credit to borrowers in States with long redemption periods.

As with real estate lending, the choice of nonreal estate lender appears to be strongly influenced by when debt was acquired. A commercial farm operator with nonreal estate debt is more likely to owe FCS if most of their nonreal estate debt was acquired prior to 1990. For comparison, about half of the farms in this sample acquired nonreal estate debt after 1990 (table 3). This is consistent with the results obtained for the real estate debt market and indicates the competitive pressures FCS has been facing, especially from commercial banks. In contrast, a commercial farm operator with nonreal estate acquired after 1990 is 15 percent more likely to be a bank borrower. Those

acquiring debt after 1990 are less likely to be an FSA borrower reflecting the agency's movement away from direct lending toward guaranteed lending. Also, those acquiring nonreal estate debt after 1990 were more likely to use merchants and dealers as a lender reflecting their recent emergence as an important source of production credit.

Summary & Implications

Strong evidence was presented that commercial-sized FCS borrowers are older, larger, more profitable, and more wealthy than other indebted commercial farms regardless of whether the debt was for real estate or nonreal estate purposes. Also, younger and low resource operators are less likely to be FCS borrowers. One possible explanation is that as FCS's market share has declined, the average age of its portfolio has increased. A portfolio which contains older loans is likely be associated with older operators who tend to be more wealthy and larger. Another possible explanation is that because of the financial adversity FCS experienced during the 1980s, it has pursued much more conservative lending practices. Whatever the explanation, it appears that many of FCSs current customers could probably obtain credit from other sources.

Neither was there strong evidence that FCS served regions rationed out of the credit markets because of restrictive jurisdictional laws. Mortgage borrowers in States without non-judicial foreclosure were less likely to be FCS borrowers. Nonreal estate borrowers in states with long redemption periods were also less likely to be an FCS borrower. FCS's strongest justification, in terms of serving Federal credit policy, would appear to be providing credit to regions deemed to be either too risky or too costly by other conventional lenders. Examples include nonreal estate credit in metro regions, real estate credit in regions characterized by recent land value declines and loans to operators heavily dependent on direct Government payments.

In contrast to the results for FCS, there was strong evidence that FSA direct lending programs serves borrowers unable to obtain either real estate on nonreal estate credit because of their limited equity. There was not strong evidence, however, that FSA direct lending programs specifically served young farm operators. Many of their customers were older farm operators who had held their FSA loans for long periods.

Commercial bank borrowers tended to have lower farm equity and were less profitable than the average indebted farm. This could be a consequence of commercial banks' strong use of FSA's guaranteed loan program. Among bank loans, FCRS data did not distinguish whether the loans were guaranteed or not. There were indications, however, that banks rationed nonreal estate credit within metro regions and real estate credit within States with restrictions on deficiency judgements or long redemption periods.

Individuals as well as merchants and dealers appear to serve many of the niches apparently subject to credit rationing by other lenders. Individuals provided real estate

financing to operators who were younger, less wealthy, and located in regions with restrictive jurisdictional laws. Individuals also served younger nonreal estate borrowers and those located in metro regions.

The results of this analysis are consistent with credit rationing by farm lenders. Younger operators or those with limited repayment ability are less likely to be FCS borrowers while operators located in metropolitan regions or in States with restrictive jurisdictional laws or less likely to bank borrowers. While rationing by lenders provides one explanation, these results could also be explained by borrower choice. It may be that older and wealthier operators prefer FCS because of a long term relationship between the institution and operator. Younger operators may have less loyalty to an institution than their elders and consequently are more willing to use nontraditional financing provided by captive finance companies or individuals.

The implication that many FCS customers could probably obtain credit from private lenders combined with the observation that FCS serves borrowers in regions apparently not served by banks point to a need to examine the current delivery system used by FCS. If the purpose of FCS is to reduce the effects of credit rationing, one could easily argue that an alternative delivery system would be more efficient. Providing credit to farmers in regions subject to credit rationing probably does not require a national portfolio lender local outlets, and agency status, creating a contingent liability for the Federal Government. For example, credit unions in these regions could be provided greater access to loan funds for agriculture through a discount window from Federal Home Loan Board or FCS.

Table 1. Definition of Variables

Symbol	Variable Description
Dependent	
P_i	Probability that borrowers in group i obtain real estate credit from lender j.[1]
Y_j	1 if borrower in group i owes real estate debt to lender j, 0 otherwise.
Repayment ability	
NETW	Ending of year farm net worth as reported on the FCRS ($100,000).
VPRODTOT	Annual value of farm production ($100,000).
ROA	Return on assets measured as [(Net farm income-management charge - unpaid family labor + interest paid)/ Total farm assets (year end)].
AGE	Age of the primary operator.
DAR2	Total farm real estate debt/ total farm real estate assets
DAR	Total farm debt/ total farm assets.
RISKLAND	1 if at the time the loan was originated, the farm was located in the lower 50 percent of non-metro counties according to the change in land values since the last Census.
GOVDEP	1 if farm received over 20 percent of gross cash farm income in direct government payments, 0 otherwise.
Screening costs	
UNIQUE	1 if farm specialized in the production of a commodity (or related group of commodities) which made up less than 5 percent of the States total receipts or the farm speialized in nursery, vegetable, and fruit production, 0 otherwise.
METREG	1 if indebted farm was located in a metro county, 0 otherwise.
Jurisdictional laws	
JUDFORE	1 if the farm was located in a State where judicial foreclosure was the only available foreclosure remedy, 0 otherwise.
DEFJUD	1 if the indebted farm was located in a State which did not allow deficiency judgements, 0 otherwise.
REDEMP	1 if the indebted farm was located in a State which had a 90 day or greater redemption period.
Debt Acquisition	
ACQ90	1 if a majority of real estate debt was acquired from 1991-93.
ACQ85	1 if a majority of real estate debt was acquired before 1985.
ACQ90NR	1 if a majority of norreal estate debt was acquired from 1991-93.

[1]J here represents one of six potential lending sources: FCS, commercial banks, USDA's FSA, individuals, life insurance companies, and merchants and dealers

Table 2. Mean of Variables for Farm Businesses with Real Estate Debt, 1991-93 averages.

Variables	All farms	FCS	Commercial Banks	FSA	Individuals	LICs
NETW ($)	578,274	647,200	519,810	367,110	592,870	1,080,500
VPRODTOT ($)	223,282	247,460	229,390	167,130	205,660	334,600
ROAT (%)	2.23	2.64	2.38	1.22	1.83	3.86
OP_AGE (years)	47.8	50.7	46.5	48.0	45.0	50.4
DAR2	0.28	0.30	0.29	0.44	0.29	0.32
RISKLAND	0.41	0.45	0.39	0.46	0.39	0.42
GOVDEP	0.10	0.15	0.08	0.14	0.07	0.07
UNIQUE[1]	0.21	0.21	0.20	0.19	0.21	0.16
METREG[2]	0.25	0.24	0.26	0.17	0.25	0.27
JUDFORE[3]	0.48	0.45	0.49	0.49	0.50	0.48
DEFJUD	0.52	0.53	0.47	0.52	0.59	0.52
REDEMP	0.50	0.48	0.47	0.49	0.60	0.57
ACQ90	0.21	0.13	0.31	0.06	0.18	0.25
ACQ85	0.46	0.61	0.28	0.72	0.44	0.46
Y (FCS)	0.35	----	----	----	-----	-----
Y (Banks)	0.35	----	----	----	-----	-----
Y (USDA)	0.17	----	----	----	-----	-----
Y (Individual)	0.29	----	----	----	-----	-----
Y (LICs)	0.03	----	----	----	-----	-----
Sample	4,253	1,691	1,436	716	1,102	213
Population	277,104	96,730	96,594	47,691	80,458	9,550

Note: Estimates that are underlined have coefficients of variation (CVs) in the range of 25 to 50 percent. All other estimates have CVs less than 25 percent.

[1]Determined using data from Economic Indicators of the Farm Sector-State Financial Summary.

[2]Determined using county typology described by Butler and Beale.

[3]Determined using data on state jurisdictional laws (Dunham).

Table 3. Mean of Variables for Farm Businesses with Nonreal Estate Debt,, 1991-93 averages.

Variables	All farms	FCS	Commercial Banks	FSA	Individuals	Merchant & Dealer
NETW ($)	506,196	626,300	485,690	304,890	578,480	501,710
VPRODTOT ($)	235,893	281,320	241,060	179,370	291,150	220,820
ROAT(%)	2.28	2.89	2.15	1.15	2.68	1.10
OP_AGE (years)	47.1	48.7	46.8	46.2	44.7	44.8
DAR	0.20	0.23	0.26	0.38	0.27	0.27
RISKLND2	0.11	0.15	0.10	0.07	0.17	0.10
GOVDEP	0.10	0.07	0.09	0.13	0.06	0.14
UNIQUE	0.20	0.19	0.19	0.19	0.23	0.15
METREG	0.22	0.30	0.20	0.23	0.31	0.20
JUDFORE	0.47	0.46	0.45	0.50	0.50	0.45
DEFJUD	0.51	0.47	0.52	0.53	0.58	0.53
REDEMP	0.51	0.40	0.55	0.48	0.55	0.50
ACQ90NR	0.66	0.57	0.71	0.36	0.55	0.73
Dependent Variables						
Y (FCS)	0.17	----	----	----	----	----
Y (Banks)	0.68	----	----	----	----	---
Y (USDA)	0.09	----	----	----	----	----
Y (Individuals)	0.08	----	----	----	----	----
Y (Merchant & dealer)	0.19	----	----	----	----	----
Sample	4,858	1,001	3,116	425	440	995
Population	304,512	50,746	206,732	27,618	25,622	57,750

Note: Estimates that are underlined have coefficients of variation (CVs) in the range of 25 to 50 percent. All other estimates have CVs less than 25 percent.

Table 4. Lender-borrower logit model results for real estate debt of commercial farms.

Variables	FCS			Banks			USDA		
	Coefficients	t-Statistics	$\partial P_i/\partial X_j$	Coefficients	t-Statistics	$\partial P_i/\partial X_j$	Coefficients	t-Statistics	$\partial P_i/\partial X_j$
INTERCEPT	-2.5883	-8.750[a]	-----	0.3897	1.410	------	-2.0271	4.651[a]	-----
NETW	0.0032	0.441	0.072	-0.0122	-2.203[b]	-0.281	-0.0754	88.54[a]	-1.080
VPRODTOT	0.0058	0.820	0.079	0.0012	0.888	0.030	0.0011	0.066	0.009
ROAT	0.0101	2.212[b]	0.232	-0.0035	-0.831	-0.028	-0.0026	-0.537	-0.031
OP_AGE	0.0282	5.648[a]	0.661	-0.0041	-0.829	-0.087	0.0006	0.095	0.022
DAR2	0.0000	0.012	0.003	0.0008	0.935	0.020	0.0076	1.949[c]	0.106
RISKLAND	0.3584	2.727[a]	9.627	-0.2950	-2.308[b]	-7.695	0.1438	0.894	2.066
UNIQUE	0.0469	0.313	2.404	-0.0821	-0.581	-2.716	0.0186	0.112	0.257
GOVDEP	0.6131	3.298[a]	15.999	-0.3630	-1.810[c]	-7.523	0.1921	0.890	-2.066
METREG	0.1755	1.147	3.800	-0.1703	-1.132	-2.985	-0.4478	-2.198[b]	-6.142
JUDFORE	-0.1953	-1.608	-4.745	0.0008	0.007	0.154	0.0101	0.072	0.043
DEF	0.0658	0.557	1.730	-0.2377	-1.853[c]	-5.631	0.1008	0.690	1.027
REDEMP	-0.0414	0.349	0.211	-0.1974	-1.503	-6.617	-0.0814	-0.561	-1.504
ACQ90	-0.2045	-1.260	-5.622	0.3797	2.528[b]	9.791	-1.1177	-3.281[a]	11.693
ACQ85	0.8010	6.328[a]	18.935	-1.0396	-7.806[a]	23.102	1.0539	5.924[a]	13.488
8 F-Statistic		8.14(14,∞)[a]			9.66 (14, ∞)[a]			21,885(14∞)[a]	
Pseudo-R^2		0.631			0.674			0.829	

[a], [b], and [c] denote significance at the 1%, 5%, and 10% levels respectively.
When the *j*th explanatory variable is a dummy variable, the change in probability is computed as: $P_i(Y_{ij}=1|X_j=1) - P_i(Y_{ij}=1|X_j=0)$ with all other Xs held at their mean levels; otherwise it is calculated as: $\alpha_j P_i (1-P_i)$ with P_i held at its estimated value.

Table 4. (continued)

Variables	Individuals			LIC's		
	Coefficients	t-Statistics	$\partial P_i/\partial X_j$	Coefficients	t-Statistics	$\partial P_i/\partial X_j$
INTERCEPT	0.6185	1.913[b]	-------	-4.5716	-5.243[a]	-----
NETW	0.0086	1.684[a]	0.166	0.0128	1.686	0.045
VPRODTOT	-0.0134	-1.540	-0.237	0.0009	0.717	0.003
ROAT	-0.0000	-0.767	-0.000	-0.0000	-0.360	-0.000
OP_AGE	-0.0342	-6.385[c]	-0.705	0.0175	1.415	0.058
DAR2	-0.0028	-1.633	-0.059	0.0002	0.667	0.000
RISKLAND	-0.1973	-1.489	-4.456	0.1429	0.487	1.806
UNIQUE	0.0387	0.279	0.574	-0.4506	-1.285	-6.048
GOVDEP	-0.5280	-2.519[b]	-10.89	-0.6035	-1.370	-8.491
METREG	-0.1350	-0.867	-3.337	0.1307	0.249	1.408
JUDFORE	0.0947	0.802	2.267	-0.0282	-0.082	-1.017
DEFJUD	0.3603	2.980[a]	8.126	-0.0687	-0.214	-1.356
REDEMP	0.4771	3.989[a]	10.785	0.3734	1.313	5.564
ACQ90	-0.4260	-2.445[b]	-9.587	0.3873	1.140	6.933
ACQ85	-0.1556	-1.196	-3.357	0.1637	0.453	1.914
F-Statistic		7.58 (14, ∞)[a]			1.32(14, ∞)	
Pseudo-R^2		0.741			0.949	

Table 5. Lender-borrower logit model results for nonreal estate debt for commercial farms.

Variables	FCS			Banks			USDA		
	Coefficients	t-Statistics	$\partial P_i/\partial X_j$	Coefficients	t-Statistics	$\partial P_i/\partial X_j$	Coefficients	t-Statistics	$\partial P_i/\partial X_j$
INTERCEPT	-1.5653	-4.886[a]	------	0.4875	1.558	------	-2.0564	-3.475[a]	-------
NETW	0.0082	1.671[a]	0.114	-0.0059	-1.155	-0.129	-0.0356	-136.801[a]	-0.294
VPRODTOT	-0.0004	-0.200	-0.006	0.0110	1.576	0.239	-0.0201	-55.620[a]	-0.165
ROAT	0.0090	3.295[a]	0.125	-0.0095	-3.690[a]	-0.208	-0.0007	-0.186	-0.006
OP_AGE	0.0107	2.112[b]	0.149	-0.0036	-0.761	-0.080	-0.0015	-0.151	-0.013
DAR	-0.5368	-1.844[c]	-7.454	0.3964	1.591	8.641	2.0241	6.438[a]	16.699
RISKLND2	0.1084	0.448	1.655	0.0544	0.263	1.135	-0.8425	-1.814[c]	-7.389
UNIQUE	-0.2372	-1.512	-3.373	0.0779	0.532	1.622	-0.0904	-0.459	-1.013
GOVDEP	-0.2841	-1.334	-3.915	-0.2669	-1.474	-5.843	0.2729	0.924	3.361
METREG	0.3391	1.801[c]	5.271	-0.4071	-2.481[b]	-8.943	0.3193	1.031	3.898
JUDFORE	0.0509	0.356	0.759	-0.2791	-2.496[b]	-5.897	0.1098	0.486	1.256
DEF	-0.0552	-0.397	-0.822	-0.1245	-1.124	-2.617	0.2548	1.196	2.902
REDEMP	-0.5093	-3.369[a]	-7.358	0.4250	3.440[a]	8.994	-0.2147	-1.157	-2.453
ACQNR90	-0.3985	-3.067[a]	-6.056	0.6640	6.232[a]	14.616	-1.4284	-5.899[a]	-14.46
F-Statistic		5.805(13,∞)[a]			6.433 (13,∞)[a]			19,058(13,∞)[a]	
Pseudo-R^2		0.790			0.649			0.913	

[a], [b], and [c] denote significance at the 1%, 5%, and 10% levels respectively.
When the j^{th} explanatory variable is a dummy variable, the change in probability is computed as: $P_i(Y_{ij}=1|X_j=1) - P_i(Y_{ij}=1|X_j=0)$ with all other Xs held at their mean levels; otherwise it is calculated as: $\alpha_j P_i (1-P_i)$ with P_i held at its estimated value.

Table 5. Lender-borrower logit model results for nonreal estate debt for commercial farms. (continued)

Variables	Individuals			Merchants & Dealers		
	Coefficients	t-Statistics	$\partial P_i/\partial X_j$	Coefficients	t-Statistics	$\partial P_i/\partial X_j$
INTERCEPT	-1.6975	-3.861[a]	-------	0.7125	-2.149[b]	-----
NETW	0.0077	1.194	0.119	0.0073	1.226	0.056
VPRODTOT	0.0000	0.022	0.001	-0.0038	-0.802	-0.030
ROAT	0.0075	1.714[c]	0.115	-0.0032	-1.301	-0.025
OP_AGE	-0.0211	-2.891[a]	-0.325	-0.0219	-4.064[a]	-0.169
DAR	0.2998	0.897	4.608	0.4294	1.820[c]	3.309
RISKLND2	0.3652	1.029	3.383	0.0638	0.249	1.031
UNIQUE	0.1450	0.673	1.256	-0.3506	-2.041[b]	-5.180
GOVDEP	-0.3685	-1.221	-2.714	0.4169	2.025[b]	7.248
METREG	0.2704	0.913	2.369	-0.1166	-0.571	-1.817
JUDFORE	0.1486	0.875	1.248	-0.0883	-0.659	-1.403
DEF	0.3410	1.981[b]	2.805	0.0333	0.246	0.530
REDEMP	0.1471	0.853	1.227	-0.1120	-0.791	-1.784
ACQNR90	-0.4999	-2.984[a]	-4.311	0.3412	2.410[b]	5.187
F-Statistic		4.255 (13, ∞)[a]			2.961(13, ∞) [a]	
Pseudo-R^2		0.908			0.794	

REFERENCES

Butler, Margaret A. and Calvin L. Beale. "Rural-Urban Continuum Codes for Metro and Nonmetro Counties, 1993", AGES 9425, U.S. Department of Agriculture, Economic Research Service, September 1994.

Clauretie, Terrence. "The Impact of Interstate Foreclosure Cost Differences and the Value of Mortgages on Default Rates."Journal of the American Real Estate and Urban Economics Association. 15.(3). (1987). 152-167.

Clauretie, Terrence. "State Foreclosure Laws, Risk Shifting, and the Private Mortgage Insurance Industry". Journal of Risk and Insurance. 56(3).(1989). 544-554.

Clauretie, Terrence M. and Thomas Herzog. "The Effect of State Foreclosure Laws on Loan Losses: Evidence from the Mortgage Insurance Industry". Journal of Money, Credit, and Banking. 22(2). (May 1990). 221-233.

Dodson, Charles B. and Steve Koenig. "Young Commercial Farmers: Their Financial Structure and Credit Sources". AIS 56. pp. 40-44

Durham, James "In Defense of Strict Foreclosure: A Legal and Economic Analysis of Mortgage Foreclosure" South Carolina Law Review. (Spring 1986). 461-510..

Fuller, W.A. "Least Squares and Related Analysis for Survey Design". Survey Methodology, Vol. 10. pp.97-118 (1984).

Gale, William G. "Federal Lending and the Market for Credit". Journal of Public Economics. 42 (1990) 177-193, North Holland.

Gale, William G. "Economic Effects of Federal Credit Programs". The American Economic Review. March 1991, pp.133-152.

Greene, W. H. Econometric Analysis. 2nd ed. New York: MacMillan. 1993.

Johnson, Doyle C. and Tarra M. Johnson. "Financial Performance of U.S. Floriculture and Environmental Horticulture Farm Businesses, 1987-91". United States Department of Agriculture Economics Research Service. Statistical Bulletin 862. September 1993.

Koenig, Steven R. and Charles B. Dodson. "Comparing Bank and FCS Farm Customers". Journal of Ag Lending. Vol 8. Issue 2. American Bankers Association. Winter 1995 pp.24-27.

Maddala, G.S. Limited Dependent and Qualitative Variables in Econometrics. Cambridge University Press. 1984.

Miller, L.H. and E.L. LaDue. "Credit Assessment Models for Farm Borrowers: A Logit Analysis". Agricultural Finance Review. 49 (1989) pp. 22-36.

Smith, Bruce D. and Michael J. Stutzer. "Credit Rationing and Government Loan Programs: A Welfare Analysis". AREUEA Journal. Vol. 17. No. 3. 1981. pp. 393-410.

Stiglitz, Joseph E. and Andrew Weiss. "Credit Rationing in Markets with Imperfect Information". American Economic Review. Vol. 71, No. 3. 1981. pp. 393-410.

USDA. Agricultural Income and Finance Situation and Outlook Report. Economic Research Service. AIS-56. February 1995.

_____. Economic Indicators of the Farm Sector: State Financial Summary, 1993. ECIFS 13-2. Economic Research Service, Washington, D.C. (December 1994)

_____. "Farm Costs and Returns Survey, 1991-93." ERS Agriculture and Rural Economy Division. Washington, DC. (unpublished data series).

____. "Value of Land and Buildings Per Acre" ERS Natural Resources and Environment Division (data product). Stock # 87012. Washington, DC.

Williamson, Stephen D. "Do Informational Frictions Justify Federal Credit Programs?" Journal of Money, Credit, and Banking. Vol. 26. No. 3 (August 1994)