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**Racial/Ethnic Discrimination in  
USDA's Direct Farm Lending Programs**

By

Charles B. Dodson

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## **Racial/Ethnic Discrimination in USDA's Direct Farm Lending Programs**

By

**Charles B. Dodson<sup>1</sup>**

**Abstract:** An analysis of default by racial and ethnic minorities is estimated for direct farm loans made by USDA's Farm Service Agency (FSA) in fiscal 2005. Logit model results indicated that when controlling for creditworthiness, Blacks who received FSA direct loans had higher default rates suggesting they were generally less creditworthy. This would not be consistent with the Becker 'taste based' discrimination model and provides no evidence of discrimination either by FSA or by commercial lenders. Higher default rates for other racial minorities and women provide no evidence of discrimination among other SDA groups.

Keywords: Racial discrimination, FSA direct lending, taste-based discrimination.

The alleviation of racial discrimination in credit markets has long been a major objective of Federal credit policy. Few issues have generated as much action by Congress (Fair Housing Act of 1978; Credit Opportunity Act of 1974; Community Reinvestment Act of 1977; Home Mortgage Disclosure Act of 1975; Agricultural Credit Act of 1987). Within USDA, the issue has been especially pertinent. Black, Hispanic, American Indian, and women farmers have all made claims of inequitable treatment by USDA in their farm lending programs. Claims of Blacks and American Indians were both recognized as a class and reached a settlement agreement. The initial Black farmer settlement, Pigford I, resulted in excess of \$1 billion in monetary payments to Black farmers ([Cower & Feder](#)). In 2011, a \$760 million settlement was reached between USDA and American Indians ([Keepseagle v. Vilsack Settlement](#)). The Claims Resolution Act of 2010, Pigford II, provided an additional \$1.25 billion in relief to Black farmers who did not receive benefits under Pigford I ([USDA Office of Advocacy & Outreach](#)). USDA voluntarily established an [administrative claims process](#) in 2011 in response to on-going claims of discrimination by women ([Love](#)) and Hispanics ([Garcia](#))<sup>2</sup>.

Even though racial discrimination was neither admitted by USDA nor proven in any of the aforementioned cases, procedures were implemented to reduce or alleviate opportunities for discrimination in FSA lending programs. This included setting aside a share of loan funds for use by socially-disadvantaged (SDA) groups as well as implementation of other items of

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<sup>2</sup> For further information on the administrative claims process see (<https://www.farmerclaims.gov/>). See (<http://www.garciaclassaction.org/>) for Hispanics and (<http://womenfarmers.com/index.htm>) for women (accessed May 29, 2013).

programmatic relief<sup>3</sup>. Specific actions included removal of the FSA County Committees from the loan approval and oversight process, implementation of outreach programs, and the establishment of advisory committees for SDA groups. This analysis attempts to determine if there has been evidence of racial discrimination occurring in USDA's Farm Service Agency (FSA) lending programs after implementation of the aforementioned programmatic relief.

### **Racial Discrimination in Lending**

Racial discrimination is most simply defined as inequitable treatment of equals, based on race (Fix and Struyk). The general legal theory under which discrimination is unlawful is the *equal protection* provision of the 14<sup>th</sup> amendment to the U.S. Constitution which states that *no state shall ... deny to any person within its jurisdiction the equal protection of the laws*. The specific legal definition of racial discrimination states *...it shall be unlawful for any creditor to discriminate against any applicant, with respect to any aspect of a credit transaction....on the basis of race, color, religion, national origin, sex or marital status, or age, provided the applicant has the capacity to contract* (Fair Housing Act, Equal Credit Opportunity Act of 1974, and Civil Rights Act of 1966).

While historical actions of prejudice and discrimination toward racial and ethnic minorities may have been clear, identifying instances of discrimination in a modern environment are problematic. It can be difficult to distinguish social-economic and geographic factors from those of race. In lending, for example, minorities tend to be located in economically-depressed regions which lenders consider unprofitable to serve. There are several methods utilized by researchers to determine if there is any evidence that discrimination may have occurred. One method involves utilizing a paired testing procedure on random surveys of lenders undertaken at the pre-application stage to determine if loan rates and terms differ between racial and non-racial minority groups. Such an approach has been utilized by the [National Fair Housing Alliance](#) and has suggested differential treatment of minorities in certain markets (Smith and Cloud). Another approach is to examine loan application data to test for discrimination in the loan approval process. Probably the most infamous example is the [Boston Federal Reserve](#) study which failed to find explanations other than racial discrimination for the significant disparities observed in the rejection rates for white and minority loan applicants in the Boston metropolitan area (Glennon and Stengel). The default approach analyzes disparities in default rates between racial and ethnic minorities and whites. The default approach was initially proposed by Becker (1971) in his seminal work on discrimination economics. While none of these approaches alone provides conclusive evidence of discrimination, each has advantages and shortcomings and provides unique insights into lender behavior (see Turner and Skidmore).

### **Becker's Theory of Taste-Based Discrimination**

In this analysis, the default approach for examining loan discrimination is applied to direct farm loans made by USDA's Farm Service Agency (FSA) in fiscal 2005. The default approach follows theoretical foundations of the economics of discrimination (Becker, 1971), which are based on the premise that biased lenders will require higher expected profits from loans to

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<sup>3</sup> SDA groups have been defined to include Blacks, Asians, Pacific Islanders, American Indians, Alaska Natives, and Hispanics, as well as women.

minority applicants to compensate for the psychic cost of discrimination. This premise may be referred to as *taste-based discrimination* and implies that biased lenders may hold minority applicants to more stringent underwriting standards than those required for other applicants (Berkovec et al. 1996; Beckovec et al, 1994). Consequently, discrimination is expected to result in lower expected default costs and higher expected profits for loans originated by minority borrowers in comparison with those observed for non-minority borrowers.

Becker suggests that discriminatory behavior emerges from prejudice or a "taste for discrimination". As applied to lending by Peterson (1981), biased lenders would be expected to hold minority applicants to higher loan qualification standards to compensate for the privilege of exercising their prejudicial tastes. The implications being that in the presence of discrimination, the marginal return on loans to minority borrowers should be above that for non-minority borrowers. Since each borrower's contribution to profit is not easily identifiable, researchers have used default rates as a proxy under the presumption that default costs are highly correlated with net returns. The correlation between net returns and default costs also assumes that borrower's marginal returns are homogenous with all borrowers paying similar interest rates. If borrowers are homogenous with respect to interest rates, most of the variability in net returns would arise from differences in default costs.

The procedures used in this study will follow that of Berkovec who examined Federal Housing Administration (FHA) home mortgages for evidence of racial discrimination. Direct farm loans provided through FSA are similar to FHA mortgages in that both are administered by Federal agencies and are intended for more marginally creditworthy applicants. It is presumed that lenders behave rationally by offering credit to those applicants whose loan requests are expected to yield positive returns and denying credit to applicants with negative expected returns. The Berkovec framework follows credit rationing as described by Stiglitz and Weis. That is, lenders do not price risk directly but rather grant loans only when an applicant's default probability is above a threshold level. For each applicant, lenders observe a creditworthiness index,  $C$ , which reflects an applicant's expected default probability. The expected default probability is represented by  $D(C)$ , where  $0 < D(C) < 1$  and  $D' < 0$  for all levels of  $C$ . In the absence of discrimination, commercial lenders would be expected to approve all applicants where the creditworthiness index, exceeds the threshold,  $A_2$  and reject applicants with creditworthiness below the threshold (figure 1).

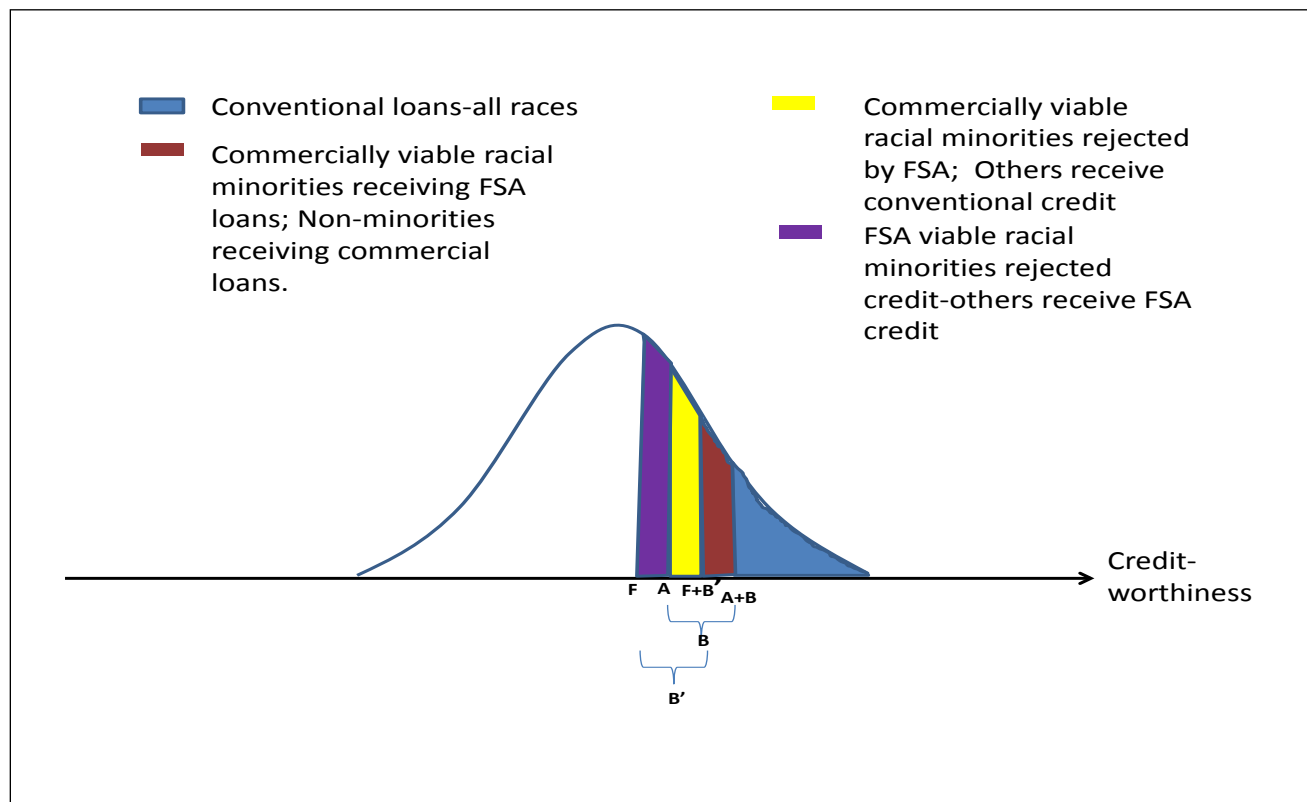
Under the Berkovec framework, commercial lenders with prejudice would be expected to have a higher creditworthiness threshold for minority applicants. Specifically,

If: $C > A + B$ , Then:	CONVENTIONAL LOAN.
If: $A + B > C > F + B'$ , Then:	FSA LOAN.
If: $C < F + B'$ , Then:	REJECTED FSA APPLICATION,

where  $C$  represents an index of creditworthiness, and  $A$  represents the minimum level of creditworthiness required for a conventional loan, and  $F$  is the minimum level creditworthiness for an FSA loan. The variables  $B$  and  $B'$  indicate the degree of discrimination faced by the applicant/borrower for conventional lenders and FSA respectively.

Since there is some variance associated with creditworthiness, the minimum level of creditworthiness required by risk-averse commercial lenders,  $A$ , is likely to exclude some marginally creditworthy applicants. Thus, the minimal level of creditworthiness for an FSA loan,  $F$ , is expected to include clientele less creditworthy than those served through commercial lenders. This is reflected in FSA loan eligibility criteria which requires applicants to demonstrate an inability to obtain credit from commercial sources at reasonable rates and terms despite being creditworthy.

Discrimination can occur among either or both marginally creditworthy FSA or conventional applicants. White borrowers would be expected to receive loans from commercial lenders if their creditworthiness was greater than  $A$ . In the presence of discrimination by commercial lenders, racial minorities would receive credit only if their creditworthiness was greater than  $A + B$ , the blue area of figure 1. Since the creditworthiness threshold for minorities exceeds that of whites, discrimination would be expected to result in improved observed loan performance among commercial lenders, at the margin, for the disadvantaged group.



**Figure 1. Creditworthiness of FSA and Commercial Borrowers under the Berkovec Framework for Racial Discrimination.**

Those rejected by commercial lenders may still receive FSA direct loans if their creditworthiness exceeds the threshold for a Government lender,  $F$ . While eligible FSA borrowers must demonstrate repayment ability and a capability to fully securitize the loan, these standards are generally lower than that of a commercial lender. In the absence of discrimination, all applicants with creditworthiness between  $F$  and  $A$  would receive an FSA loan.

But if FSA is also biased, the creditworthiness threshold for FSA loans would reflect the lender bias,  $F + B'$ . In this case minority applicants with creditworthiness between  $F + B'$  and  $A + B$  (red area in figure 1) would receive a direct loan while those minority applicants below  $F + B'$  would be rejected for all (FSA and commercial) credit. The area between  $A$  and  $F + B'$  (yellow area in figure 1) includes commercially creditworthy minority applicants who are denied credit from all sources while the area between  $F$  and  $A$  (purple area of figure 1) includes marginally creditworthy minorities denied FSA credit. In this example, the red area would include minority FSA borrowers while the purple area would include non-minorities.

The intuition of the Berkovec framework is that the higher credit standards among biased commercial lenders pushes applicants with the highest default risk into the FSA group where they are now the lowest-risk borrowers. A similar situation occurs at the creditworthiness threshold for FSA, where discrimination by FSA results in rejections for what otherwise would be the highest risk minority FSA borrowers. Thus, the cumulative impact of discrimination by FSA and private lenders should be to improve the relative quality of the FSA minority borrower pool. This result is vital to default models of credit discrimination in which discrimination at the margin results in lower average default rates for every quality level of borrower. Assuming that the distributions of unobservable factors are equal, discrimination in underwriting standards should be revealed by lower ex post default rates for the affected group of borrowers.

### **Modeling Loan Default with Racial Discrimination**

The empirical model follows Berkovec et al's conceptual framework. Lenders cannot observe the creditworthiness index directly, but instead observe a set of characteristics of the loan and applicant that are related to  $C$ . Formally, this is expressed as:

$$C = Xb + \varepsilon,$$

where  $X$  is a vector of observed characteristics,  $b$  is a vector of parameter coefficients, and  $\varepsilon$  is an error term<sup>4</sup>. Borrowers with the same observed characteristics  $X$  can have different default risks because of differences in the unobservable  $\varepsilon$ . This uncertainty causes lenders to be more likely to reject applicants where the commercial creditworthiness threshold,  $A$ , is close to  $C$ .

In the presence of discrimination, the rejection probability of an FSA applicant with characteristics  $X$  is given by:

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<sup>4</sup> For a more thorough description of the mathematical relationships underlying this model see Berkovec et al (1994) and Berkovec et al (1996).

$$d(X) = \int f(\varepsilon) d\varepsilon,$$

$$\varepsilon < F - X\beta + B',$$

The probability of approval for a FSA loan is given by:

$$A - X\beta + B$$

$$P(X) = \int f(\varepsilon) d\varepsilon$$

$$F - X\beta + B'$$

The observed default rate of FSA borrowers at a given level of X is the probability of default given that loan approval. This conditional probability is defined by:

$$\text{Prob(Default|FSA)} = \text{Prob(Default and FSA)}/\text{Prob(FSA)}$$

$$A - X\beta + B$$

$$= \int D(X\beta + \varepsilon) f(\varepsilon) d\varepsilon / P(X)$$

$$F - X\beta + B'$$

This conditional probability should always be decreasing in B and B'. Consequently, a group adversely affected by discrimination should, all else being equal, have lower default rates than other borrowers. In the context of this model, if X contains all characteristics that are important in determining default, discrimination results in lower observed default rates at all values of X.

An empirical analysis of default was undertaken employing a logit procedure to estimate the contribution of the various loan, borrower, and location characteristics to the likelihood of default.

$$P = \exp[\gamma X] / (1 + \exp[\gamma X]),$$

where P represents the probability of default for an FSA direct borrower, X is a vector of borrower attributes expected to affect default. The vector of estimated coefficient values,  $\gamma$ , indicates the effect of each characteristic on the conditional default probability

## Data

The principal data used in this analysis is drawn from files of farm loans originated by FSA in 2005. In 2003, FSA implemented the commercially available loan analysis software, [Web](#)



[Equity Manager](#)<sup>5</sup>. This enabled FSA to maintain more detailed electronic records of borrower financial characteristics and loan performance. Prior to this, FSA had utilized the Farm and Home Plan which was maintained in a non-electronic format at the county office which originated the loan. The Web Equity Manager provides farm balance sheet information, farm income, cash flow, personal (nonfarm) financial and income data, as well as data on race, gender, production specialty, farming experience, and marital status.

The availability of this data facilitates borrower-level analysis of FSA's direct loan portfolio at the national level. The Web Equity Manager data was merged with loan accounting data on obligation amount, outstanding balance, obligation date, loan term, repayment status, and loan purpose. The merged data combined financial and socioeconomic characteristics at time of loan obligation with subsequent loan repayment performance.

Default was measured by examining the loan performance among borrowers receiving direct loans in 2005. The status of all direct loans obligated in 2005 was followed through March of 2013 using FSA's R540 data file. The R540 data file includes loan level information on loan balance, terms, and status of loan payments as to whether current and, if in default, number of days past due. This data is archived at the end of each month enabling the creation of a time series of each loan's payment status and loan balance. However, a unique characteristic of FSA direct loans is that they are commonly restructured or consolidated with other loans, a process which complicates the tracking of loan performance over time. Thus, performance was assessed at the borrower rather than the loan level. Default was only considered for borrowers who had maintained a continual positive outstanding loan balance since obligation. Once a borrower's outstanding loan balance dropped to \$0, the observation was truncated from the data. For example, suppose a borrower could have received a direct FSA loan in 2005, paid it off by 2007 and received another direct loan in 2009. In this case, the analysis would have only considered loan performance over the 2005-2007 period.

The procedure focused on the cumulative default which was defined to occur if a borrower became 90 days or more delinquent on any direct FO (FO\_DEF) or OL (OL\_DEF) loan (see table 1). The average cumulative default rate for entire the cohort group reflects the share of original borrowers who default.

$$\text{Cumulative default rate} = \frac{\begin{array}{l} \text{\# of borrowers originating direct FO (OL) loans in 2005 who became 90 days} \\ \text{or more delinquent on any FO (OL) loan from obligation date until the} \\ \text{outstanding loan balance} = \$0 \text{ or March 2013, whichever comes first} \end{array}}{\begin{array}{l} \text{\# of borrowers originating direct FO (OL) loans in 2005} \end{array}} .$$

Application of the multivariate model to the data set merging loan performance and the Web Equity Manager enables an empirical testing of taste-based discrimination which may be occurring in FSA direct lending. Results should provide insights as to whether there is any evidence of loan discrimination occurring in FSA direct lending. Since all direct FO (OL) borrowers receiving an FSA loan on a given day pay the same interest rate regardless of their risk, borrower's total returns should be homogenous. Differences in costs, as reflected through

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<sup>5</sup> <http://www.webequitysolutions.com/loan-types/agriculture.asp> (accessed May 29, 2013).

differences in default rates, should be reflective of the variability in net returns. Names and descriptions of variables considered likely to influence default are shown in table 1.

<b>Table 1. Variable Names and Definitions.</b>	
Dependent Variables	Description
OL_DEF	1 if borrower receiving a new OL loan in 2005 was 90 days or more late on any OL loan at least once since loan obligation; 0 otherwise.
FO_DEF	1 if borrower receiving a new FO loan in 2005 was 90 days or more late on any FO loan at least once since loan obligation; 0 otherwise.
Independent Variables	
BEEF	1 if beef cattle farm, 0 otherwise.
DAIRY	1 if dairy farm, 0 otherwise.
CASHGRAIN	1 if cash grain farm (corn, wheat, milo, soybeans), 0 otherwise.
BLACK	1 if borrower is black and located in a county where Blacks operated 10% or more of all farms or there were 30 or more Black-operated farms, 0 otherwise.
OTHERACE	1 if borrower is Hispanic, American Indian, or Asian and located in a county where racial minorities operated 10% or more of all farms or there were 30 or more racial minorities located in the county, 0 otherwise.
BEGYOUNG	1 if borrower has less than 10 years of farming experience or under 35 years of age.
WOMFARM	1 if borrower is a non-Hispanic white woman, 0 otherwise.
MARRIED	1 if borrower is married, 0 otherwise.
SMFARM	1 if annual farm sales < \$50,000, 0 otherwise.
SOLEP	1 if farm business is organized as sole proprietorship, 0 otherwise.
SCORE	FSA internal risk-rating score ranging from 1 to 4 with 1 being the highest level of creditworthiness
HI_RSK_SHR	Share of total principal outstanding on loans to borrower that (a) have been reamortized or refinanced, or (b) with rates greater than 9 percent, or (c) currently past-due or (d) where the loan is identified as a personal credit card.
FSA_SHR	Share of total nonreal estate or real estate debt provided to borrower through FSA direct loans.
OPLOAN	1 if majority of borrower's FSA nonreal estate debt has term of 1 year or less; 0 otherwise.
FCS_IND	1 if borrower has FCS loan; 0 otherwise.
GTE	1 if borrower had a FSA guaranteed loan in 2005; 0 otherwise.
EM_IND	1 if borrower received an EM loans from 2000-2005; 0 otherwise.
CASHFLOW	Dollar amount of borrower's total cash inflows less total cash outflows.
PERSONAL_EQUITY	Borrower's nonfarm current assets – nonfarm current liabilities.
CTY_HHINC	Median household income for county where borrower resides.
NUMLOAN	Total number of unique farm loans owed by borrower to all lenders.

Black farmers are known to have several characteristics which distinguish them from other groups. Specifically, they tend to operate smaller farms, are more likely to specialize in the production of specialty crops or livestock, are generally more financially stressed and have less capital than other groups of farmers, and geographically concentrated in economically-impooverished regions. Nearly two-thirds of direct OL borrowers in 2005 were involved in the traditional dairy, beef, or cash grain enterprises (figure 2).

White non-hispanic men represented over 85 percent of new direct borrowers in 2005. Black farmers, BLACK, comprised only 1.2 percent of FO borrowers and 2.3 percent of OL borrowers (table 2).<sup>6</sup> While appearing small, this is consistent with their presence in the general population of farmers. In the 2007 Census of Agriculture, indebted black farmers represented only 1 percent of all indebted farmers. In addition, FSA loan funds are targeted to beginning farmers and other SDA groups which include women farmers, Hispanics, Asians, and American Indians

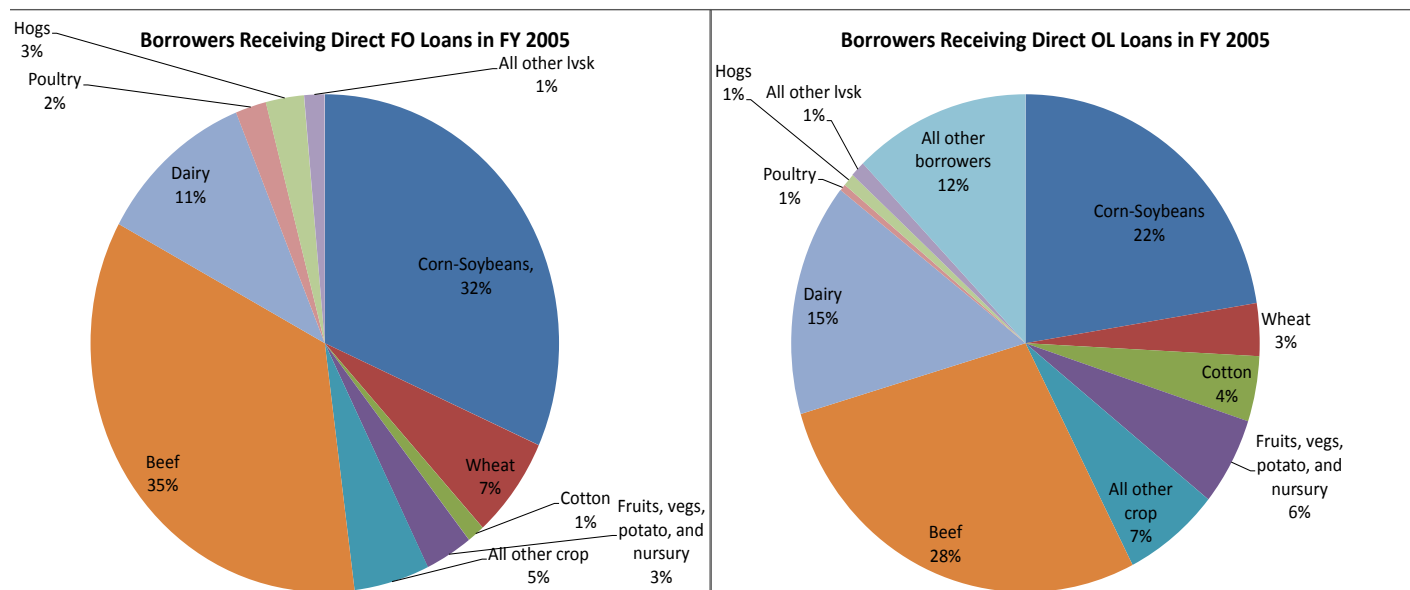
While women are present on most farms as the spouse of a primary operator, they were either the sole or primary borrower among just 6.5 percent of new borrowers in 2005. While this analysis focused specifically on Black farmers, it was expected that the theoretical framework as defined by Becker would also apply to other SDA groups. Thus, if there was discrimination toward other racial groups, OTHERACE, or women, WOMFARM, their associated default rates would be expected to be lower. Inclusion of variables representing racial minorities and women meant that non-Hispanic white men are the base group in estimating contribution to expected default probability.

In developing the empirical model, efforts were made to incorporate the broad group of factors which are expected to influence default. Young and beginning farmers, BEGYOUNG, are likely to lack financial resources and management skills making them more likely to default. As a result of targeting, most FSA borrowers were either young or beginning farmers. The average age of borrowers receiving FO loans in 2005 was 36.2 years with over 80 percent considered beginning. OL loan funds were slightly less targeted with 60 percent of new loan funds going to beginning farmers. Among FO loan recipients, gross revenue averaged just over \$150,000 with 46 percent having less than \$50,000 while OL loan recipients averaged over \$160,000 with 35 percent having less than \$50,000 in sales (table 2). Given the high share of loans going to beginning farmers, it is likely that most farms with lower sales are start-ups with a limited production record. Because they lack economies of size and scale, smaller farms were considered more likely to default. Since many direct borrowers operate smaller farms, they are more reliant on off-farm employment opportunities to meet household expenses. Hence, defaults were expected to be greater in counties where non-farm income opportunities are less lucrative, CTY\_HHIINC. Married borrowers, MARRIED, were considered more likely to have non-farm income (from spousal income) which could be used to service debt, thereby reducing default probability. Nearly two-thirds of FO and over three-fourths of OL borrowers receiving loans in 2005 were married. Farms with more complex organizational form, such as partnerships or limited liability corporations, were considered less likely to default since they could draw on the financial resources of a larger pool of owners. However, only 7 percent of direct borrowers

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<sup>6</sup> This analysis considered Blacks in counties which had been identified as having minimum levels of racial minority farmers, defined as at least 10 percent of total farmers or at least a total of 30 racial minority operators present in the county. Counties meeting these criteria were targeted by FSA for additional outreach programs intended to encourage participation of minorities in FSA programs.

receiving obligating a loan in FY2005 were organized as anything other than a sole proprietorship, SOLEP. This marginal creditworthiness of FSA borrowers is reflected in the financial characteristics of loan recipients who displayed high indebtedness, tight cash flows, and limited capital. The average debt-to-asset ratio was 0.64 for FO and 0.45 for OL borrowers (table 2). In addition to negative net cash flow (CASHFLOW), negative amounts of current personal equity (PERSONAL\_EQUITY), indicated FSA borrowers had little cash resources to draw to meet their ongoing expenses. Fractionalized credit, where loans are spread among many different lenders, is considered an indicator of financial duress. The number of number of loans, NUMLOANS, was included as an explanatory variable which averaged between 6 and 7. Another indicator of financial duress would be the share of outstanding debt considered to be high risk (HI\_RSK\_SHR), which was defined as credit card debt, renegotiated loan terms, and high interest rates. Among FO borrowers, 10 percent of total debt was found to be of high risk compared to 7 percent for OL borrowers.



**Figure 2. Direct borrowers receiving loans in fiscal 2005 by primary farm type.**

FSA utilizes a composite scoring model which incorporates information on several underwriting factors to risk-rate borrowers.<sup>7</sup> The FSA model assigns a score to borrowers based on their return-on-assets, debt-to-asset ratio, term-debt-coverage ratio, and current ratio. The composite score ranges from 1 to 4 with 1 indicating the applicant likely meets commercial underwriting standards while a score of 4 indicates a likely loss. An overall score between 2 and 3 reflects marginal creditworthiness and suggests the farmer may face difficulties obtaining commercial credit. Among FO borrowers obligating loans in FY2005, FSA's internal score, SCORE, averaged 2.07 for FO borrowers and 2.22 for OL borrowers.

<sup>7</sup> See Section 4, Borrower Account Classification, of FSA Handbook FLP-1 for discussion of the FSA internal scoring model ([http://www.fsa.usda.gov/Internet/FSA\\_File/1-flp\\_r01\\_a52.pdf](http://www.fsa.usda.gov/Internet/FSA_File/1-flp_r01_a52.pdf))

**Table 2. Descriptive Statistics of FSA Direct Borrowers Receiving loans in Fiscal 2005.**

	FO		OL	
	Mean	Std. Dev	Mean	Std. Dev
	Share of total borrowers			
Default rate	0.239	0.4265	0.410	0.6401
Farm Type				
Beef	0.324	0.4680	0.280	0.5289
Dairy	0.101	0.3008	0.151	0.3890
Cash grain	0.294	0.4556	0.224	0.4735
Black	0.012	0.1077	0.023	0.1524
Other race	0.048	0.2145	0.035	0.1858
Women	0.067	0.2494	0.066	0.2561
Beginning/young	0.811	0.3917	0.624	0.7901
Married	0.647	0.2285	0.767	0.1788
Small farm	0.455	0.4981	0.347	0.5887
Sole proprietorship	0.934	0.2377	0.934	0.2491
FSA guarantee	0.238	0.4259	0.149	0.3563
EM loans	0.021	0.1422	0.105	0.3065
Hi-risk share	0.100	0.1788	0.068	0.1788
FSA share	0.597	0.4222	0.799	0.2296
FCS	0.206	0.4045	0.116	0.3207
Share w/outstanding				
FSA loans in 2013	0.55	0.50	0.26	0.44
	--Number--			
Total loans	6.74	4.412	6.47	4.154
FSA Score	2.07	0.564	2.22	0.629
Borrower age	36.2	10.2	38.4	12.3
	--\$--			
County household income	37,931	6,673	37,265	7,803
Current equity	-8,149	34,669	-10,679	33,916
Net cash flow	-14,700	89,286	-12,505	82,045
Gross _revenue	150,887	207,380	161,105	215,308
Total farm assets	476,136	524,215	531,230	400,111
Total farm debt	305,641	298,435	234,341	278,151
Farm net worth	170,495	304,173	296,889	349,291
Net farm income	16,922	51,327	19,043	55,083
Source: Web Equity Manager Database, FSA OBFN (Obligation) database 2005.				

FSA's Emergency Loan (EM) program is intended to assist producers who have suffered production losses as a result of natural disasters or quarantines. Eligibility requires that a producer demonstrate a 30 percent production loss or physical loss of assets and be unable to obtain commercial credit. Losses of such magnitude can make it difficult for producers to meet future obligations. Consequently, it is expected that borrowers who had received EM assistance within the 5 years period prior to loan obligation, EM\_IND, would be more likely to default.

Historically, the Farm Credit System has maintained higher credit standards than commercial banks (Dodson & Koenig). Therefore, it was expected that those farmers who had an outstanding loan with FCS, FCS\_IND, would be less likely to default. Direct loan eligibility requires that applicants be unable to receive credit from a commercial lender even *with the presence of an FSA guarantee*, despite being creditworthy. Thus, farmers with FSA guaranteed loans, GTE\_IND, are expected to be more creditworthy and less likely to default. About one-fourth of FO and 15 percent of OL borrowers in FY2005 also had an outstanding FSA guaranteed loan. Similarly, borrowers who are more reliant on FSA direct loans, FSA\_SHR, for their credit needs would be expected to be less creditworthy and more likely to default. In FY2005, new FO borrowers received 60 percent of their real estate credit needs through FSA direct loans while OL borrowers received 80 percent of their nonreal estate credit needs through FSA.

By commercial standards the default rate among direct borrowers was high, reflecting their marginal creditworthiness. Among those receiving obligating loans in FY2005, 24 percent of FO borrowers had defaulted by 2013 compared to 41 percent for OL borrowers (table 2). Since the analysis was undertaken at the borrower and not the loan level, it was possible for borrowers to still have outstanding loan balances after the original loan term had expired. For example, a loan may be restructured or a borrower receive a new direct loan enabling a borrower to extend the duration of time in which they are an FSA customer beyond the term of the original loan.

### **Results of Empirical Model**

The logistic regression results show that, after controlling for the influence of creditworthiness and other factors, Black borrowers still exhibit a significantly higher likelihood of default than white borrowers (table 3). The parameter for Blacks was highly significant in both the OL and FO model. Estimation of the log-odds ratio using predicted probabilities showed Black borrowers were 2.7 times as likely to default in the FO model and 1.7 times as likely to default in the OL model compared to non-hispanic white men (table 4). For the FO, the model did not completely explain the differential between black and white default rates. Using actual data, the Black default rate was 3.1 times that of whites on FOs compared to the 2.7 which was predicted. This differential may be a result of factors not included in the model. On the other hand, the actual black OL default rate was 1.8 times that of whites compared to 1.7 which was predicted indicating that differential between Blacks and whites is mostly explained by factors included in the model.

There may be several explanations for actual FO default rates for Blacks being greater than was predicted based on their creditworthiness. Some relevant variables may have been omitted from the empirical model. This could include credit history, which was not available for the 2005 data. Neither did the data set include any measures of financial literacy. Since Blacks may be less financially knowledgeable than other groups, they may be more prone to default. Another possible explanation is that, relative to whites, larger shares of Black farmers are marginally creditworthy. One of the criticisms of the default approach is that average creditworthiness of minority and non-minority groups should be similar (Yinger). These critics argue that even though a modeling approach may include a broad array of creditworthiness factors, there remain many unobservable factors whose impacts are accentuated when the average creditworthiness differs between the groups analyzed.

<b>Table 3. Logistic Regression Results of Cumulative Default Model, by Program Type.</b>					
Variable	FO Borrowers			OL Borrowers	
	Estimate	Standard Error	\	Estimate	Standard Error \
INTERCEPT	-1.097	0.6203	*	-1.216	0.2537 ***
BEEF	-0.0991	0.1544		-0.171	0.0726 **
DAIRY	0.2178	0.2043		-0.271	0.0853 **
CASHGRAIN	-1.2293	0.1949	***	-0.633	0.0763 ***
BEGYOUNG	0.3462	0.1667	**	0.040	0.0606
BLACK	1.9388	0.4921	***	1.323	0.2026 ***
OTHERACE	0.6932	0.2687	**	0.406	0.1601 **
WOMFARM	0.4198	0.2241	*	0.210	0.1103 *
MARRIED	0.0493	0.1345		-0.207	0.0651 **
SMFARM	0.1475	0.1493		0.112	0.0680 *
SOLEP	-0.5682	0.313	*	-0.222	0.1111 **
CASHFLOW	-8.07E-07	8.23E-07		-9.58E-07	4.4970E-07 **
SCORE	0.1625	0.1105		0.234	0.0434 ***
HI_RSK_SHR	0.4594	0.3367		1.389	0.1520 ***
PERSONAL_EQUITY	-0.00002	3.12E-06	***	-6.78E-06	0.0000 ***
FSA_SHR	-0.2357	0.1524		0.804	0.1364 ***
OPLOAN				-0.030	0.0745
FCS_IND	-0.797	0.1754	***	-0.161	0.0842 *
NUMLOAN	0.054	0.0161	**	0.057	0.0073 ***
GTE_IND	-0.0226	0.1534		-0.005	0.0797
EM_IND	0.7232	0.3747	*	0.306	0.0897 ***
CTY_HHINC	-7.58E-06	0.57		-9.55E-06	3.6810E-06 **
N	1,748			6,310	
Likelihood Ratio	208.3471	***		568.3634	***
Wald	162.6711	***		485.2012	***
Percent correct	72.7			65.0	

\| The significance levels for the t-statistics are indicated as \*, \*\*, \*\*\* indicating levels of significance of 10-, 5- and .0001-percent respectively.

Another possible explanation is that the higher default rates reflect some moral hazard resulting from the earlier class action settlements. As a consequence of these settlement agreements, defaulting racial minority borrowers benefited from more lucrative debt restructuring than they would have otherwise received which may have encouraged more defaults. Finally, rather than being discriminated against, Blacks may actually be receiving deferential treatment. In the Becker framework, this implies that the racial bias,  $B'$ , is negative. That is that lenders receive positive utility from lending to minorities. This would be consistent with the incentives placed on FSA staff to reach out to racial minorities.<sup>8</sup>

The result for other racial minorities was significant, though not as strong as for Blacks. Non-Black racial/ethnic minorities were 1.5 times as likely to default for FO and 1.2 times as likely for OL, compared to non-hispanic white borrowers (table 4). Likewise, women borrowers were more likely to default for both the FO and OL models. These results suggest that SDA groups receiving FSA direct loans are generally less creditworthy than non-hispanic white men.

The overall model result were highly significant with both the likelihood ratio and Wald statistic being significant at the highest level. Also, the model correctly predicted default in 72.7 percent of FO and 65.0 percent of OLs. The OL model appears more robust with most parameters significant and of the expected sign. The only exception being the sole proprietorship parameter estimate which indicated that organizations with more complex organizational structure were more likely to default. As expected, the results indicate that less creditworthy borrowers, those in lower income areas, and those more reliant on FSA direct loans were more likely to default. It was also indicated that borrowers of the most common farm types (cash grain, beef, or dairy) and those who also borrowed from FCS, were less likely to default. Fewer parameters were significant in the FO model, possibly because of the limited amount of funds that were available to lend in FY2005.

<b>Table 4. Log-odds Ratio for Significant Binary Variables.</b>		
	FO	OL
Cash grain farm	0.393	0.686
Beef farm		0.908
Dairy farm		0.855
Young or beginning	1.272	
Black	2.715	1.756
Other race	1.545	1.233
Women farmer	1.313	1.119
Married		1.022
Small farm		1.0643
Sole proprietorship	0.698	0.8874
FCS borrower	0.561	0.912
Recent EM borrower	1.565	1.176

<sup>8</sup> Each FSA employee's evaluation included a Civil Rights component which may have encouraged lending staff to increase the volume of loans to socially-disadvantaged groups.



Regardless, the differential in predicted default rates for black and white borrowers indicates that Black direct borrowers are generally less creditworthy, a result which is inconsistent with the presence of taste based discrimination as defined by Becker.

### **Summary & Implications**

The observed default rate among Blacks exceeded that which would be expected given their financial characteristics suggesting they were generally less creditworthy than other groups. This would not be consistent with Becker's *taste based* discrimination model and provides no evidence of discrimination either by FSA or among commercial lenders. Likewise, the higher default rates for other racial minorities and women provide no evidence of discrimination among these SDA groups.

One possible explanation is that SDA groups may be receiving deferential treatment. By increasing participation among less creditworthy SDA groups in FSA programs, the programmatic relief implemented after settlements of class-action suits may have contributed to the observation of higher default rates. This has included expanded outreach to socially-disadvantaged groups, creation of special advisory groups, and expanded Civil Rights training to lending staff.

While results are not consistent with the practice of racial discrimination, they do not imply that no discrimination has occurred. The difference between the predicted and actual FO default rate for Blacks suggests there factors other than those explicitly modeled that influence default. Results were based only on loans made in 2005 and say nothing about prior lender behavior. Extending the analysis to include later periods, especially the 2008-2009 financial downturn, should provide broaden the applicability of the results. Also, redefining the borrower pool to only include borrowers similar in characteristics to Blacks would address the criticisms of differences in average creditworthiness.

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