# Commercial Bank Usage of the Farm Service Agency Interest Assistance Program

Bruce L. Ahrendsen, Bruce L. Dixon, Chris Bacchus, and Latisha A. Settlage*

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## Abstract

The Farm Service Agency's (FSA) interest assistance interest assistance program allows lenders to enter into an agreement with FSA to subsidize a guaranteed farm operating loan by reducing the interest rate charged to the borrower by up to four percentage points. With fiscal 1997-2003 data, an incidental truncation model framework is used to analyze: 1) commercial bank usage of the program; and 2) intensity of commercial bank usage. The results suggest bank characteristics, farm and non-farm financial characteristics, region, and time are important factors in determining bank usage of the interest assistance program and its intensity.

**Key words**: government loan guarantee, interest subsidy, commercial bank, incidental truncation model

* Associate Professor, Professor, and M.S. Student in Agricultural Economics at the University of Arkansas, Division of Agriculture, Fayetteville; and Assistant Professor of Business at the University of Arkansas, Fort Smith. This material is based upon work partially supported by the Economic Research Service, U.S. Department of Agriculture, under Agreement No. #43-3AEL-2-80068.

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Section 5313 of the Farm Security and Rural Investment Act of 2002 made permanent the four-percentage-point interest assistance program for certain loans guaranteed by the Farm Service Agency (FSA) within its guaranteed operating (OL) loan program. The Act also raised the maximum annual authority that Congress may appropriate from $490 million to $750 million and required that not less than 15 percent of the annual funding is to be reserved for beginning farmers and ranchers.

Through the interest rate assistance program the lender enters into an agreement with FSA to subsidize a guaranteed OL loan. This enables the lender to reduce the interest rate charged to the borrower by up to four percentage points. In order for a farmer to qualify for an interest rate reduction, the borrower must demonstrate that without the assistance, he or she cannot meet the standard repayment requirements for the guaranteed loan. Even though the interest assistance program has been in existence for two decades and has been authorized to receive increased funding, little is known about its utilization.

This study seeks to answer two questions. First, what determines whether or not a commercial bank that originates FSA guaranteed OL loans will originate an interest assistance loan? Second, what determines the intensity of commercial bank usage? A incidental truncation model framework is used to answer these two questions with fiscal 1997-2003 data on all commercial banks which originated an FSA guaranteed OL loan during a given year and in a given state. Within the incidental truncation model framework: 1) commercial bank usage of the program is analyzed with a probit selection model; and 2) intensity of commercial bank usage is analyzed with a Poisson model.

### FSA Overview

The FSA is an agency in the United States Department of Agriculture (USDA) which makes direct and guaranteed farm ownership (FO) and OL loans to farmers and ranchers who are temporarily unable to obtain credit from conventional sources at reasonable rates and terms. The FSA loans may be used to purchase land, livestock, equipment, feed, seed, and supplies and to provide funding to construct buildings or make farm improvements. FSA loans are often provided to beginning farmers who cannot qualify for conventional loans because they have insufficient financial resources and/or have little credit history. FSA also helps established farmers who have suffered financial setbacks or whose resources are too limited to maintain profitable farming operations.

The FSA guaranteed loan program provides conventional lenders with up to a 95 percent guarantee of the loss of principal and interest on a loan should the borrower default. The lender is responsible for servicing the borrower's account for the life of the loan. FSA has the right and responsibility to monitor the lender's servicing activities.

Congress appropriates funds for supporting the guaranteed loan program and, through the budgeting process, determines the amount of loans that may be guaranteed by FSA. The actual funds for the loans made to farmers come from conventional lenders, such as commercial banks and the Farm Credit System (FCS). The guaranteed loan program enables banks and other lenders to originate and service loans otherwise deemed too risky. FSA guarantees reduce the risk exposure for the financial institution by lowering the potential loss from a loan default. Another advantage for commercial banks to use the FSA guaranteed loan program is that the guaranteed portion of the loan does not count against a bank's legal lending limit and may be sold into the secondary market; therefore banks can increase the loan volume they service with the same loanable funds base.

The guaranteed loan program enables conventional lenders to serve a portion of the agricultural loan market that is underserved due to its relatively high financial risk. This portion of the market is made up primarily of three groups: beginning farmers with little experience, farmers with little equity or inadequate collateral, and farmers with a weak credit history relative to farmers receiving loans from conventional sources. These farmers benefit from the program because they are able to obtain credit at reasonable terms and interest rates.

A loan applicant to a financial institution must meet several criteria so that the institution may qualify for an FSA guarantee. The applicant must be a citizen of the United States and have the legal capacity to incur the obligations of the loan. The applicant must be unable to obtain credit at reasonable rates and terms without a guarantee and have an acceptable credit history as determined by the lender. The applicant must not have caused FSA a loss by receiving debt forgiveness on more than three occasions, and the applicant cannot be delinquent on any Federal debt. The applicant must also be the owner or tenant operator of a family farm after the loan is closed.

The maximum guarantee is 90 percent for most loans. The guaranteed percentage is determined by FSA based on the risk involved for the loan. Under certain circumstances the lender may receive a 95 percent loan guarantee. This may occur when either: 1) the purpose of the loan is to refinance an FSA direct farm loan program debt; or 2) the loan is made to a beginning farmer to participate in the beginning farmer down payment FO direct loan program or a qualifying State beginning farmer program.

For most loans, FSA will charge a guarantee fee on the loan. This is usually one percent of the guaranteed portion of the loan. This fee is most likely passed on to the borrower. The guaranteed fee is waived for: 1) interest assistance loans; 2) loans where more than 50% of the loan funds are used to pay off direct FSA loan debt; and 3) loans made in conjunction with the beginning farmer down payment FO direct loan program.

Table 1 shows the maximum guaranteed loan amount for fiscal 1999-2006. Prior to fiscal 1999, the maximum guaranteed loan amount was $300,000 for guaranteed FO loans and $400,000 for guaranteed OL loans. In 1999, section 806 of the Omnibus Consolidated and Emergency Supplemental Appropriations Act increased these limits to a maximum of $700,000 per borrower for guaranteed FO loans, guaranteed OL loans, or a combination of guaranteed FO and OL loans. The legislation also required an annual increase of the $700,000 maximum so that the loan limit keeps pace with inflation in the cost of farm inputs.

Table 1. Maximum FSA Guaranteed Loan Amounts, Fiscal 1999-2006.

| Fiscal Year | Maximum Amount ($) |
|---|---|
| 1999 | 700,000 |
| 2000 | 717,000 |
| 2001 | 731,000 |
| 2002 | 759,000 |
| 2003 | 762,000 |
| 2004 | 782,000 |
| 2005 | 813,000 |
| 2006 | 852,000 |

## Literature Review

Few studies have dealt with interest assistance programs, and none have looked directly at the FSA interest assistance program and tried to explain the variability in lender interest assistance usage. However, several studies have included an interest assistance variable in their models to explain both the uses and the losses of FSA guaranteed loans.

One of these studies was conducted by Dodson and Koenig (2003). The main objective of their study was to explain the variation in county-level use of FSA farm loan programs. They used Tobit regression procedures to test for the presence of a relationship between the observed use patterns of FSA loan programs among counties and a set of related factors. The dependent variable used for measuring FSA loan program use was the share of indebted nonhobby farms within a county in 1997 which had received at least one FSA loan during 1995-1999. Among the set of explanatory variables, they included a binary variable to account for interest assistance. Dodson and Koenig hypothesized that the use of the interest assistance program within a county would increase loan guarantee use. They believed that since the interest assistance program provides up to a four-percentage point interest rate subsidy on OL loans, more farmers would likely apply for loans in areas where interest assistance is more readily available, resulting in greater use of the program. During the 1995-1999 time period of their study, the use of the interest assistance program was heavily concentrated in just 300 counties, although it was available nationwide. Dodson and Koenig found that interest assistance had a positive and significant effect on the share of farmers obtaining FSA loan guarantees, as they expected. In their sensitivity analysis, they concluded that if the interest assistance program is used within a county, the share of indebted nonhobby farmers borrowing from FSA rises by 48%. Many of the other explanatory variables used in Dodson and Koenig could also be considered in determining the use of the interest assistance program in the study presented here.

Another study was conducted by Fultz (1999) where she looked at the factors determining FSA guaranteed loan loss claim activity in the United States. Two of the independent variables that she included in her model dealt with interest assistance. She included a variable for interest assistance paid on guaranteed FO loans and one variable for interest assistance paid on guaranteed OL loans. She hypothesized that the amount of interest assistance provided for guaranteed loans would facilitate the payment of loan principal by lowering the total interest cost of the loan. However, she also hypothesized that higher amounts of interest assistance might foreshadow larger loss claims since loans are being made to borrowers with less repayment capacity, thus meriting interest assistance. Because of these two differing hypotheses, she did not hypothesize the sign of the interest assistance variables.

In her model, the variables for interest assistance for both FO and OL loans were omitted after the first round of estimation because the t-ratios were less than one in absolute value, indicating statistical insignificance. She concluded that there was insufficient evidence to reject the hypothesis that a relationship does not exist between interest assistance and the amount of loss claims. Likewise, she concluded the results did not imply that the interest assistance program was failing to help farmers stay in farming because undoubtedly farmers that received interest assistance were helped. According to her study, the fact that the interest assistance variables were insignificantly related to loss claims might indicate that the program was accomplishing its goal of helping farmers with marginal repayment capacity successfully repay loans. That is, farmers receiving interest assistance fail at about the same rate as other farmers not receiving interest assistance in a given time and region. Finally, she concluded that the insignificance of the two variables might also be attributed to the levels of assistance being too modest to have an observable impact.

A study by Koenig and Dodson (1998) looked at the question of when interest subsidies within the FSA direct farm loan program are most effective in assisting borrowers. They concluded that the limited resource interest rate subsidy is more effective in assisting the lowest income FSA borrowers when prevailing interest rates are high than when they are low. The limited resource program is available to FSA direct farm loan program borrowers with repayment difficulties if satisfactory repayment plans can be developed with the assistance of the limited resource interest rate subsidy. Those farmers receive the limited resource interest rate, which changes infrequently over time. The ability for those farmers to re-qualify for the rate is subject to annual review. However, the regular interest rate for FSA direct farm loan program loans, which is related to the cost of borrowing for the U.S. Government and, correspondingly, the market interest rate, changes with market conditions but is fixed for the term of the loan once the loan is made.[†] For example, if the regular interest rate was 9% and the interest subsidy reduced the rate to 5.00%, then it would be a four percentage point reduction, whereas if the regular rate was 6.00% and the interest subsidy reduced the rate to 5.00%, there would only be a one percentage point reduction in interest rate.

Koenig and Dodson found that the financial profiles of direct farm loan program borrowers paying regular FSA rates and those receiving interest rate subsidies were very similar in 1995. However, in the higher interest rate environment of the early 1990s, the

[†] The limited resource rate for FO loans was the same for 1987-2002, whereas the regular interest rate for FO loans over the same period ranged from 9.46% in 1988 and 1989 to 6.01% in 2002 (USDA/ERS, 2003)

financial profiles of the two groups were more dissimilar. They found that when market interest rates are low, subsidies to reduce interest rates have less impact on borrower income and financial performance than when market interest rates are high. Koenig and Dodson's findings suggest that to improve effectiveness of program delivery, FSA interest subsidy programs could be more narrowly targeted to the most financially stressed farms, including beginning and socially disadvantaged farmers. Also, the interest subsidy programs could be reserved for use only during the most stressful economic periods, and eligibility for these interest subsidies could be removed on a timelier basis. They also suggested that requirements that set percentages of FSA loans be made at subsidized limited-resource rates could be removed, because under low interest rate conditions, borrowers are often better served by paying regular program rates that are fixed and are not subject to an annual review.

Studies were conducted by McCollum (1996), Dixon et al. (1997), and Dixon, Ahrendsen, and McCollum (1999) in which they looked at the determinants of FSA guaranteed loan use and volume for Arkansas commercial banks. In their studies, they used "double hurdle" sub-models, which is somewhat similar to the methodology used in the present study. Each model included a selection equation and a regression equation. In the selection equation, the dependent variable is binary, indicating if a bank did or did not make a guaranteed loan. If the bank did make a guaranteed loan, then the volume of guaranteed loans made at the bank is a dependent variable observation in the regression equation. If the bank did not make a guaranteed loan, the bank is not included as an observation in the regression equation. The authors stated that the reason for the "double hurdle" model is that there is a problem of incidental truncation in the data, meaning for example, that the level of FSA loans made is only observed if a decision is made to enter the FSA loan market. Some of the unobservable factors captured in the error term that determine whether a bank enters the FSA loan market may also determine the level of FSA loans made by the bank. The selection equation was estimated as a probit equation. They then regressed the volume of loans obligated on a set of appropriate regressors in the regression equation step.

These previous studies, although not focusing specifically on the interest assistance program, are helpful when looking at various model approaches and explanatory variables. Many of the variables included in Dodson and Koenig's (2003) study on determining the demand for the guaranteed loan program are also helpful in defining what determines which lenders are using interest assistance and which farmers are receiving interest assistance. Also, the estimation methods used by these previous studies are helpful in selecting the appropriate methodology for the current study, especially those used in McCollum (1996), Dixon et al. (1997), and Dixon, Ahrendsen, and McCollum (1999) because the data for the problem addressed in those studies and the current study are subject to incidental truncation.

## Methodology

The current study focuses on two main questions: (1) what motivates banks to make interest assistance loans, and (2) given that a bank makes a guaranteed operating loan in a given fiscal year, what influences how many loans receive interest assistance?

The first question will be answered by formulating a qualitative response model. A probit model has been selected to use in this study. Probit models have been used and discussed extensively in the econometric literature, for example, Greene (2003). The probit model can be written as:

$$(1) \qquad z^* = x'\beta + u \quad u \sim N(0,1)$$

where z* is an unobserved variable, x is a vector of independent variables, and β is a vector of parameters to be estimated. The observed variable is z where:

$$z = 0 \text{ if } z^* < 0$$
$$z = 1 \text{ if } z^* \geq 0.$$

The variance of the error term u is fixed at 1 as a normalization. In actuality, since the scale of z* is never observed, technically only $\beta/\sigma$ can be observed where $\sigma$ is the standard deviation of u. The variables in vector x represent those variables that influence the decision of a bank to make interest assistance loans.

The second question in the study, which deals with the intensity of interest assistance usage, requires a count data model. In the classical regression model the dependent variable is a continuous random variable that can take on any value on the real line. However, the number of interest assistance loans made by a bank in a year can only be a nonnegative integer. Analysis of the data shows that the number of interest assistance loans typically ranges from zero to six for almost all of the banks making guaranteed OL loans.[‡] Thus, to assume the dependent variable is continuous would be a specification error. Moreover, the econometric literature has developed count data models in a variety of special cases (for instance, see Winkelmann, 2000, or Greene, 2002).

The most common count data model is the Poisson. The probability distribution function for a Poisson random variable y is given as:

$$F(y) = (e-\lambda\lambda y)/y! \qquad y = 0,1,2,\ldots$$

A distinct property of the Poisson is that its mean and variance both equal λ. The Poisson can be used in a regression context by letting the mean be conditional on variables thought to cause variation in y. This is effected by assuming:

$$(2) \qquad \lambda = w'\alpha$$

[‡] The data are observed on an annual basis so the zero to six is for one year.

where w is a vector of variables thought to influence the number of interest assistance loans made and $\alpha$ is a vector of parameters to be estimated.

In the simplest of all specifications (1) and (2) could be estimated as separate equations, typically by maximum likelihood (ML) methods. However, two problems arise. The first is the potential of incidental truncation. As noted in Greene (2002), the incidental truncation problem is not as easily handled in the count data model as in the incidental regression model. The main implication of incidental truncation is that the error term u in (1) is jointly distributed with an error term in (2). However, as is clear in (2), there is no error term. This is accommodated by appending an error term to (2) so that (2) becomes:

(2a) $\lambda = w'\alpha + \in$

where $\in$ is assumed to have a normal distribution with mean zero and variance $\varphi$. The joint distribution of $\in$ and u is characterized by the correlation coefficient $\rho$.

The parameters of (1) and (2a) can be estimated by ML. In addition to estimating $\alpha$ and $\beta$, $\varphi$ and $\rho$ are estimated in the ML process. The model in (2a) leads to what is called a heterogeneity model implying that the mean of the Poisson varies by individual bank even though the values of w might be identical for two banks. A test for incidental truncation is that $\rho = 0$. Rejection of this hypothesis leads to acceptance of the incidental truncation model. But even failure to reject the no incidental truncation hypothesis does not necessarily permit estimating (2) or (2a) as simple count data models.

Even though incidental truncation may not be a problem, the parameters in (2) or (2a) cannot necessarily be estimated as a simple Poisson model. The reason is the so-called "excess zero" or "zero inflation problem." That is, there may be a much higher proportion of zeroes than would be modeled in the Poisson distribution for any given $\lambda$. The problem arises because there may be a threshold effect at work. In the application of present here, a bank may have a lending philosophy that they never use interest assistance. Another bank may use interest assistance and the Poisson might be an adequate representation of how frequently that bank makes interest assistance loans. Hence there would be some years that such a bank makes no interest assistance loans because of the repayment situation of its borrowers and some years that it does according to the Poisson. However, when observations on y from banks that never make interest assistance loans are combined with observations on y from banks making interest assistance loans, there is an excess of zero observations leading to the zero inflation problem. In essence, non-interest assistance banks have not crossed over a threshold to make interest assistance loans. Estimation of such samples using simple count data models leads to inconsistent parameter estimates.

Econometric models have been formulated to incorporate the zero inflation problem. In the case of the Poisson, these are referred to as ZIP models. In the simplest formulations a parameter is estimated to account for the excessive zeros. In more sophisticated models the variables associated with whether the bank is an interest assistance lender can be incorporated. That is, the variables in x in (1) can be used to explain the threshold. In fact, the estimated model of the threshold effect simply becomes the probit model in (1) but assuming no incidental truncation.

The problem with applying this method to interest assistance usage by banks departs from the traditional truncation model in another way. With incidental truncation[§] it is normally assumed that observations on w are not available when z = 0. However, bank information is available even if a bank does not make the loan. Winkelman describes a similar problem but does not apply it to banking. His method, which is used in this study, includes all the observations on w regardless of the value of z. This method is used in this study via the ML estimations as described in Greene (2002).

A final aspect of this model is the fact that the total number of guaranteed loans made is not an explanatory variable in the model. It might seem logical that number of guaranteed loans made would provide an upper limit on the number of interest assistance loans made. This is certainly true. However, the inclusion of number of guaranteed loans would likely create an endogeneity problem. This means that the random error term that determines the number of guaranteed loans made would be jointly distributed with the error term in y, $\in$. When explanatory variables are jointly distributed with the error term in an equation, estimators predicated on the assumption of no correlation are inconsistent. To get around this problem the equation in (2a) is viewed as a reduced form from a structural simultaneous model that determines both y and the number of guaranteed loans made. In this case the problems engendered by the contemporary correlation between the error terms are avoided.

## Data and Descriptive Statistics

### Data Sources

The study was initiated as the result of a cooperative agreement (#43-3AEL-2-80068) between the USDA/Economic Research Service and the University of Arkansas, Division of Agriculture, Fayetteville. The project was titled "Analysis of the FSA Interest Rate Assistance Program Pre and Post 2002." FSA assisted with the project by providing detailed information on all OL and FO loans guaranteed by FSA for fiscal years 1985-2003. FSA data included information on fiscal year closed, originating lender identification number with name and address, lender type (commercial bank, Farm Credit institution, savings bank, credit union, mortgage company, etc.), servicing lender identification number, loan closing date, state of residence for the borrower, SDA loan indicator, beginning farmer loan indicator, loan type (OL or FO), loan principal amount,

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[§] Recall that Incidental truncation refers to the joint distribution of u and $\in$. If the correlation of the error terms is zero, then there is not incidental truncation and the ZIP model assuming a normally distributed error term for the probit model is identical to the formal probit and Poisson model. A correlation coefficient different than zero leads to inconsistent estimates of the parameters of (2) because the expected value of y, conditional on z = 1, is no longer $w'\alpha$ because the expected value of $\in$ given z = 1 is no longer 0 if $\rho \neq 0$. That is, the value of y is not observed for some observations because of its "incidental" relationship to u.

guarantee percentage, certified or preferred lender indicator, lender interest rate, borrower interest rate, whether the interest rate was fixed or variable, loan maturity date, interest assistance payment amount and date, loan status (active, paid in full, terminated by lender request, and loss claim), and loss date and amount if there was a loss claim observed as of the date the data were constructed.

Several steps were taken to aggregate the loan level data to the bank level within a state. The data are at the bank level for every state in which the bank makes a guaranteed OL loan and has deposits. Settlage (2005) provides information on the steps taken to aggregate loan data and additional details for the data used.

Data on bank characteristics were obtained from the Federal Reserve Bank of Chicago. The Federal Reserve Bank of Chicago provides electronic access to the Federal Deposit Insurance Corporation's Consolidated Report of Condition and Income for Banks (Call Report) and Summary of Deposits. Call Report data collected for individual banks included asset size, total loans, capital, loans secured by agricultural real estate, agricultural production loans, deposits, net income, rate of return on assets, and whether the bank was a member of a single- or multi-bank holding company (Settlage, 2005).

Data from the USDA and the Bureau of Economic Analysis were used to quantify the economic situation for the state where the borrower resided. The annual, state-level data included debt-to-asset ratio (total farm liabilities divided by total farm assets), debt servicing ratio for agricultural producers, net farm income per farm, value of land and buildings per farm acre, and per capita income. The data on the latter three variables were used to construct annual, state-level variables to measure relative risk: coefficient of variation for net farm income per farm (CVFI), coefficient of variation for the value of land and buildings (CVLB), and coefficient of variation for per capita income. Each year's value for a coefficient of variation variable was computed from data for the five previous years (Settlage, 2005).

## Guaranteed OL Loan Usage

The use of guaranteed OL loans and interest assistance by lenders is far from uniform across the United States (table 1). During fiscal 1997 through 2003, a higher percentage of guaranteed OL loans in the Corn Belt, Southeast, and Appalachian regions received interest assistance than in other regions. The regions participating least in the program, both in absolute and relative terms, are the Northeast, Pacific, and the Delta States.

Table 1. Guaranteed OL Loans Originated by All Lenders by Region, Fiscal 1997-2003

| Regions | IA | Total OL | Percent IA |
|---|---|---|---|
| Northeast | 27 | 3,469 | 0.8 |
| Lake States | 704 | 4,348 | 16.2 |
| Corn Belt | 5,672 | 12,579 | 45.1 |
| Northern Plains | 1,984 | 8,308 | 23.9 |
| Appalachian | 3,572 | 9,415 | 37.9 |
| Southeast | 5,844 | 13,739 | 42.5 |
| Delta States | 97 | 5,673 | 1.7 |
| Southern Plains | 418 | 3,399 | 12.3 |
| Mountain | 684 | 4,308 | 15.9 |
| Pacific | 27 | 2,414 | 1.1 |
| US Total | 19,029 | 67,652 | 28.1 |

IA= Interest Assistance
OL= Operating Loans
*U.S. totals do not include obligations made to Alaska and Hawaii

Next, the data are broken down to show the interest assistance usage by four categories of borrowers (table 2). The first category is beginning farmers (BF) as defined by FSA. For OL loan purposes, a BF farmer is a farmer who meets the general eligibility requirements for an OL loan and has been farming for less than ten years. The next category is socially disadvantaged (SDA) farmers. FSA recognizes an SDA farmer or rancher as "one of a group whose members have been subjected to racial, ethnic, or gender prejudice because of his or her identity as a member of the group without regard to his or her individual qualities. SDA groups are women, African Americans, American Indians, Alaskan Natives, Hispanics, Asian Americans and Pacific Islanders" (USDA/FSA, 2006). Another category is created for those borrowers classified as both a BF and an SDA borrower, and the last category is for those borrowers that are neither a BF or an SDA borrower.

Table 2. Guaranteed OL Loans Originated by All Lenders by Borrower Type, 1997-2003

| Borrower Type | IA | Total OL Loans | Percent IA |
|---|---|---|---|
| BF Only | 2,407 | 9,271 | 26.0 |
| SDA Only | 474 | 2,297 | 20.6 |
| BF & SDA | 131 | 715 | 18.3 |
| Non-BF, Non-SDA | 16,021 | 55,454 | 28.9 |
| Total | 19,033 | 67,737 | 28.1 |

BF = Beginning Farmer
SDA = Socially Disadvantaged Farmer
IA = Interest Assistance Loans

The information in table 2 suggests that for the years 1997 through 2003 there is fairly consistent shares of guaranteed OL loans receiving interest assistance among the various borrower types. Borrowers that are neither BF nor SDA receive the highest percentage of guaranteed OL loans with interest assistance and those borrowers that are both BF and SDA receive the lowest percentage of guaranteed OL loans with interest assistance.

It is important to consider what types of lenders are using the interest assistance program, and at what frequency the lenders are using the program. Table 3 shows the total number of interest assistance and guaranteed OL loans originated by various types of lenders and then shows the percentage of loans receiving interest assistance. The types of lenders identified are: commercial banks, cooperative Farm Credit System institutions, savings and loans, credit unions, mortgage companies, and a category including all other financial institutions.

Table 3. Guaranteed OL Loans by Lender, Originated Fiscal 1997-2003

| Lender Type | IA | Total OL Loans | Percent IA |
|---|---|---|---|
| Commercial Bank | 16,646 | 53,528 | 31.1 |
| Farm Credit System | 1,850 | 11,636 | 15.9 |
| Savings and Loans | 203 | 923 | 22.0 |
| Credit Union | 251 | 525 | 47.8 |
| Mortgage Company | 11 | 66 | 16.7 |
| Other | 72 | 1,059 | 6.8 |
| Total | 19,033 | 67,737 | 28.1 |

IA = Interest Assistance Loans

Table 3 indicates that credit unions have the the highest percentage of OL loans that have interest assistance among the lender types. This high percentage, however, is somewhat deceiving since there are relatively few guaranteed OL loans made by credit unions compared with commercial banks. When looking at intensity of usage, commercial banks dominate the market with 16,646 interest assistance loans. Over 31% of all guaranteed OL loans made by commercial banks received interest assistance.

## Model Variable Definitions and Coefficient Expected Signs

The dependent variables for the probit and Poisson models were both obtained from FSA data. For the probit model, the variable IALNDR is a binary variable which simply indicates whether or not a bank that originates at least one guaranteed OL loan in a given state in a given year also participates in the interest assistance program in that state and year (table 4). The dependent variable for the Poisson model, NUMIALN, is a count variable which gives the intensity of usage as indicated by the number of interest assistance loans a bank originates in a given state in a given year.

Table 4. Model Variable Definitions, Expected Coefficient Signs, and Data Sources

| Variable names | Definitions | Expected Coefficient Sign | Source |
|---|---|---|---|
| **Dependent Variables** | | | |
| IALNDR | Binary variable: 1 = Bank made at least one interest assistance loan during the year, 0 otherwise | | FSA |
| NUMIALN | Numer of interest assistance loans made by a bank in a state during year | | |
| **Independent Variables** | | | |
| **Bank Characteristics** | | | |
| AC1 | Binary variable: 1 = Bank has less than $25 million in assets, 0 otherwise | * | Constructed from Call Reports |
| AC2 | Binary variable: 1 = Bank has $25 million to $99,999,999 in assets, 0 otherwise | * | |
| AC3 | Binary variable: 1 = Bank has $100 million to $1 billion in assets, 0 otherwise | + | |
| AC4 | Binary variable: 1 = Bank has over $1 billion in assets, 0 otherwise | + | |
| LAR | Total loans divided by total assets (ratio) | + | Constructed from Call Reports |
| CAPASST | Total equity divided by total assets (ratio) | + | |
| AGTL | Total agricultural loans divided by total loans (ratio) | + | |
| LNDEP | Total loans divided by total deposits (ratio) | + | |
| ROA | Net income divided by total assets (ratio) | +/- | |
| MBHC | Binary variable: 1 = Bank is affiliated with a multi-bank holding company, 0 otherwise | +/- | |
| **State Financial Characteristics for agricultural producers in the state in which the loan was made** | | | |
| CVNFI | Coefficient of variation in net farm income per farm | + | Constructed from ERS and BEA Data |
| DSR | Debt servicing ratio for agricultural producers | + | |
| DA | Debt-to-asset ratio for agricultural producers | + | |
| CVLB | Coefficient of variation in the value of land and buildings, per farm acre | + | |
| CVPCI | Coefficient of variation in per capita income | + | |
| **Region** | | | |
| CRN | Binary variable: 1 = Borrower located in CornBelt Region, 0 otherwise | * | ERS |
| PAC | Binary variable: 1 = Borrower located in Pacific Region, 0 otherwise | - | |
| MTN | Binary variable: 1 = Borrower located in Mountain Region, 0 otherwise | +/- | |
| NPL | Binary variable: 1 = Borrower located in Northern Plains Region, 0 otherwise | +/- | |
| SPL | Binary variable: 1 = Borrower located in Southern Plains Region, 0 otherwise | +/- | |
| LKS | Binary variable: 1 = Borrower located in Lake States Region, 0 otherwise | + | |
| DLT | Binary variable: 1 = Borrower located in Delta Region, 0 otherwise | - | |
| NE | Binary variable: 1 = Borrower located in Northeast Region, 0 otherwise | - | |
| APP | Binary variable: 1 = Borrower located in Appalachian Region, 0 otherwise | + | |
| SE | Binary variable: 1 = Borrower located in Southeast Region, 0 otherwise | + | |
| **Time** | | | |
| T97 | Binary variable: 1 = Year 1997, 0 otherwise | * | |
| T98 | Binary variable: 1 = Year 1998, 0 otherwise | +/- | |
| T99 | Binary variable: 1 = Year 1999, 0 otherwise | +/- | |
| T00 | Binary variable: 1 = Year 2000, 0 otherwise | +/- | |
| T01 | Binary variable: 1 = Year 2001, 0 otherwise | +/- | |
| T02 | Binary variable: 1 = Year 2002, 0 otherwise | +/- | |
| T03 | Binary variable: 1 = Year 2003, 0 otherwise | +/- | |

* Variable omitted from the estimated models

The independent variables will be the same for both the probit and the Poisson models and are categorized into four groups: bank characteristics, regional financial characteristics, binary regional variables, and time variables. The bank characteristics, both financial and situational, will allow us to look at whether individual bank characteristics can influence a bank to enter the interest assistance program. Regional financial characteristics will give us a feel for whether the financial situations among regions play a significant part in determining which lenders are utilizing the program. For this reason, we include a set of state economic characteristics which will give an insight as to the general financial need in the region where the loan is made. And the time variables will allow us to monitor the impact of program changes and farm situation changes over the years of the study.

## Bank Characteristics

The set of bank characteristic variables includes a set of binary variables indicating the asset size of the bank (AC1, AC2, AC3, and AC4). Preliminary thought leads us to think that larger banks are more likely to enter the interest assistance program and use the program more frequently.

The loan-to-asset ratio (LAR) is also included as a bank financial characteristic. This variable allows us to determine how much of a bank's assets consists of loans, and reflects a bank's aggressiveness in lending. The sign of the coefficient for this variable is hypothesized to be positive because as a bank loans out more of its assets, it would be more willing to utilize a program that reduces the risk of those loans, including agricultural loans.

The variable which accounts for the proportion of total loans that are agricultural for a bank (AGTL) gives us a better understanding of whether agricultural banks are more likely to utilize the interest assistance program than banks that are not as highly active in the agricultural loan market. The variable is computed as agricultural loans divided by total loans for the bank. The hypothesized sign for the coefficient is positive, since one would think the more agricultural a bank is, the more familiar it may be with FSA programs and more likely to utilize the interest assistance program, and at a higher frequency than a bank that is less agricultural. Also, a bank with a high AGTL may be more likely to use guaranteed loans and, perhaps, interest assistance, to try to protect the loans from the risk of being over invested in agriculture.

The loan-to-deposit ratio (LNDEP) indicates whether aggressive lending banks are participating in this program. One would think that the more aggressive a bank is in its lending practices, the more likely it would be to utilize the interest assistance program. For this reason, a positive sign is expected for this variable.

A bank's rate of return on assets (ROA) provides a good indication of the profitability or success of a bank. This variable will be a good determinant of whether more profitable and successful banks utilize the program or not. One hypothesis would be that if a bank views programs such as interest assistance as being profitable, it is more likely to use them. However, another hypothesis would be that less profitable banks need to take advantage of these programs to alleviate some risk. Therefore, the expected sign of the coefficient is indeterminate.

Another bank characteristic variable included in the models is a variable to account for whether or not a bank is part of a multi-bank holding company (MBHC). It is usually thought that MBHC banks are associated with large MBHC organizations that have banks in a large area and perhaps many states. Again, there could be two hypotheses about MBHC banks. One hypothesis is that if a bank is a member of a large MBHC organization, there might be more available staff to specialize in the interest assistance program which might help lower the transaction costs of using such a program. Therefore the coefficient sign would be positive. However, there could also be the situation that the loans of MBHC's banks are geographically diversified because the MBHC's banks may be located over a larger area. Therefore, the MBHC may not need the risk reduction offered by interest assistance, indicating a negative sign.

## State Financial Characteristics

Variables measuring the financial characteristics of agricultural producers and general public for the state in which each loan was made were constructed using ERS and Bureau of Economic Analysis data. The first state financial variable is the coefficient of variation in net farm income per farm (CVNFI). This variable indicates whether an increase in the relative variation of farm income increases or decreases the usage of interest assistance. The more unstable farm incomes are, the more likely banks utilize the program is the hypothesis tested with this variable.

The debt servicing ratio for agricultural producers (DSR) is the sum of principal and interest payments divided by gross cash farm income. DSR is a measure of the repayment capacity of farmers in a state, such that as DSR increases farmers are more likely to have repayment difficulties. The debt-to-asset ratio for agricultural producers (DA) is the ratio of total farm liabilities to total farm assets and indicates financial risk and solvency. As DA increases it is more likely that farms have more financial risk and are less solvent. These variables indicate the repayment and debt situation for each state and whether they affect interest assistance usage. More than likely, farmers who have more repayment difficulties and financial risk (less solvency) are more likely to need the program.

Another important aspect of the study will focus on the coefficient of variation in the value of land and buildings for each state (CVLB). One would think that the more relative variability in land and building prices, lenders would need to negate as much risk as possible.

The last state financial characteristic is the coefficient of variation in per capita income for each state (CVPCI). Obviously, the more variability in the income that a farmer faces in a particular region would imply an increase in risk for that farmer since many farmers supplement their farm income with non-farm income. Therefore, one would think that the more variability in income, the more likely a farmer (and bank) would need to utilize the interest assistance program to help offset this risk.

## Region

The third set of independent variables is comprised of ERS defined binary region variables. These variables should indicate whether or not there is a regional effect determining the usage of interest assistance. Certain patterns can be predicted using the simple data analysis presented earlier. As shown in table 1, specific regions such as Corn Belt, Southeast, and Appalachian are intensive users of interest assistance. Since the Corn Belt variable is omitted from the estimated models, the rest of the regions are expected to be negative.

## Time

The last set of variables included in the models contains binary time variables for years 1997 through 2003. These variables are included to model any patterns associated with time, or whether program usage has been fairly consistent throughout the years. These variables could account for natural occurrences such as drought or other weather conditions that occurred during a specific year which could influence the need for interest assistance.

## Summary Statistics

Summary statistics of the dependent and independent variables included in the models are presented in table 5. The dependent variable in the probit selection model, IALNDR, has a mean of 0.3976 which means that nearly 40% of the banks which made at least one guaranteed OL loan in a given year in a given state also made at least one FSA interest assistance loan. For the dependent variable in the Poisson model, NUMIALN, the mean is 1.3908 meaning that the average number of interest assistance loans made by every bank in the data set is 1.39. The minimum is obviously zero for banks not making any interest assistance loans in a given state, and the maximum is 128 meaning that one bank made 128 interest assistance loans in one year in one state.

When looking at the descriptive statistics for the independent variables, it is interesting to look at the asset size classes. According to the descriptive statistics for the binary variables, roughly 11% of the banks in the data set to used to estimate the models were in asset size class 1, 48% were in asset size class 2, 34% in asset size class 3, and 7% in asset size class 4. This identifies the predominant sizes of banks in our data set, i.e., most of the banks fall in the middle two size classes.

The Corn Belt region has the greatest percentage of banks making guaranteed OL loans with 25%, followed by the Northern Plains region with 21%. The regions with the lowest percentages of banks making guaranteed OL loans are the Northeast, Pacific Coast, and Southeast, all with less than 4%.

Table 5. Dependent and Independent Variable Summary Statistics

| Variable | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|
| IALNDR | 0.3976 | 0.4894 | 0.0000 | 1.0000 |
| NUMIALN | 1.3908 | 3.6109 | 0.0000 | 128.0000 |
| AC1 | 0.1120 | 0.3154 | 0.0000 | 1.0000 |
| AC2 | 0.4771 | 0.4995 | 0.0000 | 1.0000 |
| AC3 | 0.3409 | 0.4740 | 0.0000 | 1.0000 |
| AC4 | 0.0700 | 0.2552 | 0.0000 | 1.0000 |
| LAR | 0.6319 | 0.1219 | 0.0000 | 0.9673 |
| CAPASST | 0.1010 | 0.0301 | 0.0096 | 0.5755 |
| AGTL | 0.3212 | 0.2270 | 0.0000 | 0.9632 |
| LNDEP | 0.7670 | 0.1923 | 0.0000 | 5.0076 |
| ROA | 0.0118 | 0.0066 | -0.0959 | 0.0782 |
| MBHC | 0.3095 | 0.4623 | 0.0000 | 1.0000 |
| CVNFI | 0.3156 | 0.1358 | 0.0215 | 0.9210 |
| DSR | 0.1700 | 0.0315 | 0.0800 | 0.2400 |
| DA | 16.0337 | 3.3118 | 3.7200 | 23.2000 |
| CVLB | 0.0768 | 0.0324 | 0.0000 | 0.4613 |
| CVPCI | 0.0703 | 0.0104 | 0.0354 | 0.1038 |
| CRN | 0.2523 | 0.4345 | 0.0000 | 1.0000 |
| PAC | 0.0302 | 0.1712 | 0.0000 | 1.0000 |
| MTN | 0.0663 | 0.2488 | 0.0000 | 1.0000 |
| NPL | 0.2078 | 0.4057 | 0.0000 | 1.0000 |
| SPL | 0.1123 | 0.3157 | 0.0000 | 1.0000 |
| LKS | 0.1359 | 0.3427 | 0.0000 | 1.0000 |
| DLT | 0.0682 | 0.2521 | 0.0000 | 1.0000 |
| NE | 0.0220 | 0.1466 | 0.0000 | 1.0000 |
| APP | 0.0655 | 0.2474 | 0.0000 | 1.0000 |
| SE | 0.0394 | 0.1945 | 0.0000 | 1.0000 |
| T97 | 0.1454 | 0.3525 | 0.0000 | 1.0000 |
| T98 | 0.1395 | 0.3465 | 0.0000 | 1.0000 |
| T99 | 0.1634 | 0.3698 | 0.0000 | 1.0000 |
| T00 | 0.1553 | 0.3622 | 0.0000 | 1.0000 |
| T01 | 0.1368 | 0.3437 | 0.0000 | 1.0000 |
| T02 | 0.1355 | 0.3423 | 0.0000 | 1.0000 |
| T03 | 0.1240 | 0.3296 | 0.0000 | 1.0000 |

*Number of Observations = 11,509

## Model Estimation

### Probit Model Results

The estimated coefficients for the 22 independent variables in the probit model are shown in table 6. For the nine bank variables, only two of the estimated coefficients are significantly different from zero at the 0.05 level (AGTL and MBHC) and one is marginally significant at the 0.10 level (CAPASST). The coefficient for AGTL is positive as expected meaning that predominately agricultural banks are more likely to make interest assistance loans. MBHC is shown to be negatively related to interest assistance usage for this model. This can be justified by our theory that banks which are members of a MBHC do not have to actively search for alternatives to negate risk because of the more diversified loan portfolio that is usually associated with a MBHC when members’ loans are taken together.

Table 6. Estimated Probit Selection Model of Interest Assistance Usage with Incidental Truncation

| Variable names | Coefficient | P-value |
|---|---|---|
| **Dependent Variable IALNDR** | | |
| **Independent Variables** | | |
| Constant | -8.1194 | 0.0000 |
| **Bank Characteristics** | | |
| AC2 | 0.1488 | 0.3470 |
| AC3 | 0.2651 | 0.1375 |
| AC4 | 0.4210 | 0.1050 |
| LAR | 0.3321 | 0.6693 |
| CAPASST | -3.0072 | 0.0725 |
| AGTL | 0.6960 | 0.0103 |
| LNDEP | 0.3739 | 0.5068 |
| ROA | -2.6696 | 0.7278 |
| MBHC | -0.2255 | 0.0292 |
| **State Financial Characteristics** | | |
| CVNFI | 1.1258 | 0.0550 |
| DSR | 5.9825 | 0.0467 |
| DA | 0.4528 | 0.0000 |
| CVLB | -0.8056 | 0.6452 |
| CVPCI | 25.5715 | 0.0001 |
| **Region** | | |
| PAC | -2.0743 | 0.0055 |
| MTN | -0.1167 | 0.6908 |
| NPL | -3.3493 | 0.0000 |
| SPL | -3.0562 | 0.0000 |
| LKS | -2.0523 | 0.0000 |
| DLT | -5.1025 | 0.0000 |
| NE | 0.2635 | 0.6131 |
| APP | 1.8613 | 0.0016 |
| SE | -4.4326 | 0.0000 |
| **Time** | | |
| T98 | 0.3528 | 0.0154 |
| T99 | 0.7694 | 0.0000 |
| T00 | 1.0008 | 0.0000 |
| T01 | 0.8532 | 0.0000 |
| T02 | 1.3206 | 0.0000 |
| T03 | 1.3694 | 0.0000 |

Number of observations equals 11,509.

For the incidental truncation model, the Chi squared equals 7,885.629 with a p-value of 0.0000, the standard deviation of heterogeneity equals 1.1768 with a p-value of 0.0000, and the correlation of heterogeneity and selection equals -0.4247 with a p-value of 0.0000.

Of the state financial characteristic variables, DA and CVPCI are significant at the 0.01 level, and both have a positive sign. These signs are expected because as the relative indebtedness and relative income variability increases, lenders likely seek out alternative methods to reduce risk for borrowers and, hence, reduce bank risk. DSR is positively related to interest assistance usage at the 0.05 level indicating that an increase in debt payments relative to gross income tends to increase the likelihood of using interest assistance. CVNFI is marginally significant indicating that for an increase in the relative variability of farm income, there is an increase in likelihood of using the interest assistance program.

The regional characteristics are fairly predictable given the prior descriptive data analysis. Regions PAC, NPL, SPL, LKS, DLT, and SE are all negatively related to interest assistance usage at the 0.01 level compared with the Corn Belt region. This is expected since the Corn Belt region had the highest percent of guaranteed OL loans that received interest assistance. The positive and significant sign for APP is a bit surprising since the percent of interest assistance loans in the Appalachian region was slightly less than the Corn Belt region. Likewise, the insignificant signs for MTN and NE are surprising since they had much lower percentages of interest assistance loans than did the Corn Belt region. However, the percent of interest assistance loans presented in table 1 includes loans originated by all lender categories, not just commercial banks. Commercial banks in certain regions may have had a much greater rate of originating interest assistance loans than other lenders. Also, the impact of the other independent variables could partially off set the lending patterns reflected by the binary coefficients.

The time variables are all positive and significant as compared with 1997 meaning that the likelihood of using interest assistance was greater in all years compared with 1997. These results are consistent with the data which reveal the lowest percent of interest assistance loans for the time period were originated in 1997. These results are also consistent with more banks becoming familiar with the interest assistance program and, perhaps, using the program to compete with other banks already using the program. The largest coefficient estimates are for T02 and T03 which is consistent with banks learning about the program over time. Also, the estimates may indicate the new policies for interest assistance have had an impact. There is also a large coefficient estimate for T00 which could indicate a special demand or allocation for interest assistance in 2000.

**<u>Poisson Model Results</u>**

The results for the estimated Poisson model are presented in table 7. In this model, five of the nine bank variables are significant. One interesting variable is asset size. All three asset size classes, AC2, AC3, and AC4, are positively related to the number of interest assistance loans and significant at the 0.01 level. These results indicate that given a bank makes a guaranteed OL loan, the larger the bank, the more interest assistance loans it is likely to make in a state.[**] The two bank portfolio variables, LAR and AGTL, are both positively significant. As predicted, as a bank lends more of its assets, it is more likely to utilize the interest assistance program at a higher intensity level to help negate its lending risks. In addition, a bank that is aggressively attempting to expand its loan portfolio will be able to have more loans meet the marginal repayment levels required to qualify for interest assistance. Also, banks which are more highly involved in the agricultural

[**] It should be remembered that a multi-state bank appears as an observation in the data set for every state where it has positive deposits and has made at least one guaranteed OL loan, i.e., the farm borrower is located in the state. So this variable means large, multi-state banks make more loans in a state where it is located, ceteris paribus.

lending arena (greater AGTL) are more likely to make more interest assistance loans which we expect given their relative lack of diversification.

The results for the state financial characteristics are mixed. The debt service ratio (DSR) is positive and significant as expected. This is the same result that was found for the probit model. However, the signs of the variables that measure financial and income risks, DA and CVPCI, are unexpected and opposite of that found for the probit model. In addition, the estimated coefficient for CVLB, which may be considered as an indicator of security risk, is unexpectedly negative.

One of the limitations of the state financial characteristic variables is that they are at the state level. Financial characteristics for farms and local economies can vary greatly within a state. For example, a drought may only occur in part of the state and adversely affect farmers located there while farmers in other parts of the state are unaffected. Likewise, a manufacturer may close a plant in a community and adversely affect the income for people in the area, including some farmers perhaps. Meanwhile, other areas of the state may have a steady, growing economy.

The region variables give slightly different results than in the probit model. For the Poisson model PAC, MTN, NE, and APP all have negative and significant coefficients. Banks in these regions are less likely to make more interest assistance loans than banks in the Corn Belt region. Conversely, NPL, SPL, and LKS have positive and significant coefficients. This means that for banks in these regions, they are more likely to make a greater number of interest assistance loans than banks in the Corn Belt region.

The binary time variables are again interesting because there are some unexpected results. T99, T00, and T01 have positive and significant coefficients while T03 has a negative and significant coefficient. This indicates that banks making at least one guaranteed OL loan in a given year in a given state made more interest assistance loans in 1999, 2000, and 2001, and fewer interest assistance loans in 2003 when compared with 1997. In the probit model, T03 had a positive sign indicating that banks that made at least one guaranteed OL loan were more likely to have made at least one interest assistance loan in 2003 than in 1997. These results may indicate that more banks were involved in the interest assistance program in 2003 than 1997, but they were not making as many interest assistance loans.

Table 7. Estimated Poisson Model of Interest Assistance Usage with Incidental Truncation

| Variable names | Coefficient | P-value |
|---|---|---|
| **Dependent Variable NUMIALN** | | |
| **Independent Variables** | | |
| Constant | -1.5307 | 0.0001 |
| **Bank Characteristics** | | |
| AC2 | 0.4747 | 0.0000 |
| AC3 | 0.9347 | 0.0000 |
| AC4 | 1.0827 | 0.0000 |
| LAR | 0.8654 | 0.0001 |
| CAPASST | -0.8998 | 0.1864 |
| AGTL | 1.4781 | 0.0000 |
| LNDEP | 0.1515 | 0.1453 |
| ROA | 2.1176 | 0.4730 |
| MBHC | -0.0238 | 0.4949 |
| **State Financial Characteristics** | | |
| CVNFI | -0.2010 | 0.2355 |
| DSR | 12.7610 | 0.0000 |
| DA | -0.1332 | 0.0000 |
| CVLB | -1.8098 | 0.0175 |
| CVPCI | -8.8883 | 0.0000 |
| **Region** | | 0.0000 |
| PAC | -2.7802 | 0.0000 |
| MTN | -0.7761 | 0.0000 |
| NPL | 0.9193 | 0.0000 |
| SPL | 0.8903 | 0.0000 |
| LKS | 0.6335 | 0.0000 |
| DLT | 0.7837 | 0.0566 |
| NE | -0.3935 | 0.0059 |
| APP | -1.0508 | 0.0000 |
| SE | 1.5212 | 0.2937 |
| **Time** | | |
| T98 | -0.0602 | 0.3812 |
| T99 | 0.1705 | 0.0124 |
| T00 | 0.2958 | 0.0000 |
| T01 | 0.2209 | 0.0029 |
| T02 | -0.1018 | 0.1921 |
| T03 | -0.3898 | 0.0000 |

Number of observations equals 11,509.
For the incidental truncation model, the Chi squared equals 7,885.629 with a p-value of 0.0000, the standard deviation of heterogeneity equals 1.1768 with a p-value of 0.0000, and the correlation of heterogeneity and selection equals -0.4247 with a p-value of 0.0000.

## Summary and Conclusions

Section 5313 of The Farm Security and Rural Investment Act of 2002 made permanent the interest assistance program for the FSA's guaranteed loans. Through the interest assistance program the lender enters into an agreement with FSA to subsidize an OL loan by reducing the interest rate charged to the borrower by up to four percentage points. With fiscal 1997-2003 data, an incidental truncation model framework is used to analyze:

1) commercial bank usage of the program with a probit model; and 2) intensity of commercial bank usage of the program with a Poisson model. The results suggest bank characteristics, farm and non-farm financial characteristics, regional location, and time are important factors in determining bank usage of the interest assistance program and its intensity. There are considerable regional differences in bank program usage which are not attributed to bank, farm, and non-farm financial characteristics. A potential explanation for this finding includes regional differences in program promotion by FSA officials. Also, competitive pressures for banks to offer (utilize) programs used by other banks in their region may be a potential explanation. The results may be used by policy makers and administrators to make adjustments to the interest assistance program to enhance its effectiveness.

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