A Credit Migration Analysis of the Financial Vitality of Female and Racial Minority Borrowers of the Farm Service Agency under Recessionary Conditions

Xiaofei Li
University of Georgia, Department of Agricultural and Applied Economics
306 Conner Hall, Athens, GA 30602
Email: zxmf1128@uga.edu

Cesar L. Escalante
University of Georgia, Department of Agricultural and Applied Economics
315 Conner Hall, Athens, GA 30602
Email: cescalan@uga.edu

Charles B. Dodson
U.S. Department of Agriculture, Farm Service Agency
Email: Charles.Dodson@wdc.usda.gov

Selected Poster prepared for presentation at the

Copyright 2015 by Xiaofei Li, Cesar L. Escalante, and Charles B. Dodson. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.
ABSTRACT

This paper compares the credit migration transition of female and racial minority farmers of the Farm Service Agency’s lending program using both time-discrete method and time-homogeneous Markov chain method. The estimated results indicate that racial and gender minority farmers have higher financial vulnerability.

Keywords: Farm Loan, Credit Migration, Transition matrix, Markov chain, Cohort method, Time homogeneous

INTRODUCTION

A USDA’s Farm Service Agency (FSA) is considered as a lender of last resort since it makes direct loans to those farmers who are unable to obtain credit from regular commercial lenders. 

FSA’s loan program is even more crucial for farmers during economic downturns. During the recent economic recession from 2007 to 2009, farmers claimed that it has been harder for them to obtain loans and that they have faced unique credit and debt burdens.

This study is designed to analyze the credit migration transition rates of racial and gender minority farmers that are existing FSA borrowers.

The major contribution of this study is that economic shocks, such as a recession, can affect different gender and different racial minority farmer groups differently given the inherent differences in structural attributes, infrastructural support, resource endowments, and varying levels of opportunities and access to sources of assistance and resources that may be results of longitudinal, historical events that created such inequities.

This study utilizes the Farm Business Plan data from the FSA national office spanning from year 2004 to year 2013. The FSA normally calculates a credit score when a farm applies for a new loan, receives the proceeds of the approved loan, or receives servicing action. In this analysis, the credit risk classification variable of FSA’s Borrower Account Database System is used as levels for credit scores (Table 1):

<table>
<thead>
<tr>
<th>Table 1. Credit Risk Classification</th>
<th>Classification</th>
<th>Classification Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 to 1.49</td>
<td>1</td>
<td>Standard</td>
</tr>
<tr>
<td>1.50 to 1.99</td>
<td>2</td>
<td>Acceptable</td>
</tr>
<tr>
<td>2.0 to 4.0</td>
<td>3</td>
<td>Marginal</td>
</tr>
</tbody>
</table>

A fifth category (NR) is added to capture observations that have been dropped from the dataset before the end of the sample time period. These loan accounts may have been fully settled or re-classified as delinquent loan accounts.

The transition probability estimates that establish the gender and racial classes of FSA loan clientele, female and non-white farm borrowers tend to display a greater need for financial assistance given their higher financial vulnerability (as may be reflected by higher rates of credit downgrade).

These classes of borrowers are accommodated under the lending program for Socially Disadvantaged farmers that ensure that these classes of farmers are not discriminated against, even if their financial conditions may be less competitive in their respective borrower categories.

RESULTS

Table 3. Summary Statistics for Male Farmers Under the Cohort Method and Markov Chain Method, 2008-2011 (percent)

<table>
<thead>
<tr>
<th>Period</th>
<th>Cohort Method</th>
<th>Markov Chain Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2009</td>
<td>2010</td>
</tr>
<tr>
<td>Period 1</td>
<td>5.12</td>
<td>5.12</td>
</tr>
<tr>
<td>Period 2</td>
<td>5.12</td>
<td>5.12</td>
</tr>
</tbody>
</table>

Table 6. Summary Statistics for Minority Farmers Under the Cohort Method and Markov Chain Method, 2008-2011 (percent)

<table>
<thead>
<tr>
<th>Period</th>
<th>Cohort Method</th>
<th>Markov Chain Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2009</td>
<td>2010</td>
</tr>
<tr>
<td>Period 1</td>
<td>5.12</td>
<td>5.12</td>
</tr>
<tr>
<td>Period 2</td>
<td>5.12</td>
<td>5.12</td>
</tr>
</tbody>
</table>

CONCLUSION

The transition probability estimates that establish the gender and racial classes of FSA loan clientele, female and non-white farm borrowers tend to display a greater need for financial assistance given their higher financial vulnerability (as may be reflected by higher rates of credit downgrade).

These classes of borrowers are accommodated under the lending program for Socially Disadvantaged farmers that ensure that these classes of farmers are not discriminated against, even if their financial conditions may be less competitive in their respective borrower categories.

RESEARCH QUESTIONS

- Consistent with the findings of previous empirical studies on credit migration (Lando and Skedrobe, 2002; Deng et al., 2003), the cohort method tends to produce lower, seemingly underestimated rates of migration, especially among minorities and to and from the extreme credit classes (from the top rating category to the lowest rating category, excluding the exit category, NR). This trend is reflected in the matrices developed for all four gender and race categories of farm borrowers (Table 2 - 5).

- Disregarding the NR class, the transition probabilities (migration rates) calculated for male farm borrowers seem to dominate those estimated for female borrowers, especially in terms of rejections (diagonal terms), and upgrades (rates below the diagonal terms). This is especially true when the time homogeneous estimates (Markov chain) are considered.

- Comparing the time homogeneous (Markov chain) migration matrices of white and non-white farm borrowers for all ratings except the NR rating, the white borrowers’ matrices reflect higher rejections rates while the non-white borrowers’ matrices tend to have higher downgrades (rates above the diagonal terms).

- The transition probability estimates that establish the gender and racial classes of FSA loan clientele, female and non-white farm borrowers tend to display a greater need for financial assistance given their higher financial vulnerability (as may be reflected by higher rates of credit downgrade).

- These classes of borrowers are accommodated under the lending program for Socially Disadvantaged farmers that ensure that these classes of farmers are not discriminated against, even if their financial conditions may be less competitive in their respective borrower categories.

- The transition probability estimates that establish the gender and racial classes of FSA loan clientele, female and non-white farm borrowers tend to display a greater need for financial assistance given their higher financial vulnerability (as may be reflected by higher rates of credit downgrade).

- These classes of borrowers are accommodated under the lending program for Socially Disadvantaged farmers that ensure that these classes of farmers are not discriminated against, even if their financial conditions may be less competitive in their respective borrower categories.

- The transition probability estimates that establish the gender and racial classes of FSA loan clientele, female and non-white farm borrowers tend to display a greater need for financial assistance given their higher financial vulnerability (as may be reflected by higher rates of credit downgrade).

- These classes of borrowers are accommodated under the lending program for Socially Disadvantaged farmers that ensure that these classes of farmers are not discriminated against, even if their financial conditions may be less competitive in their respective borrower categories.

- The transition probability estimates that establish the gender and racial classes of FSA loan clientele, female and non-white farm borrowers tend to display a greater need for financial assistance given their higher financial vulnerability (as may be reflected by higher rates of credit downgrade).

- These classes of borrowers are accommodated under the lending program for Socially Disadvantaged farmers that ensure that these classes of farmers are not discriminated against, even if their financial conditions may be less competitive in their respective borrower categories.

- The transition probability estimates that establish the gender and racial classes of FSA loan clientele, female and non-white farm borrowers tend to display a greater need for financial assistance given their higher financial vulnerability (as may be reflected by higher rates of credit downgrade).

- These classes of borrowers are accommodated under the lending program for Socially Disadvantaged farmers that ensure that these classes of farmers are not discriminated against, even if their financial conditions may be less competitive in their respective borrower categories.

- The transition probability estimates that establish the gender and racial classes of FSA loan clientele, female and non-white farm borrowers tend to display a greater need for financial assistance given their higher financial vulnerability (as may be reflected by higher rates of credit downgrade).

- These classes of borrowers are accommodated under the lending program for Socially Disadvantaged farmers that ensure that these classes of farmers are not discriminated against, even if their financial conditions may be less competitive in their respective borrower categories.