DO FARM LENDERS' ATTITUDES AND RISK ASSESSMENT MODELS ENCOURAGE ORGANIC FARMERS' DEMAND FOR MICROLOANS?

by

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(Under the Direction of Cesar Escalante)

ABSTRACT

Abrupt, significant shifts in consumer demand for organic products in the U.S. over the past two decades have overwhelmed organic farmers in providing adequate domestic supply. This study investigated capital constraints as one of these major obstacles. Specifically, the goal of this research was to provide empirical evidence on the predicament of organic farmers in their efforts to access credit from regular farm lenders. This study produced important evidence that specific credit risk assessment benchmarks have an impact on the chances of organic farm operators having their loan applications accommodated and subsequently approved by lenders. This study's results have underscored the need for lenders' better understanding of organic farms' operating structures and business potentials. Lenders should consider the adoption of more appropriate credit risk assessment model that should more accurately capture organic farms' credit risk conditions. Furthermore, organic operators should consider the Microloan Program to better suit their business situations.

INDEX WORDS: organic farmers, farm lenders, access to credit, credit-risk assessment models, micro-loans

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In Loving Memory of Dr. Marcia White Jones

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CHAPTER 1

INTRODUCTION

1.1 Background

The terms “microfinance” and “micro lending” have usually been associated with developing countries. Since this lending paradigm was conceived in the 1980s, majority of microfinance research has been made in the area of development finance, which primarily involves poverty alleviation in developing nations (Brau & Woller, 2004). There has been very minimal investigation on the relevance and application of the micro lending models in the United States. There has been little interest in exploring how this particular type of financing can benefit the U.S. farming sector and its approximate 2.2 million farming businesses. The misconception has been that a developed country like the United States does not have any need for microfinance services, including micro loans.

Recently, there has been growing awareness that small businesses in the U.S. may actually have some demand for non-traditional small credit accommodations. After all, smaller U.S. businesses are not significantly different from their counterparts in developing countries in a sense that smaller businesses naturally have demands for smaller loan amounts that qualify as micro-loans. These non-traditional loan demands, however, cannot be easily supplied by traditional U.S. lenders that have been more accustomed to larger lending transactions. Thus, the reality in the U.S. is that small businesses, including smaller farms that are especially classified as non-traditional farming operations, often face limited financing options.

In January 2013, the Farm Service Agency (FSA) developed and implemented the Microloan Program to better serve the unique financial operating needs of beginning, niche and small family farm operations by modifying its Operating Loan (OL) application, eligibility and security requirements. The program offers more flexibility in access to credit and serves as an attractive loan alternative for smaller farming operations like specialty crop producers. For this study, we will focus on how this program can assist exclusively organic producers, which are typically smaller farms, and their delicate farming business.

Although organic farming methods have been in practice for decades, its philosophy remains fairly new and ostensibly misunderstood by agricultural lenders. There have not been significant research efforts devoted to reconciling the agricultural lenders' perceptions of organic farm businesses to the actual farming conditions and structures of organic farm businesses. Although there are several sources of agricultural lenders that encourage and provide credit so that farmers can financially support their operations, difficulties in credit access and management adhere particularly for organic operators. It has been voiced by organic farmers that gaining access to credit can be challenging because lenders have their own perception of the standard farm business which align with conventional operations. Seemingly, lenders do not consider the nature and structure of the farming business when deliberating loan applications even though management practices differ between organic and conventional farming.

Organic farming exclude practices that are typically speculated as important risks management tools in conventional farming. This farming system relies on the natural process of the environment presenting peculiar risks and particular ways of managing

these risks. For example, organic farms encounter more production risks in GMO contamination and vulnerability to pests than their conventional counterparts.

It is suspected that lenders utilize credit application evaluation standards or credit risk assessment models that are more patterned after conventional farm business conditions. In these models, prospective organic farm borrowers may not fare favorably and could have their applications rejected as their strengths in mitigating business risks may have been ignored or not factored into the models.

The results of this study will help agricultural lenders consider modifications in their credit risk assessment models to adapt to organic farmers' credit needs. Furthermore, this study will provide organic farmers with important implications that may be considered in devising effective loan application strategies and choosing loan programs (such as micro lending) that would be more suitable to their business situations.

1.2 Growth in the Organic Sector

Consumer demand is driving growth in the organic sector. More Americans are shifting their food choices to organic products due to a variety of health concerns. National standards for organic production and processing set by the USDA in 2002 help to ensure that acceptable organic production practices are in place. By 2005, all 50 states were time officially accounted for certified organic farm operations encompassing a total of over 4.0 million acres of farmland (USDA-ERS, 2008). Industry analysts estimate that U.S. organic food sales were $1 billion in 1990 and peaked $27 billion in 2010. Leading organic commodities of fruits and vegetables currently make up over 11 percent of all U.S. fruit and vegetables sales (OTA, 2011). Previous demand patterns suggest that the increasing trend will continue in the future (see *Table 1*).

Table 1: U.S Organic and Total Food Sales and Growth, 2000-2010

U.S. Organic Food vs. Total Food Sales, Growth and Penetration, 2000-2010

Category	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Organic Food	6,100	7,360	8,635	10,381	12,002	14,223	17,221	20,410	23,607	24,803	26,708
Growth	21.0%	20.7%	17.3%	20.2%	15.6%	18.5%	21.1%	18.5%	15.7%	5.1%	7.7%
Total Food	498,380	521,830	530,612	353,406	544,141	566,791	598,136	628,219	659,012	669,556	673,324
Growth	5.0%	4.7%	1.7%	0.9%	1.6%	4.2%	5.5%	5.0%	4.9%	1.6%	0.6%
Organic as % Total	1.2%	1.4%	1.6%	1.9%	2.2%	2.5%	2.9%	3.2%	3.6%	3.7%	4.0%

Source: Organic Trade Association, 2011

Consequently, this rapid increase in demand for this niche market has overwhelmed organic farmers in meeting supply needs. In recognition of the shortcomings in organic supply, during 2008, amendments were made to the Food, Conservation and Energy Act implementing a source of financial assistance for producers willing to convert to organic production systems. However, even though more producers have emerged in this market, there still exists a supply gap, and despite its drastic decline between 2008 and 2009, supply growth is increasing at a slow rate while consumer demand continues to grow. Such supply gap requires the sector to stimulate more business expansion and start-ups. The expansion and growth of this industry, however, will hinge on the availability of borrowed capital, among other options, to supplement existing funds to finance larger operating and production requirements.

Weaknesses in organic farmers' access to credit and risk assessment could slow down growth and expansion in the organic farming industry. The availability of small loans can bring valuable benefits in helping supply the financing needs of existing organic businesses as well as assist new businesses entering this growing industry.

1.3 Operating Structure and Risk Profile of Organic Farms

Farm Size and Debt Aversion

Although organic farms continue to remain small compared to conventional farms, operations continue to grow. In 2013 the USDA recognized that certified organic farming operations, comprised of cropland, pasture, and livestock productions, nearly doubled within a decade accounting for 6, 900 organic operations in 2001 and 12,800 in 2011. These operations included over five million acres and thirty-seven million head of livestock and poultry (ERS-USDA, 2013). Organic agriculture is one of the fastest growing agricultural industries with certified cropland and livestock production more than quadrupling over the past decade (ERS-USDA, 2013). The average size of organic farms was 285 acres (USDA-ERS, 2010) while the average size for all farms was 434 acres (U.S. Census Bureau, 2012) in 2008.

The survival and growth of small businesses, a category where most organic farms belong to, however, are hindered by a number of factors. A capital constraint is considered as one of these major obstacles. Finance theory suggests a pecking order model of capital sourcing, which was developed by Myers (1984) and Myers and Majluf (1984), suggests a hierarchical ordering of sources of capital based on adverse selection issues that arise when a firm has more information about its value than the providers of funds. According to such a prioritization scheme, internally generated funds are usually first in the hierarchy. When such funding sources are depleted, the firm resorts to external borrowing or debt. Raising equity capital is considered as the last funding resort.

For small businesses like most organic farms, especially those in the early stages of operation, liquidity issues limit the availability of internal funds and hence limit the

ability to be self-sufficient in financing capital and operating requirements. As a result, debt becomes the more practical option for raising capital. The problem, however, is that organic farm operators seem to be "highly risk averse." There are several factors than can explain organic farmers' financial risk averseness which result their financing preferences.

In 2004, the Center for Community Self-Help found that 56% of organic farmer survey respondents considered debt as not compatible with their sustainability principles. Remaining respondents indicated that lenders do not really understand their farms (Cutis, 2004). For example, in an ongoing project funded by the Southern Sustainable Agriculture Research and Education (SARE) program a focus group of organic farmers voiced the opinion that lenders do not seem to put a premium on the risk mitigating aspect of business or product diversity of organic farmers. Lenders often perceive this as a negative business trait although it helps minimize risks in organic farming. The same study also found that a majority of the focus group participants self-financed their operations (Escalante, 2012). When personal cash flow is depleted, C.S. Mott group for Sustainable Food Systems at Michigan State University established another financial option used by organic producers by maximizing credit card debt in order to support their business operating needs (Cocoarelli, Suput and Boshara, 2010). Organic farmers' averseness to external debt and reluctance to borrow capital validates personal investment as a common source of finance by organic operators.

Organic Farming Risks

Considering the differences in their operating and production environments, risk perceptions may differ among organic and conventional farmers. The 2001 national

survey of the Organic Farming Research Foundation (OFRF), for instance, reveal that about 30% of the responding organic farmers are most worried about the risk of getting their organically grown farm products contaminated by genetically modified organisms (GMOs) through pollen drift and other ways of contamination. This risk can translate into probable serious losses in revenues and eventual loss of organic certification. Moreover, the availability of the organic farms' specialized inputs can further aggravate production risks. These farms use certified organic seeds, farm equipment adapted to their organic cultural practices and biological pesticides, among others, that may not be easily procured as producers or manufacturers may not be easily accessible and abundantly available. Furthermore, the option for crop insurance is non-existent for organic produce.

Changing farm structures and scales in the organic farm industry can also bring about less favorable changes in market conditions. The average size of organic farms in the country increased significantly as favorable returns in previous years allowed existing operations to expand their business size and scale, while new large-scale entrants acquire their own organic certifications (Greene and Kremen, 2003). As the market is dominated by larger players, price premiums are at risk of deteriorating if higher production is unmatched by adequate increases in consumer demand. Such production and market risks are just among several sources of risk that need to be addressed and factored into lenders' credit risk assessment models.

1.4 Farm Lenders' Credit Risk Assessment and Lending Attitudes

Generally, regular commercial lenders look at business profitability records, credit histories, collateral arrangements, historical financial conditions, repayment capability, and enterprise viability, among other considerations, in making loan approval

decisions. Lenders often use credit risk assessment formulas that are developed using either (or both) experiential and statistical models (Splett et al., 1994). Small businesses, especially newly-established firms, often do not rate high with these credit risk models resulting in difficulty obtaining approval of loan applications.

Agricultural lending institutions are not exceptions to this rule as they too have traditionally tailored their financial services after the needs of large conventional farming systems. Regular lenders often make loans primarily to established farmers, thus excluding right away new businesses (usually by younger farmers, of which the organic farming movement is associated with) lacking adequate credit histories and track records. The lenders' rigid credit risk assessment formulas sometimes do not completely understand the business potentials of innovative systems, like organic farms. For example, organic farm business plans may hinge on anticipated commodity prices higher than conventional prices, but some lenders may take a more conservative stance and insist on still using standard commodity prices. When the small farm sizes of organic farm borrowers are factored into the creditworthiness analysis along with product prices, the borrowing farms' repayment potentials and business viability are grossly understated that lenders could deny the loan applications.

Moreover, it is possible that lenders could be inclined to shun away from accommodating business of smaller or new farmers, a category that includes most organic farms (Blank, 1998; USDA-ERS; Walz, 2004). As organic farms operate smaller operations, their credit requirements could be relatively smaller than the average loan requests of conventional farm businesses. When lenders factor in transaction costs that are incurred regardless of loan size, they prioritize the servicing of larger loan requests,

rather than squander time and resources on smaller loan requests of some organic farmers.

1.5 The Demand for Micro Loans

Access to credit is a risk for organic farmers because agricultural lenders are oblivious to organic production systems and find difficulty in assessing creditworthiness. In a SARE report (2012) evaluating lenders' general perceptions of organic farms, lenders express that organic farms have too small loan requests (i.e. amounts that are about $50,000 and less). This is expected because small business operations of organic farms result in relatively smaller loan amount needs. In the past, lenders have been wary of smaller loan applications because of transaction and opportunity costs related to the resources they allocate for the processing of loan applications.

Another concern to agricultural lenders is that organic operators typically have limited expansion plans and operate stagnant operations. Lenders do not the organic farmers' cash flow plans.

The study also finds that lenders feel that organic businesses make less optimal decisions. For example, organic farming implicates less investment in tangible farm assets like machinery and large areas of land. Organic farm operations value more on intangible assets like soil enhancement and reduced water contamination from run-off. These important intangible investments create discrepancies when applied to lenders' existing credit scoring models.

As a result, the flow of credit to organic producers is restricted and can be difficult to obtain. Hattam (2006) suggests that credit constraints and lacking knowledge about organic farming systems create barriers for adoption which retreats rapid increase

in organic product supply to markets and essentially consumers. Like any other farmer, organic farmers need credit to purchase key components for production such as land, machinery and operating capital. Credit serves as a source of financial alleviation or a supplement in the case of inadequate or exhausted cash flow from organic farmers' preferable option of financing from personal investments.

The microloan program created by FSA provides loan requirement features that are favorable to organic operations. The program is targeted to benefit small and/or beginning farm businesses which are currently common categories for organic operations. The application process for microloans require less paperwork to fill out, to coincide with the smaller loan amounts associated with microloans. Eligible applicants may obtain a microloan for up to $35,000 at reasonable loan terms. Loan proceeds may be used to pay for initial business start-up costs and operating expenses. The benefits of such seed money in jumpstarting a business venture or sustaining an existing operation cannot be overstated now that such a funding opportunity is available to small and beginning farms. Overall, the purpose of this loan program is to facilitate alleviated, yet, effective and rational loan requirements for small and beginning businesses like organic farms.

Among the intended beneficiaries of this program, the organic farm sector could potentially benefit immensely from microloans. This contention can be attributed to at least three factors: industry start-up and expansion opportunities, slower business size growth trends, and farm operators' business principles or attitudes

1.6 Research Objectives

This research will provide empirical evidence on the actual predicament of organic farmers in their efforts to access credit from regular farm lenders. A special focus of this portion of the analysis is the organic farmers' demand for microloans. On the other hand, the farmers' perspective will be matched with empirical data from lenders on their attitude towards and treatment of organic farmers as borrowing clients. Specifically, this research will address the following two-pronged goals:

- First, this research will validate the issues raised by organic farmers on their experiences in accessing regular farm credit, such as the areas of frustration experienced by farmers in their dealings with farm lenders. A specific focus of this analysis will be an understanding of the farmers' demand for smaller loans (microloans).
- Secondly, this research will also analyze farm lenders' attitudes towards their existing and prospective organic farming borrowers in terms of credit access, credit risk measurement, and loan packaging practices for approved loan applications.

Given this two-pronged focus, this study will potentially provide important implications in reconciling the farmer borrowers' and lenders' perspectives by identifying areas that will require special attention and consideration by either of the two or both parties. These points of contention will hopefully offer important insights on ways to improve relationships between organic farm borrowers and their farm lenders.

1.7 Organization of Study

This thesis is divided into five chapters that adequately discuss the research problem, model and empirical results obtained. The first chapter covers the background about issues in farmers' access to credit and risk assessments, agricultural lenders' perception toward organic businesses and how the microloan program presents suitable loan requirements particularly for organic operations. The second chapter deals with relevant literature pertaining to studies in small farmers' access to credit, lenders' credit risk assessments for farmers and the necessity of small loans for small businesses. Chapter three presents the methodology for conducting this study, which explains the formulation of the surveys used for obtaining farmers' information and lenders' data. This chapter also discusses data collection procedures and the econometric models used in this study. Chapter four presents and discusses the survey and regression results. The final chapter lays out this study's conclusions and its implications.

CHAPTER 2

LITERATURE REVIEW

Organic farming businesses are steadily emerging as a significant sector in the farming industry in response to consumer demands for organic products (OTA, 2011). However, limited research has been conducted on finance-related issues, such as the organic farmers' access to credit and the suitability of credit risk assessment models agricultural lenders use to evaluate the creditworthiness for organic businesses. The research imperative is to explore issues in credit access and risk assessment models related to the structural characteristics of organic businesses like operator demographics and business size. Additionally, because the idea is fairly new, even fewer efforts have been pursued concerning microlending as a plausible and valuable source of credit for US farming businesses involved in organic production.

2.1 Access to Credit

Credit, defined as borrowing capacity, constitutes an important source of liquidity for farmers (Baker, 1966). Liquidity provides cash used for the purchase of operating inputs and to make capital purchases. The liquidity position of most organic farms is at relatively low levels compared to large conventional farms, yet lenders continue to use liquidity measures when determining the financial position of a potential borrower. Provided that credit reserves are smaller when liquidity needs are greater (Barry, Baker and Sanint, 1981), this gives a disadvantage to small, organic operation holders during loan requirement assessments.

Beck, Demirguc-Kunt, Laeven, Maksimouic (2004) explore the business characteristics that predict firms' financing obstacles. They find that age, size and ownership are important predictors of financing obstacles. Younger, smaller and domestic businesses reportedly experience more obstacles. Categorizing firms by their age, size and ownership is therefore most useful when considering the effect of financial and institutional development on firms' financing obstacles.

Most organic farm businesses are smaller than conventional farms. Hoppe, MacDonald and Korb (2010) contend that profitability is directly related to farm size and is frequently measured by net farm income. Given that Barry, Baker and Sanint (1981) find a positive correlation between credit and the level of farm income, small organic businesses inevitably encounter issues in access to credit due its business size. Beck & Demirguc-Kunt (2006) find that less access to funds restrains small-medium size business' growth potentials. They suggest that improving legal and financial institutions can help businesses grow but its greatest growth impacts are on smaller businesses. Additionally, this research finds that small firms do relatively better compared to large firms (Beck & Demirguc-Kent, 2006).

The National Small Business Association (NSBA) (2012) recognizes that the prospect of getting financed as a small business is very difficult simply due to the fact that many small businesses lack the assets necessary to secure traditional bank loans, making them a riskier lending option for banks. In fact, in a survey conducted by NSBA, 26% of respondents indicated that they were denied a loan because of inadequate collateral. Berger and Udell (1995) contend that banks will create 'credit crunches' or reduction in the supply of credit for small borrowers who face higher loan rates and

impose more collateral requirements. Interestingly enough, they find that borrowers with longer relationships with lenders receive easier loan terms (i.e. lower rates, fewer collateral requirements).

Furthermore, Carter (1988) found that large farms "soak up all the formal credit" because lenders are competitive and succumb to profit-maximizing behavior. Variability in production in small-scale farming results in credit rationing by lenders as these are perceived to be risky and unprofitable. He suggests that informational imperfections account for majority of explanation behind small farm credit issues.

Since most organic farms are operated by young and beginning farmers, this presents another issue in credit access for these businesses. Kauffman (2013) proposes that access to agricultural credit for young and beginning farmers is influenced by lenders' perceptions of the trade-off between risk and returns. As such, young and beginning farmers tend to have lower levels of farm equity and fewer assets, providing greater risks to lenders.

Barry, Baker and Sanint (1981) note that other determinants of credit supply originate in agriculture through farmer-lender relationships. In support, Knight, Lovell, Rister & Coble (1989) find that many lenders do not communicate effectively with their borrowers, at least concerning risk management practice adoption.

On the other hand, researchers in Pennsylvania establish that agricultural bankers recognize that small-scale farm loans can be good for their business, increasing not only lending activity, but also savings deposits, insurance sales, and other transactions that make small-scale farmers valuable clients. Hanson and Stokes (2014) note that lenders single-out small-scale farmers, given their excellent repayment histories.

2.2 Credit Risk Management

Deficiencies in risk management strategies usually lead to low financial availability for agricultural businesses. Small producers experience common financial risks in cost and availability of financing options to obtain operating loans. Larger farms typically possess collateral and detailed financial performance records that lenders use to evaluate their credit risk, unlike smaller farms. Reynolds-Allie, Fields, and Rainey (2013) suggest that the process and cost of obtaining a loan are relatively higher for small farmers, which then present an application hurdle. Another hurdle is the limited capacity for financial institutions to evaluate the repayment capacity of these small, diversified, niche market operations. The researchers also recognize that recent benchmark studies have aided financial institutions' understanding of small, diversified operations but expertise is still somewhat limited. Although financing options are limited, it is important for local producers to understand the options available and their requirements to be able to select the best fit for their farm and their financial capabilities (Reynolds-Allie, Fields & Rainey, 2013).

Hanson, Dismukes, Chambers, Greene and Kremen (2004), study the range of risks, risk management strategies and the need for assistance from the perspective of organic farmers to understand the differences and similarities in risks between organic and conventional farming. They find that although risks in organic farming may be similar to or greater than conventional farming, the nature of production and marketing systems are managed differently. Furthermore, organic farmers from this discussion raised issues about the equity of the currently subsidized risk management programs, questioning if they are subject to the same management tools as conventional farmers.

The researchers gathered that because of product diversification, single-crop commodity insurance may not be a practical source.

Zhang and Ellinger (2006) consider credit risks for Illinois farms by classifying farms into high, medium and low credit risk levels. They find that farmers in the low risk models exhibit strong earning and repayment performance in future periods which are more attractive clients to lenders. Poor loan performance is often dictated by extremely stressed conditions using earned net worth growth rate and term debt coverage as financial stress indicators to determine the quality of farm credit for farm businesses.

Consistency of credit evaluation at agricultural banks was examined by Ellinger, Splett, and Barry (1992) with survey data from 717 agricultural banks. Their results showed large degree of dispersion in the use, implementation and design of lender credit scoring models. It indicated the lack of efficient data and uniform model for lenders to evaluate the creditworthiness of agricultural borrowers. The relatively high disparity among the systems now in place suggest informational deficiencies in this aspect of rural credit markets, and the need for further discussion and agreement among lenders, borrowers and analysts about the properties of credit scoring models.

In a study of credit risk assessment models, Miller and LaDue (1989) examined financial ratios of liquidity, solvency, capital efficiency and operating efficiency as independent variables. They concluded that liquidity, profitability and operating efficiency determined borrower quality.

Durguner and Katchova (2011) examine farmer characteristics as likely to be important in developing regional credit scoring models that account for differences in farm type, thus the need for segmenting farmers into two categories- highly creditworthy

and less creditworthy. Results from the logit estimations indicate that the previous year's working capital to gross farm return, debt-to-asset ratio, and return on farm assets are the most important factors for determining the creditworthiness of farmer. These results imply that separate credit scoring models are needed for different farm types.

Logistic regression used by Linsombunchai, Gan, and Lee (n.d.) identifies critical factors in the lending decision process in the agricultural sector that predict the borrower's creditworthiness (probability of a good loan). The results of the logistic regression verify the importance of total farm asset value, capital turnover ratio (efficiency), and the length of bank-borrower relationship (duration) as important factors in determining the creditworthiness of the borrowers. The results show that a higher value of farm assets implies higher creditworthiness.

2.3 Microloans

Most literature about microfinance is in the perspective of poverty alleviation for lesser developed economies. Microloans proposed by the Farm Service Agency targets financial needs small, beginning and niche farm businesses (FSA, 2013). This qualifies for majority of the organic farming operators. Organic producers typically finance their own farm businesses, but may require additional funding. Small loans are often requested by organic farmers, but given the size of their business and other considerations, lenders typically reject these requests for small loans.

It is clear that the demographics of farming, especially in small-scale farming, are changing and these changes have provided challenges in access to credit for both farmers and agricultural lenders. The Farm Credit Service (2014) has recognized diversity in small farm operators who are mostly beginning farmers, younger than the average farmer

and farming part-time. This diversity often means they traditionally have had less access to reliable credit (FSA, 2104). Lenders must understand the important role that the new crop of diverse, young and beginning farmers and their access to affordable credit play in the sustainability of this country's agricultural production.

CHAPTER 3

METHODOLOGY

This study will present empirical evidence on credit-related issues for organic farmers collected from two different perspectives: one side representing the organic farmers' point of view and another capturing the opinions of farm lenders. The first phase of this study's analytical framework features information provided by the farmers regarding their production and financing practices, including details on their experiences of frustration or success in their applications for credit accommodation. This survey dataset also provides inputs that capture the farmers' demand for microloans and their opinions on what constitute an acceptable and reliable micro lending program.

The second phase of the analysis shifts into the lenders' perspective on the organic farm loan credit situation. Empirical data is supplied by the results of a regional (Southeastern) farm lenders' survey conducted by the University of Georgia in 2012 among lending officers. The lenders' survey data are analyzed using two econometric techniques. A standard Probit model was used to discern the determinants of lenders' interests in lending to organic farms. A second model is created using stepwise (backward) regression method to determine the lenders' extent of loan exposure to organic farmers. The subsequent sections will discuss these methodologies in greater detail.

3.1 The Organic Farms' Microloan Survey

The farmer's survey was developed to understand the production practices as well as the financing trends, needs and constraints of farm operators. The survey, found in

Appendix A, consisted of twenty-two multiple-choice and open-ended questions. Demographic and structural information were obtained to describe the average profile of respondents. Characteristic differences among the respondents based on education, business structure, farming status, gender and race allow notable comparisons for particular operators' loan reliance and operators that experience frustrations accessing loans. Production information was gathered to understand the operation and farming systems respondents use. Questions addressed farm size, ownership, gross farm income, total farm assets and categories for which commodities farmers produce. The financial data were collected to assess the farmers' demand for credit, especially microloans, that will sustain farm business operations. The information collected in the survey also capture the farmers' attitude towards credit, their usual funding sources, and financing needs. The farmers' experiences in securing credit – including both successful and frustrating loan application stints – are also collected in the survey.

The survey respondents also provide important information on the pricing and non-pricing components of the loan packages that successful loan applicants are given by their lenders. This portion of the survey dwells on lenders' attitudes towards small organic farm borrowers. Normally lenders determine borrowers' creditworthiness through an assessment of the borrowers' financial conditions. A lender's attitude towards a particular category or class of borrowers (such as small organic farms) is not only reflected in decisions involving the approval or rejection of loan applications. Even when a borrower has successfully overcome the challenges at the loan application stage, it is possible that lenders can reveal their differential treatment of specific borrower categories vis-à-vis the preferred ones through variants in setting the terms of the approved loan.

For example, operators were asked the average amount of loan they have received from lenders, how many times they received loans, how many times they applied for a loan and how many times their application was approved for each financing need. Furthermore, although some operators are awarded loans, certain elements of the loan package waive fairness for repayment like the maturity and interest rate, which is why these questions were included.

In order to establish the relative demand for microloans, the survey also included questions on the farmers' awareness of the microloan program, along with a ranking of features of the program most pertinent to farmers.

The microloan and credit survey conducted among farmers was conducted through mail and face-to-face encounters. Participants were randomly selected using organizational farm websites such as Local Harvest, Georgia Organics and North Carolina Fruits and Vegetables. Also, those that attended the Sustainable Agriculture conference for Small and Beginning Farmers in Watkinsville, Georgia were asked to complete a survey. A total of 550 surveys were distributed via mail to farmers listed on producer website listings and requested they respond one month within the time they received the survey (October 2013 to November 2013). Thirty-four usable surveys (6% response rate) were received for data collection and responses were recorded in Excel. The demographic, production and financial data obtained through the collected thirty-four surveys were compared with quantitative analysis of data from farm loan applications from the agricultural lenders. [1]

[1] A non-response error analysis was not conducted due to time constraints and difficulty in contacting non-responding famers.

3.2 The Farm Lenders' Survey

A project funded by the Sustainable Agriculture Research and Education (SARE) investigates on the financing issues experienced by organic farmers. Major proponents from Fort Valley State University and the University of Georgia worked together to obtain organic farmers' perspectives on their credit access and credit risk assessment issues. Two focus group discussions with several organic farmers were held in March 2012 in Fort Valley and Athens, Georgia. The wealth of information and ideas from farmer participants of the two meeting sessions were used to develop a lenders' survey instrument, listed in Appendix B. Overall, the survey was designed to determine lenders' perceptions of organic farming risks, identify whether any preconceived notions define their attitudes towards organic farm loan requests versus their regular or conventional farm borrowers, analyze the relevance of their existing credit risk assessment models to the organic farms' peculiar operating environments, and elicit their opinions and perspectives in improving credit access of potential organic farm borrowers.

The structural characteristics identified the type and size of the agricultural lending institution along with its agricultural lending history. Lenders were asked to indicate their inclination or interest in lending to organic farm borrowers and the extent of their credit exposure (planned and existing) to this farm sector. Lenders were asked to indicate the likelihood of certain farm borrowers obtaining loans from them vis-a-vis other types of farm borrowers of the same credit risk and loan requests. With the intention of revealing lenders' understanding of organic farm borrowers compared to conventional farm borrowers, lenders ranked their general perceptions of organic farmers. Given that organic and conventional farming systems encounter different production risks

within their operations, it is important to justify whether lenders use different credit scoring models for different types of borrowers and to identify which financial variables and credit risk factors are heavily considered when assessing loan applications.

Moreover, additional survey questions captured the lenders' treatment in their credit risk assessment models of certain unique features of organic farming, such as the farms' highly diversified operations and these farms' relatively more intensive inputs or investments in soil enhancement that could affect real estate property appraisal practices or credit scoring weights assigned to intangible assets.

The lenders' survey was sent out to at least 2,000 offices of commercial banks, community banks, Farm Credit System associations and Farm Service Agency branches in the Southeast (Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Louisiana, Kentucky, Arkansas, and Tennessee). The target participants represent the major groups (commercial banks, Farm Credit System, and Farm Service Agency, the federal lending arm) lending to farmers. A total of sixty-eight consistent responses were collected and logged into excel charted. The response rate has been affected by the duplication or uniformity of lending policies used by lenders under the same institution in the same geographical area. For example, branches of a common commercial bank usually turn in just one survey response that will capture their banking institutions' lending policies and practices. At times, even when lending policies are the same across lending units in the same institution (such as the Farm Service Agency), several survey responses received from lenders in the same organization provide interesting variances in lending officers' differing attitudes towards their organic farming clients.

3.3 Descriptive Farmers' Survey Analysis

Given the sample size obtained from this survey (not significantly greater than 30 observations), the survey data will analyzed along the lines of a case study analysis. Under this approach, descriptive and comparative summaries will be compiled to deduce a prevalent trend in several variables that can bring up important business issues experienced by a group of respondents.

The descriptive analyses of the survey data will produce important details and implications on the following:

a) The farmers' borrowing experiences, especially evidence of frustrations in their credit applications;
b) Any deduced patterns in loan term packaging decisions that lenders may impose on certain categories of farmers, as revealed by the farmer respondents; and
c) The farmers' demand for microloans in terms of the extent of financing assistance and the preferred features of a micro lending program.

The survey responses will allow a rich discussion of the above issues for several categories of farming situations. Among these categories are:

a. Business structure to compare simple (single proprietorships) and complex (partnerships and corporations) business organizations;
b. Farming status to differentiate full-time from part-time farmers;
c. Educational attainment of farm operators to distinguish highly educated farmers (completed college and beyond) and less educated farmers (at most with some college units);

d. Gender groups that distinguish male and female farm operators; and

e. Racial groups that classify farmers into white and non-white farm operators.

These analyses will produce interesting trends and implications that will be useful in understanding the predicament of organic farmers. The results of these analyses will also direct special attention to specific categories of organic farmers that may experience more hurdles in sustaining their farm businesses.

3.4 Econometric Analysis

Primary data collected from the lenders' survey were used to identify the significant determinants of farm lenders' attitudes towards their organic farming clients and the extent of their loan exposure to organic farm borrowers. It is suspected that lenders use uniform credit risk assessment models to determine the accessibility of loans to farmers with disregard to the nature of their farm operations. This study uses two regression models to discern the significant determinants of lenders' interest in and extent of credit accommodation to organic farm borrowers.

3.4.1 Probit Estimation

This analysis employs PROBIT estimation approach whereby the binary choice model is used to empirically identify the determinants of agricultural lenders' attitudes towards organic farming clients. Given the logic mentioned above, farm lenders that express interest in accommodating organic farmers' loan requests:

$$\mathbf{z^*_i = \beta x_i + \varepsilon,}$$

where z^*_i is the unobservable variable, x_i is a vector representing the variables that affect likelihood of interest in lending to organic farmers, β is a vector incorporating the

corresponding parameters, and ε is assumed to have a normal distribution with mean 0 and 1.

The binary dependent variable can defined as z = 1, if z* > 0, otherwise z = 0. In this analysis, the dichotomous dependent variable takes a value of 1 for lenders interested in lending to organic operators and 0 for those who are not interested. Specifically:

$$\textbf{Prob } (z = 1) = \textbf{Prob } (\varepsilon > -\beta x_i)$$
$$= F(\beta x_i),$$

where *F* is the cumulative distribution function of ε (Green, 2003). Since a normal distribution is assumed for ε, the model's PROBIT is estimated below:

$$\textbf{Prob}(y = 1) = \int_{-\infty}^{\beta x i} \varphi(t)dt,$$

where φ represents the standard normal distribution. A maximum likelihood procedure is used to estimate the parameters of the above binary choice model. Because the estimated coefficients arising from these regressions are not marginal effects, additional calculations are necessary. The probit model:

$$z_i = \gamma_0 + \gamma_1 ST + \gamma_2 ATT + \mu_i,$$

The x_i vector in this analysis is comprised of a set of dummy structural characteristics (*ST*) that are included to discern whether lenders' interest in organic farmers is significantly influenced the lending institutions' type, size, years in experience and percentage of lending to farm borrowers. Table 1 presents a summary of these variables' names and their descriptions. The dependent variable is labeled *Orglending1*,

which is a binary variable representing lenders' expressed interest in accommodating organic farmers' loan requests. The variable takes on "1" if the lender expressed interest in lending to organic farms; "0" otherwise. The explanatory variables include *CBLender* (1 if commercial bank; 0 otherwise), *ASSETS* (Lenders' total assets (billion dollars), *YEARSEXP* (lenders' number of years in lending business) and *FARMLOANSPCT* (Percent of lenders' farm loans granted to total loan portfolio).

The x_i vector also consists of set of variables that represent lenders' attitudes (ATT) toward organic farmers which are considered important indicators of lenders' perceptions (10-scale rating, 1 is highest perception) of organic farm operators. These variables include *hobby* (lenders' perception rating of organic farms as mere hobby farming), *Small_op* (lenders' perception of organic farms as small operations), *Envhlthrnk* (lenders' perception of organic farms as environmentally and health conscious operations), *Findisadrnk* (lenders' perception of organic farms as financially disadvantaged operations (less optimal and less viable businesses), and *sustainable* (lenders' perception of organic farms as sustainable , self-reliant business operations).

Additionally, the vector includes another set of dummy variables that distinguish lenders' attitudes:

- *Divereffctdum* Dummy variable for lenders' consideration of product/enterprise diversification as risk-mitigating (credit risk-reducing effect)

- *Soileffctdum* Dummy variable for lenders' consideration of soil enhancement investments of farmers in real estate appraisal and calculation of equity-asset ratios

- *Creditscore* Dummy for existence of separate credit scoring models for organic and conventional farms (1 for existence; 0 otherwise)

- *Orgcondum* Dummy variable capturing lenders' general perception of significant differences of economic and production structures of organic and conventional farms (1 for positive perception; 0 otherwise)

Following Greene (2003), the marginal effects for the PROBIT model, computed at the means of $x_{i,}$ are given by:

$$\frac{\partial E[z|\mathbf{x}]}{\partial x} = \varphi(\beta xi)\beta$$

Table 2: Variables Defined for PROBIT model

Variable Abbreviation	**Definition of Variable**
Orglending1	Binary variable taking on "1" if lender expressed interest in lending to organic farms; "0" otherwise
CBLender	Dummy variable – 1 if commercial bank; 0 otherwise
Assets	Lenders' total assets (billion dollars)
Yearsexp	Lenders' number of years in lending business
Farmloanspct	Percent of lenders' farm loans granted to total loan portfolio
Hobby	Lenders' perception rating of organic farms as mere hobby farming operations (10-scale rating, 1 is highest perception)
Small_op	Lenders' perception of organic farms as small operations
Envhlthrnk	Lenders' perception of organic farms as environmentally and health conscious operations
Findisadrnk	Lenders' perception of organic farms as financially disadvantaged operations (less optimal and less viable businesses)
Sustainable	Lenders' perception of organic farms as sustainable , self-reliant business operations
Divereffectdum	Dummy variable for lenders' consideration of product/enterprise diversification as risk-mitigating (credit risk-reducing effect)

Soileffctdum	Dummy variable for lenders' consideration of soil enhancement investments of farmers in real estate appraisal and calculation of equity-asset ratios
Creditscore	Dummy for existence of separate credit scoring models for organic and conventional farms (1 for existence; 0 otherwise)
Orgcondum	Dummy variable capturing lenders' general perception of significant differences of economic and production structures of organic and conventional farms (1 for positive perception; 0 otherwise)

3.4.2 Stepwise (Backward) Least Squares Regression

The lenders' extent of loan exposure has been analyzed using backward stepwise regression that initially considered all probable independent variables. Using a 20% variable significance retention rate, the model has been reduced to a version that involves only the important (relatively more significant) regressors. The general form of the original model is:

$$y_i = \beta_0 + \beta_1 ST + \beta_2 ATT + \beta_3 POL + \mu_i$$

In this model, the dependent variable (y_i) is the total amount of real estate and non-real estate loans granted by lenders to organic farm borrowers. The original list of independent variables include: ST which is a set of lenders' structural characteristics (such as measures of size of operations, years of lending experience, type of institution); ATT are dummy variables accounting for lenders' qualitative perceptions of organic farmers collected in the survey; and POL variables which capture lending policies such as the differentiation of credit scoring models for different types of borrowers, property

appraisal approaches that affect valuation of organic farmland, and other specific credit risk assessment benchmarks.

Table 2 provides a list of variables used in the Stepwise Backward Least Squares regression analysis. This analysis assessed lender's extent of loan exposure to organic farm borrowers. The dependent variable, *Orglnamt,* represents the total amount of real estate and non-real estate loans granted by lenders to organic borrowers.

The explanatory variables include *Assets, Hobby, Small_op, Envhlthrnk, Findisadrnk, Sustainable, Divereffctdum, Soileffctdum and Creditscore* that have been previously included in the PROBIT model. Among the new explanatory variables in this model are *Orglngrwth,* which accounts for growth in the number of organic farm borrowers accommodated by lenders during the past two years as well as the weights assigned by lenders on the solvency, profitability and financial efficiency ratios in their credit scoring models, which are labeled as *Orgsolvwght, Orgprofwght,* and *Orgfinefwght,* respectively.

Table 3: Variables Defined for Backward Weighted Least Squares Model

Variable Abbreviation	**Definition of Variable**
Orglnamt	Total amount of real estate and non-real estate loans granted by lenders to organic farm borrowers
Assets	Lenders' total assets (billion dollars)
Hobby	Lenders' perception rating of organic farms as mere hobby farming operations (10-scale rating, 1 is highest perception)
Small_op	Lenders' perception of organic farms as small operations
Envhlthrnk	Lenders' perception of organic farms as environmentally and health conscious operations
Findisadrnk	Lenders' perception of organic farms as financially disadvantaged operations (less optimal and less viable businesses)

Sustainable	Lenders' perception of organic farms as sustainable , self-reliant business operations
Divereffctdum	Dummy variable for lenders' consideration of product/enterprise diversification as risk-mitigating (credit risk-reducing effect)
Soileffctdum	Dummy variable for lenders' consideration of soil enhancement investments of farmers in real estate appraisal and calculation of equity-asset ratios
Creditscore	Dummy for existence of separate credit scoring models for organic and conventional farms (1 for existence; 0 otherwise)
Orglngrwth	Growth in number of organic farm borrowers approved loans by lenders during the last two years

CHAPTER 4

RESULTS

This chapter presents the empirical evidence produced by the various analytical approaches used in this research. The first section features the analysis of the information collected from a farmers' survey. Owing to the small sample size, the survey data will be analyzed qualitatively similar to a case study method. The second section provides empirical evidence from the lenders' perspective capturing their perceptions and experiences of organic farm businesses as existing and/or potential borrowing clients.

4.1 Microloan Survey Results

Using the responses of a sample of 34 organic farmer respondents, the following subsections will separately discuss three major themes of results. These themes will provide an interesting background and rationale for the organic farmers' attitudes towards credit and farm lenders.

4.1.1. Farmers' Demographic Attributes and Loan-Equity Reliance

Table 3 presents the demographic attributes as well as the loan-equity reliance comparisons among the categorized farmer respondents. These tabulations will help provide a general descriptive profile of the farmers that participated in the microloan survey.

In the comparisons between the simpler business set-ups (single proprietorships) and more complicated organizations (such as partnerships and corporations categorized here as non-single proprietorships), the results present interesting trends. Respondents

that are involved in non-single proprietorship businesses appear to be more experienced, slightly older, operate larger acres of farmland, and generate more income from farming, complemented by their larger asset sizes. This group of farmer respondents tends to rely a little more on loans than respondents that run single-proprietorship farming businesses. This group's higher loan reliance is intuitively expected as lenders are generally more inclined to favorably consider loan requests of larger, more sophisticated business organizations.

In terms of the operators' educational attainment, respondents that have less than a college degree are more experienced, slightly older, acquire more farmland but earn less income from farming. Farmer respondents that attained at least a college degree tend to rely more on loans and less on equity.

Full-time farmer respondents are more experienced, older, have larger acres of farmland and have higher farm income and assets. Full-time farmer respondents also appear to rely more on loans than part-time farmer respondents. Again, the loan reliance result reflects the lenders' usual preference to accommodate more the credit requests of farmers that seriously devote their time to their farming business.

Male and female farmer respondents have almost the same level of farming experience. However, female respondents are relatively older. They also comprise a larger value of assets perhaps from inheritance or because females prefer security. Male respondents farm larger amounts of land, earn higher farm income and tend to rely more on loans. It is possible that male farmers have experienced more success in their loan applications while female farmers may still be a bit cautious in accessing credit as a source of financing.

Non-white respondents have more experience in farming, are older and farm more acres of land than white survey participants. This could be due to historical reasons. White farmer respondents generate higher farm income and operate larger farms in terms of asset values in addition to higher reliance on loans than non-white respondents.

Table 4: Demographic Characteristics and Loan-Equity Reliance, Mean Values by Farmer Categories

	Number of Farmer observations	Experience (years in farming)	Age (years)	Total Acres	Farm Income ($)	Total Assets ($)	Loan Reliance (%)	Equity Reliance (%)
Business Structure								
Non-Single Proprietorships	15	19.2	52.8	138.78	134,500	745,166.67	21	85
Single Proprietorship	19	11.53	50.16	42.15	17,236.84	200,052.63	16	84
Education								
Less than college	17	17.18	51.94	98.16	62,058.82	437,382.35	16	89
College and beyond	17	12.65	50.71	71.39	75,882.35	443,705.88	21	79
Farming Status								
Part-time	13	12.31	47.54	49.8	14,615.38	380,615.38	11	89
Full-time	21	16.52	53.67	106.43	102,619.05	477,642.86	23	81
Gender								
Male operators	24	15	49.9	97.31	91,562.50	431,770.83	21	83
Female operators	10	14.8	54.7	54.69	14,750	461,600	12.5	87.5
Race								
White Operators	27	13.93	50.3	74.28	78,240.74	442,259.26	23	80
Non-White operators	7	18.71	55.14	125.29	33,214.29	433,928.57	.7	99

4.1.2 Farmers' Frustrations in Loan Applications

Table 4 introduces the frustration levels of farmer respondents when attempting to access a loan. This table presents a subset of the sample that includes only those farmers that had never experienced a loan approval or successful loan application. Frustration levels are indicated by the number of times loan requests were not approved. For example, respondents were asked to record the number of times they applied to a loan followed by the number of times the loans were approved. If the participant responded "0" approved loans, this means the respondent was unsuccessful in accessing a loan. Additionally, respondents were asked to document the amount of loan requested.

Respondents belonging to non-single proprietorship businesses have made an average of 4 loan applications while requesting an average amount of $72,000. Meanwhile, fourteen (14) single proprietorship farms have never filed a loan application. The same trend in noted among farmers with different educational attainment. Less educated farmers experienced more frustration in their loan applications that average 3.14 times for an average loan request of $51,429. More educated farmers, on the other hand, do not have such frustrating experiences. In the same fashion, male farmers have frustrating loan application experiences that average 2.59 times for an average loan application amount of $42,353.

Part-time and full-time farming respondents appear to have almost the same amount of experiences of loan rejection, although full-time farmers have requested for a higher average loan amount of $37,143 compared to part-time farmers' average request of $20,000.

Non-white operators appear to have more loan frustration experiences than white operators. Interestingly enough, non-white operators indicated they have requested an

average of 6 loans, resulting in disapprovals. Their disapproved amount requests have accumulated up to approximately $117,000. Comparatively, white respondents have acknowledged only 1 disapproved loan application with a small borrowing request of $1,111.11.

Table 5: Loan Application Frustration Indicators for Unsuccessful Farmer Borrowers, Various Farmer Categories, 2013

	Total Number of Farmer Respondents	Number of Farmer Observations	Average Loan Amount ($)	Average Maturity (years)	Average Interest Rate (%)[2]
Business Structure					
Non-Single Proprietorships	15	5	77,200	7	4
Single Proprietorship	19	5	85,400	3.4	1
Education					
Less than college	17	3	60,333.33	5	4
College and beyond	17	7	90,285	5.29	2
Farming Status					
Part-time	13	3	17,000	1.67	1
Full-time	21	7	108,857.14	6.71	4
Gender					
Male operators	24	7	72,714	6.71	3
Female operators	10	3	101,333.33	1.67	2
Race					
White Operators	27	9	88,333.33	5.78	3
Non-White operators	7	1	18,000	0.5	4

[2] Self-reported data

4.1.3 Successful Farmer Applicants' Loan Packaging Arrangements

For some farmer respondents, loan requests were successful in attaining approval. However, the benefits of a successful loan application do not only depend on the provision of capital funds to implement business plans. In other words, it is also important to scrutinize the details of how successful loan applications are actually packaged by lenders to discern whether the resulting price and non-price components of the loan terms (such as interest rates and maturity) are indeed beneficial to the farm business. Beneficial loan terms are those that allow the farm borrowers to repay their credit obligations according to their repayment capabilities or under reasonable terms. The following discussions will elucidate details of these arguments.

Table 5 is a summary that focuses on observations in the sample that have experienced success in their loan applications. For these successful farm borrowers, Table 3 focuses on the loan package respondents noted that they received including the loan amount, maturity rate and interest rate.

Although single-proprietorships requested a higher loan amount, they were actually given a shorter maturity rate of about 3 years with an interest rate 1% by their lenders.

Respondents that farm part-time applied for approximately $17,000, but repayment was expected within 2 years while full-time farmers had larger loan requests averaging $108,857 to be repaid in a longer period of 7 years.

Female farm operators requested loans for nearly $100,000 while repayment was anticipated within 2 years; compared to male operators who desired a smaller loan amount, but with a 7 year repayment plan.

There was only one loan approved non-white farmer who indicated he/she requested to borrow $18,000. However, the maturity rate was assigned for six months with a higher interest rate (compared to white farmers) of percent. Based on these comparative summaries, female and non-white farmer operators seem to have unrealistic loan packaging terms.

Table 6: Average Loan Packaging Terms for Successful Farm Loan Applicants, Various Farmer Categories

	Total Number of Farmer Respondents	Number of Farmer Observations	Average Loan Amount ($)	Average Maturity (years)	Average Interest Rate (%)[3]
Business Structure					
Non-Single Proprietorships	15	5	77,200	7	4
Single Proprietorship	19	5	85,400	3.4	1
Education					
Less than college	17	3	60,333.33	5	4
College and beyond	17	7	90,285	5.29	2
Farming Status					
Part-time	13	3	17,000	1.67	1
Full-time	21	7	108,857.14	6.71	4
Gender					
Male operators	24	7	72,714	6.71	3
Female operators	10	3	101,333.33	1.67	2
Race					
White Operators	27	9	88,333.33	5.78	3
Non-White operators	7	1	18,000	0.5	4

[3] Self-reported data

4.1.4 The Organic Farmers' Microloan Demand and Perceptions

The new microloan program was implemented in January 2013 and we were interested in determining if farmer respondents were aware that the program was available. Overall, most farmers are not aware of the program considering it is a fairly new financing option to farmers from the Farm Service Agency. Additionally, we were attentive to which of the program feature(s) was most pertinent to farmers by asking them to rank each feature using a 5-point scale where 1 indicated most important and 5 indicated least important. Furthermore, it was imperative to specify how much of the loan they requested/intended to request and their desired loan amount. This will help give a relative inclination of the demand for microloans from these farm operators. Also, it will assist in justifying which relaxed loan feature is most attractive to organic farmers which can be notable to lenders for their consideration when modifying their credit-scoring models for organic farm operators.

More farmers involved in non-single proprietorships are aware of the microloan program. Since these businesses are typically ran by more than one person, there is a possibility of more access to information and knowledge about this program within a group of people rather than a single business owner. Financing options and a lower interest rate appear to be the most attractive features of the microloan program for these farmers. Table 3 reveals that single-proprietorship business owners farm less land which is probably why they requests a smaller loan amount at a shorter term.

Those that have a college degree or more have a higher awareness of the microloan program. This could be that the better educated farmers are more willing to explore and inquire about new or additional financing options and/or they are consistently interested in finding the best financial opportunities. Financing options, less paperwork

and lower interest rates are the most attractive features to college educated and beyond farm operators.

Full-time farm operators are the most unaware of the microloan program. Full-time operators farm more land than part-time farmers so most of their time is demanded by labor on the farm. This could mean that they seldom take time to investigate such loan program. Full-operator designated financing options and lower interest rate to be the striking features of the loan program.

Financing of operating capital, minor farm improvements, and farm supplies (financing options) and low interest rate appear to be the most appealing component of the microloan program to both female and male operators. However, female operators request a small amount of $3,000 with a two year repayment term. Stereotypically, females are more conservative and rational when making loan decisions versus males. One non-white farmer respondent provided awareness to the microloan program. Low interest rate and credit-scoring sufficiency were the most favorable facets of the program. They also requested the largest loan amount, along with the longest loan term.

Table 7: Importance Ratings of Microloan Program Features (5-Point Scale: 1 Most Important, 5 Least Important)

	Not Aware of Microloan Program	Aware of Microloan Program	Small Loan Amount	Less Paper-work	Financing Options	Low Interest Rate	Credit-Scoring Sufficient	MLP Loan Demand	MLP Term Demand
Business Structure									
Non-Single Proprietorships	9	6	3.75	3.25	2	2	4	47,166.67	7.17
Single Proprietorship	16	3	4	2	2	2.5	5	833.33	0.67
Education									
Less than college	15	2	3	5	2	1	4	15,000	7.5
College and beyond	10	7	4	2.4	2	2.4	4.4	36,500	4.29
Farming Status									
Part-time	8	5	4.33	2.33	2.67	2	4	47,500	5.4
Full-time	17	4	3.33	3.33	1.33	2.33	4.67	12,000	4.5
Gender									
Male operators	18	6	3.8	2.8	2.2	2.2	4.2	47,583.33	7.5
Female operators	7	3	4	3	1	2	5	3,000	2.14
Race									
White Operators	21	6	3.6	2.8	1.6	2.4	4.8	8,416.67	3.33
Non-White operators	4	1	5	3	4	1	2	78,333.33	8.33

4.2 Lenders' Survey Results

This section will provide the econometric results from 68 agricultural lender survey respondents representing several farm lender groups. The survey response rate has been affected by certain borrowers' decisions to consolidate answers among lenders within the same organization and geographical assignments. For example, certain lending units of the Farm Credit System falling under the same lending association contend that they follow the same credit risk assessment standards and hence have decided to field in only one response. In other cases, however, there were lenders who

decided to participate in the survey even if they had uniform credit screening guidelines. In these cases, their responses were considered equally important as they would reveal any possible differences in lending attitudes and perspectives even under the same credit screening models are employed. The results in the section identify the determinants of farm lenders' attitudes towards their organic farming clients and the extent of their loan exposure to organic farm borrowers.

4.2.1 Farm Lenders' Attitudes and Perceptions toward Their Organic Farming Clients

The probit regression model is justified as the most logical, relevant approach in modeling lenders' interest in organic farms. The regression analysis identifies the significant explanatory variables at the 10%, 5% and 1% levels. The probit coefficients are used to determine the significance and the directional effect of each of the explanatory variables. The marginal effects estimates will provide the magnitude of the effect of an explanatory variable on the probability of farm lenders' inclination or interest to lend to organic farm borrowers.

Based on the Probit results reported in Table 4, *CBLender,* a structural variable capturing the type of farm lender, was significant at the 5% level. The coefficient results suggest that commercial bank lenders are less inclined to lend to organic farmers. This finding is consistent with the assumption that most large commercial banks would usually tend to concentrate on capturing the businesses of larger firms and would tend to assign low priority on smaller businesses, such as small organic farms.

Lenders' attitudes toward organic farms were established with three significant variables: *Small_op, Envhlthrnk,* and *sustainable*. The coefficients indicate that if lenders perceive organic farms as being small, environmentally and health conscious operations,

they will be less inclined to provide loans to organic farmers. As for businesses that are sustainable and self-reliant, which is an underpinning characteristic of organic operations, agricultural lenders are more likely to approve loans for farms perceived to possess this attribute.

Among other significant dummy regressors in the probit model that explain lenders' attitudes, *Divereffctdum* and *Soileffctdum* captures lenders' consideration of product diversification and soil enhancement investment of organic farms. Lenders consider product/enterprise diversification as risk-mitigating (credit risk-reducing effect), resulting more interest lending to these types of farms. As for farms that invest in soil enhancement and claim this to be an asset to the business, creditors are not very attentive to this aspect.

Interestingly enough, the *Creditscore* variable was significant at the 5% level. Its coefficient sign indicates that lenders that do not use separate credit-scoring models for organic and conventional farms. This result is consistent with our suspicion that lenders do not really understand the different credit risks associated with these two very different farming methods although the *Orgcondum* variable proves otherwise. This dummy variable's positive coefficient sign tells us that lenders capture the significant differences of economic and production structures of organic and conventional farms.

4.2.2 Extent of Farm Lenders' Loan Exposure to Organic Farm Borrowers

The Backward Stepwise Regression results provide us with further empirical evidence on lenders' relationship with their organic farming clients. In this analysis, the focus is on the amount of loans lenders are willing to provide to organic farms borrowers. The significant *Assets* variable with its negative coefficient indicates that larger lenders (in terms of total assets) tend to lend less to organic farm borrowers. This is consistent

with the notion that larger banks tend to be less interested in dealing with small businesses.

Lenders that do not assign a special premium on farmers' soil enhancement investments tend to extend larger loans to organic farmers which is evident in the result for *Soileffctdum.* Lenders do not claim soil enhancement to be a legitimate factor for asset appreciation due to their lack of knowledge and misunderstanding about organic farming principles and risks. The same result applies to those that do not implement separate credit scoring models for organic and conventional farms (*Creditscore).*

The significant result for the *Sustainable* variable suggests that lenders recognize organic farms as sustainable, self-reliant business operations. The negative coefficient indicates that lenders tend to provide smaller loan amounts to organic farm borrowers that exhibit this characteristic. Relating this result with the probit model estimate for this variable, it is evident that while the sustainability attribute of organic farms may encourage lenders to consider them as borrowing clients (probit result), lenders are actually cautious in dealing with these clients under the sustainability perception in such a way that lenders would only be interested in smaller loan exposures for this clientele.

On the contrary, lenders who consider product/enterprise diversification as risk-mitigating (credit risk-reducing effect), which is a primary characteristic of organic farms, provide higher loans to organic farmers. This result is consistent with the probit model finding for this variable (significantly positive effect)

Furthermore, the regression results show positive correlation between perception of organic farms as financially disadvantaged operations (*Findisadrnk*) and the amount of loans granted by lenders to organic farm borrowers.

4.2.3 Probit and Stepwise Regression Results from Lenders' Survey

	Probit Results	Marginal Effects with Probit	Backward Stepwise Regression Results
	Orglending 1	Pr(orglending)	Orglnamt
Intercept	**-1.212**		**77.312**
	(0.988)		**(43.307)**
Structural Characteristics			
CBLender	**-2.801****	**-0.474**	
	(1.215)	**(0.242)**	
Assets	**-0.117**	**-0.022**	**-33.195****
	(0.423)	**(0.086)**	**(13.387)**
Yearsexp	**0.022**	**0.004**	
	(0.042)	**(0.008)**	
Farmloanspct	**0.028**	**0.005**	
	(0.018)	**(0.004)**	
Lender Perceptions[4]			
Hobby	**-0.0365**	**-0.07**	**-13.599**
	(0.232)	**(0.06)**	**(15.154)**
Small_op	**1.465****	**.028**	
	(0.644)	**(0.15)**	
Envhlthrnk	**0.547****	**0.105**	**17.382**
	(0.255)	**(0.07)**	**(14.040)**
Findisadrnk	**-0.0004**	**-0.00008**	**37.379*****
	(0.164)	**(0.314)**	**(11.871)**
Sustainable	**-0.320***	**-0.612**	**-36.608*****
	(0.179)	**(0.04)**	**(13.282)**
Lender Considerations			
Divereffctdum	**2.850*****	**0.45**	**237.519****
	(1.037)	**(0.203)**	**(89.142)**
Soileffctdum	**-2.966****	**-0.811**	**-222.256*****
	(1.178)	**(0.21)**	**(81.584)**
Creditscore	**-4.007****	**-0.921**	**-243.764***
	(1.800)	**(0.094)**	**(130.107)**
Orgcondum	**2.153****	**0.515**	
	(0.976)	**(0.247)**	

[4] Lender perceptions variables are based on ranking order. '1' indicates the most important lender perception and '10' indicates the least important perception.

Orglngrwth			**11.345**** **(4.810)**
N	**68**	**68**	**68**
Log-likelihood	**-15.263**		
R^2			**0.343**
	Numbers in parenthesis are standard errors. ***, **, *** denote significance at 10%, 5%, and 1% levels, respectively.**		

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

Abrupt, significant shifts in consumer demand for organic products in the United States over the past two decades have overwhelmed organic farmers nationwide in providing adequate domestic supply. This study investigated capital constraints as one of these major obstacles from the perspective of organic farmers and from the viewpoint of agricultural lenders. Specifically, the goal of this research was to provide empirical evidence on the quandary of organic farmers in their efforts to access credit from regular farm lenders.

To establish a thorough understanding of farmers' dilemma when dealing with agricultural loans, it was important to, first, elucidate the issues raised by organic farmers on their experiences trying to access farm credit. In order decipher farmers' frustrations, this study examined loan trends of unsuccessful farmer loan applicants and loan packaging arrangements for farmers that were successful in obtaining credit. Results from the farmer loan surveys authenticate farmers' difficulties in accessing loans- some more than others

Secondly, this research analyzed the farm lenders' attitudes towards their existing and prospective organic farming borrowers in terms of credit access, credit risk measurement, and loan packaging practices. The ability to distinguish the significant determinants of farm lenders' attitudes towards their organic farming clients and the

extent of their loan exposure to organic farm borrowers provided justification of lenders' understanding and sensitivity toward organic farm businesses.

5.1 Conclusions

From the farmers' perspective, there is still inequity in accessing credit even among a focused group of small organic farmers. Farmers with certain characteristics (non-single proprietorships, less educated, male and non-white) experience more frustrations in their loan applications than others. In terms of loan packaging issues, single proprietorships, part-time, female and non-white farm operators tend to have lower loan amount approvals and shorter loan maturities. If small organic farms are provided the ideal lending program (microloan program) that will satisfy their financing needs. The farmers assign high importance ratings to the lower interest rate and wider financing option features of a micro lending program.

Lenders perceive organic farms as small farm operations, thus resulting smaller business conditions. Large banks, like commercial banks, are not very attentive to small businesses. Carter (1988) says that lenders are competitive and follow profit-maximizing behavior insinuating more interest in larger farms. Additionally, small business operations of organic farms request relatively smaller loan amounts. In fact, from the microloan survey, farmers express that the financing of operating capital for minor farm improvements and farm supplies was the one the top most important loan features of the small loan program, indicating a need for a minuscule loan. Lenders are not favorable to small loans requests because they consider the transaction and opportunity costs that are associated with the resources allocated for the processing of small loans as being too

high. Small local banks are a better lending institution option for organic farm operators. Local banks are more familiar with the farmer and understand the borrower's condition.

Furthermore, organic farms usually try to keep their operation size smaller and do not aggressively consider expansion plans. This is a result of the principles that guide their business decisions like sustainability, environmentally and health consciousness. The results of this study reflect that lenders disregard the environmental and health conscious aspects of organic operations. Lenders must understand that organic farmers are socially responsible farmers that are bent on providing their communities with healthy food and their practices are environmentally friendly. In terms of sustainability, lenders reveal that they find interest in this business trait because they perceive these operations as self-reliant. However, lenders are only willing to allow small loans for this type of business.

Organic farms have more diversified operations usually involving a wide array of farm commodities. Based on this study's results, lenders find product diversification as a risk mitigating benefit and are willing to access larger loan amounts to farming operations that adhere to these conditions.

A significant observation found in this study is the absence of separate credit-scoring models for organic and conventional farms. Lenders use the same credit-risk assessment models for both types of farming business although these businesses encounter different risks. This automatically disadvantages organic farmers when lenders consider loan qualifications. This notion does not support the fact where lenders indicated that they are aware of the significant differences of the economic and production structure of organic and conventional farms.

5.2 Implications

Results from the farmers' and lenders' survey, undeniably explain that organic farmers are experiencing difficulty in accessing loans from agricultural lending institutions. Results show that 58 percent of farmer respondents were unaware of the microloan program which indicates a need for farmer outreach in presenting such a valuable financing option to organic farmers. This study has also produced important evidence validating determinants of lenders' discriminatory treatment between organic and conventional farm borrowers. The results present a homogenous pattern of discrepancy between organic farmers' access to loans and lenders' credit-risk assessment models used for these farmers' businesses. It is evident that specific credit risk assessment benchmarks have an impact on the chances of organic farm operators having their loan applications accommodated and subsequently approved by lenders. Overall, this study's results have underscored the need for lenders' better understanding of organic farms' operating structures and business potentials. Also, lenders should consider the adoption of more appropriate credit risk assessment model that should more accurately capture organic farms' credit risk conditions. Furthermore, organic operators should seek loans packages more suitable for their business situations, like the Microloan program.

Among the intended beneficiaries of the Microloan program, the organic farm sector could potentially benefit immensely from microloans. This contention can be attributed to at least three factors: industry start-up and expansion opportunities, slower business size growth trends, and farm operators' business principles or attitudes. Based on the responses from the farmers' survey, there is a demand for microloans.

REFERENCES

Baker, C.B. 1968. “Credit in the Production Organization of the Firm.” *American Journal Agricultural Economics*: 50 (3): 507-520.

Barry, P.J., Baker, C.B., and Sanint, L.R. 1981. “Farmers’ Credit Risks and Liquidity Management.” *American Agricultural Economics Association.*

Beck, T. and Demirguc-Kunt, A. 2006. Small and Medium-Size enterprises: Access to finance as growth constraint. *Journal of Banking and Finance*. (30) 2931–2943

Beck, T., Demirguc-Kunt, A., Laeven, L. and Maksimouic, V. 2004. “The Determinants of Financing Obstacles.” *The World Bank.*

Berger, A.N. and Udell, G.F. 1995. “Relationship Lending and Lines of Credit in Small Firm Finance.” *Journal of Business*, 68 (3), 361-382.

Blank, S.C. 1998. “The End of Agriculture in the American Portfolio.” Quorum Books, Westport, Connecticut.

Brau, J.C., and Woller, G.M. 2004. “Microfinance: a comprehensive review of the existing literature." *Journal of Entrepreneurial Finance and Business Ventures*, 9(11), 126.

Carter, M. 1988. “Equilibrium Credit Rationing of Small Farm Agriculture.” *Journal of Development Economics* 28, 83-103.

Cocciarelli, S., Suput, D., and Boshara, R. 2010. “Financing farming in the U.S. W.K. Kellogg Foundation Food and Community Program.”

Curtis, J. 2004. “Funding the new harvest: Overcoming credit barriers for North Carolina’s sustainable farming enterprises.” Self Help Credit Union, Durham, N.C.

Dimitri, C. and C. Greene. 2002. “Recent Growth Patterns in the U.S. Organic Foods Market.”AIB-777. U.S. Department of Agriculture, Economic Research Service.

Dimitri, C, and L. Oberholtzer. 2009. “Marketing U.S. Organic Foods: Recent Trends from Farms to Consumers.” Economic Information Bulleting No. 58. USDA Economic Research Service. 33 pp.

Durguner, S. and Katchova, A. L., 2011. “Credit Risk Models by Type of Business.” The Business Review, Cambridge, 19 (1): 46-54. Available at SSRN: http://ssrn.com/abstract=2029966

Ellinger, P. N., Splett, N. S. and Barry, P. J. 1992. “Consistency of credit evaluations at agricultural banks.” Agribusiness, 8: 517–536

Ellinger, P.N. and Zhang, T. 2006. “Credit Risk and Financial Performance Assessment of Illinois Farmers: A Comparison of Approaches with Farm Accounting Data.” American Agricultural Economics Association.

Escalante, C. 2012. “Organic farms’ Credit Access and Farm Lenders’ Assessment of Organic Farms’ Credit Risks.” *Sustainable Agriculture Research Education*.

Escalante, C.L., Ferrer, M.C., and Wang, B. 2012. “Southeastern farm lenders survey.” Department of Agricultural and Applied Economics, University of Georgia.

Farm Service Agency. 2014. “The Impact of the Farm Credit System on Rural America.” Available online:

https://www.fca.gov/FCAweb/fca%20new%20site/Download/Symposium14/sia19feb2014.pdf

Greene, C. and Kremen, A. 2003. "U.S. Organic Farming in 2000-2001: Adoption of Certified Systems." *AIB-780. U.S. Department of Agriculture, Economic Research Service*.

Greene, W. 2003. *Econometric Analysis*. Prentice Hall, New Jersey, 5th Edition.

Hattam, C. 2006. "Adopting Organic Agriculture: An Investigation Using the Theory of Planned Behavior." *International Association of Agricultural Economics*.

Hanson, J. S., Dismukes, R., Chambers, W., Greene, C. and Kremen, A. 2004. "Risk and Risk Management in Organic Agriculture: Views of Organic Farmers." *Renewable Agriculture and Food Systems*: 19 (4): 218 - 227.

Hanson, J. S., and Stokes, G.D. 2014 "Financing Small-Scale and Part-Time Farms." Pennsylvania State University. Available online: http://pubs.cas.psu.edu/freepubs/pdfs/ua409.pdf

Hoppe, R.A., MacDonald, J.M. and Korb, P. 2010. "Small Farms in the United States: Persistence Under Pressure." *United States Department of Agriculture-Economic Research Service*.

Kauffman, N.S. 2013. "Credit Markets and Land Ownership for Young and Beginning Farmers." *Choices Magazine.*

Knight, T.O., Lovell, A.C., Rister, M.E., and Coble, K.H. 1989. "An Analysis of Lenders' Influence on Agricultural Producers' Risk Management Decisions." *Southern Journal of Agricultural Economics*

Limsombunchai, V., Gan, C. and Lee, M. n.d. "Lending Decision Model for Agricultural Sector in Thailand." Available online: http://www.mssanz.org.au/modsim05/papers/limsombunchai.pdf

Miller, L. H. and LaDue, E. L. 1989. "Credit Assessment Models for Farm Borrowers: A Logit Analysis." Available online: http://dyson.cornell.edu/research/researchpdf/wp/1988/Cornell-Dyson wp8812.pdf

Myers, S.C. 1984. 'The capital structure puzzle." *Journal of Finance.* 39: 575-592.

Myers, S C and Majluf, N.S. 1984. "Corporate financing and investment decisions when firms have information the investors do not have." *Journal of Financial Economics*.13:187-221.

National Small Business Association. 2012. "2012 Small Business Access to Capital Survey." Available online: http://www.nsba.biz/wp content/uploads/2012/07/Access-toCapital-Survey.pdf

Organic Trade Association. 2011. "Industry statistics and projected growth." Available online: http://www.ota.com/organic.mt.business.html?printable=1.

Organic Trade Association. 2011. "U.S. organic and total food sales and growth." Available online: http://www.ota.com/organic.mt.business.html?printable=1.

Reynolds-Allie, K., Fields, D., and Rainey, R. 2013. "Risk Management Issues for Small Farms within Local Food Systems." *Choices Magazine*.

Splett, N.S., P.J. Barry, B.L. Dixon and P.N. Ellinger. 1994. "A Joint Experience and Statistical Approach to Credit Scoring." *Agricultural Finance Review.* 54:39-54.

The Carrot Project. 2008. "Are Northeast Small Farmers in a Financing Fix?" Research Results on Financing Gaps and Program Opportunities. The Carrot Project. Sommerville, MA.

U.S. Census Bureau. 2012. "Section 17: agriculture. Statistical abstract of the United States." *U.S. Census Bureau.*

U.S. Department of Agriculture – Economic Research Service. 2008. "Organic production." Available online: http://www.ers.usda.gov/Data/Organic.

U.S. Department of Agriculture – Economic Research Service. 2010. "2008 certified organic production survey." Available online: http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/Organics/index.php.

U.S. Department of Agriculture – Farm Service Agency. 2013. "Farm loan programs." Available online: http://www.fsa.usda.gov/FSA/webapp?area=home&subject=fmlp& topic=dflop.

U.S. Department of Agriculture – Economic Research Service. 2013. "Organic Production." Available online: http://www.ers.usda.gov/data-products/organic production.aspx#.U8jLskBv0dk

Walz, E. 2004. "Final Results of the Fourth National Organic Farmers' Survey: Sustaining Organic Farms in a Changing Organic Marketplace." Organic Farming Research Foundation, Sta. Cruz, CA.

APPENDIX A:

Farmers Survey on Demand for Microloans

Please use a dark blue or black pen, or a dark pencil to mark your choices. We would also appreciate your inputs or comments on certain questions that request specific information from you. Thank you.

DEMOGRAPHIC AND STRUCTURAL INFORMATION

1. **What best describes your relationship to this farm?**
   ○ I am the owner/co-owner of this farm business. ○ I am a hired manager or caretaker.
   ○ Other _____

1. **How many years have you been farming?** *(Please fill in.)* _____ years

2. **How many years have you been farming organically** *(if applicable)***?** _____ years

3. **Do you farm FULL TIME or PART TIME?** *(Please select one response.)*
   ○ Full time ○ Part time

4. **What percentage of your time do you devote to off-farm employment or investment activities?** *(Please fill in.)* _____ percent

5. **What percentage of your HOUSEHOLD INCOME came from your farm production last year?** *(Please fill in.)* _____ percent

6. **What is your highest level of formal education?** *(Please select one response.)*
   ○ No formal education ○ Completed junior college/trade school degree
   ○ Some high school ○ Completed bachelor's degree
   ○ Completed high school ○ Some graduate work
   ○ Some college ○ Graduate degree

7. **What is your age?** *(Please fill in.)* _____ years

8. **Your gender.** *(Please select one response.)* ○ Female ○ Male

9. **Your ethnicity/race.** ○ African American ○ White American ○ Hispanic American ○ Asian American ○ Native American ○ Other (please specify) _____

10. **Which of the following business structures best describes your farm operation?**
    ○ Sole proprietor ○ Farm cooperative
    ○ Family farm partnership ○ Property management
    ○ Family farm corporation ○ Educational/research farm

○ Partnership, other than family ○ Other: _____
○ Corporation, other than family

11. In what county and state is your farm located? County _____
State _____

PRODUCTION

12. What was your farm's production acreage in 2012?

Type of Operations/Farming System	Total Acres
Organically Farmed	
In Transition to Organic Farming	
Conventionally Farmed	
Total Farm Size	

13. How many acres were owned by your farm in 2012? How many acres did you rent, rent out to other farmers, or used free-of-charge?

Type of Operations/Farming System	Owned	Rented from others	Rented out to other Farmers	Used Free-of-Charge	Total Acres
Organically Farmed					
In Transition to Organic Farming					
Conventionally Farmed					
Total Farm Size					

14. What was your farm's GROSS FARM INCOME in 2012? *NOTE: We reiterate that ALL SURVEY RESPONSES, INCLUDING FINANCIAL FIGURES, ARE STRICTLY CONFIDENTIAL! (Please select one response.)*

○ No income or loss
○ Less than $5,000
○ $5,000 to $14,999
○ $15,000 to $29,999
○ $30,000 to $49,999
○ $50,000 to $74,999
○ $75,000 to $99,999
○ $100,000 to $149,999
○ $150,000 to $199,999
○ $200,000 to $249,999
○ $250,000 to $299,999
○ $300,000 to $349,999
○ $350,000 to $399,999
○ $400,000 to $449,999
○ $450,000 to $499,999
○ $500,000 to $999,999
○ $1.0 million to $1.9 million
○ $2.0 million to $2.9 million
○ $3.0 million to $3.9 million
○ $4.0 million to $4.9 million
○ $5.0 million to $9.9 million
○ $10.0 million to $19.9 million
○ $20 million or more

15. What is the value of your farm's TOTAL ASSETS in 2012?

○ Less than $1,000
○ $1,000 to $4,999
○ $5,000 to $14,999
○ $15,000 to $29,999
○ $30,000 to $49,999
○ $50,000 to $74,999
○ $75,000 to $99,999
○ $100,000 to $149,999
○ $350,000 to $399,999
○ $400,000 to $449,999
○ $450,000 to $499,999
○ $500,000 to $999,999
○ $1.0 million to $1.9 million
○ $2.0 million to $2.9 million
○ $3.0 million to $3.9 million
○ $4.0 million to $4.9 million

○ $150,000 to $199,999
○ $200,000 to $249,999
○ $250,000 to $299,999
○ $300,000 to $349,999
○ $5.0 million to $9.9 million
○ $10.0 million to $19.9 million
○ $20 million or more

16. How many acres did your farm produce in the following commodity categories in 2012?

Farm Commodity/ Enterprise	Organically Farmed	In Transition to Organic Farming	Conventionally Farmed	Total Acres
Vegetable crops (including melons)				
Herb crops				
Nursery, floriculture and/or greenhouse crops				
Tree or vine fruit and/or nut crops				
Grains, alfalfa, mixed hay and/or field crops				
Pasture, grazed land, livestock yards and facilities				
Fallow or idle (acres not in production at all in 2006)				
Others (please fill in) _____ _____				

FINANCING

17. How do you usually finance the requirements of your operations? Please provide the AVERAGE percentage of funding acquired from these sources over the past 5 years. If your farm has been in operation in less than five years, please put the average percentage for the years in operation.

Financing Need	Loans (Percent of Total Funding)					Equity (% of Total)		Others (% of Total)	Total
	Banks	Farm Credit	Farm Service Agency	Input Suppliers/ Dealers	Others (Friends, Relatives, etc.)	Retained Earnings from the Business	Personal Funds – Additional Investments	Please specify: _____ _____	
Working/Operating Capital									
Machineries									
Land									
Total									

18. What is the average amount of the loan(s) you have received from your lenders and how many times have you received loans from these lenders? Also please indicate how many times have you applied for a loan from each lender and how many times have your application been approved (please indicate in parentheses – for example, 5(2) would indicate 5 applications with 2 of those 5 approved).

Financing Need	Average Loan Amount ($)					Number of Applications Previously Filed (Number of Times Approved)				
	Banks	Farm Credit	Farm Service Agency	Input Suppliers/ Dealers	Others (Friends, Relatives, etc.)	Banks	Farm Credit	Farm Service Agency	Input Suppliers/ Dealers	Others (Friends, Relatives, etc.)
Working /Operating Capital										
Machineries										
Land										
Total										

19. What are the average maturity and interest rate of the past loan(s) you have received from your lenders?

Financing Need	Average Maturity (Approved No. of Years)					Average Interest Rate				
	Banks	Farm Credit	Farm Service Agency	Input Suppliers/ Dealers	Others (Friends, Relatives, etc.)	Banks	Farm Credit	Farm Service Agency	Input Suppliers/ Dealers	Others (Friends, Relatives, etc.)
Working/Operating Capital										
Machineries										
Land										
Total										

20. Are you aware that the U.S. Department of Agriculture has established a microloan program for farmers earlier this year? O Yes O No **If Yes, please proceed to Question # 21. If No, please proceed to Question #22.**

21. Please rank the following aspects of the new program in terms of their order of importance or usefulness to you (with 1 being the most important/useful and 5 being the least important/useful):

	PROGRAM FEATURE	RANK
a.	Loan amounts of $35,000 and below allowed	_____
b.	Reduced paperwork in loan processing	_____
c.	Financing of operating capital, minor farm improvements, and farm supplies	_____
d.	Low interest rates	_____
e.	Credit score sufficient to establish history	_____

22. Do you have plans of availing of a microloan from the USDA? If so, please provide details of your plan(s).

Financing Need	Amount	Desired Loan Term (No. of Years)
Initial start-up expenses		
Operating expenses (eg. seed, fertilizer, utilities, land rents, etc.)		

Marketing and distribution expenses		
Family living expenses		
Purchase of livestock, delivery vehicle, and equipment		
Minor farm improvements		
Irrigation		
Others: Please specify _____		

APPENDIX B:

AGRICULTURAL LENDERS' SURVEY ON
ORGANIC FARMS' CREDIT ACCESS AND RISK ASSESSMENT

I. Structural Characteristics

1. What type of agricultural lender is your institution?

   a. Commercial Bank
   b. Farm Credit Association
   c. Farm Service Agency
   d. Others: please specify _____

2. During the last fiscal/calendar year, what was the estimated size (total assets) of your institution?

   a. Less than $100 million
   b. $100 million to $200 million
   c. $201 million to $500 million
   d. $501 million to $1 billion
   e. $1 billion to $2 billion
   f. $2 billion to $5 billion
   g. $5 billion to $10 billion
   h. Over $10 billion

3. How long has your institution been in the lending business?

   a. Less than 5 years
   b. 5 to 10 years
   c. 10 to 15 years
   d. 15 to 20 years
   e. More than 20 years

4. How much did you lend to agricultural or farm borrowers (percent of total loans)?

   a. Less than 10%
   b. 10% to 15%
   c. 16% to 20%
   d. 21% to 25%
   e. 26% to 30%
   f. 31% to 35%
   g. 36% to 40%
   h. 41% to 45%
   i. 46% to 50%
   j. Over 50%

II. Organic Farms' Credit Access

1. On the average, how much did you lend to organic farm borrowers during the past several years? (Percent of agricultural loans provided)

    a. Less than 1%
    b. 1% to 5%
    c. 6% to 10%
    d. 11% to 15%
    e. 16% to 20%
    f. 21% to 25%
    g. 25% to 50%
    h. More than 50%

2. On the average, by how much did the number of your organic farm borrowers grow during the last two years?

    a. No growth
    b. Less than 10%
    c. 11% to 25%
    d. Greater than 25%

3. What is the average amount of real estate and non-real estate loans requested by organic farm borrowers during the past year?

Average Loan Amount	Real Estate Loans	Non-Real Estate Loans
Less Than $10,000		
$10,000 to $50,000		
$50,000 to $100,000		
$100,000 to $200,000		
$200,000 to $500,000		
$500,000 to $1 million		
Over $1 million		

4. What is the average maturity of real estate and non-real estate loans requested by (and funded for) organic farm borrowers during the past year?

Average Loan Term	Real Estate Loans	Non-Real Estate Loans
Less Than 1 Year		
1 to 2 Years		
3 to 5 Years		
6 to 10 Years		
11 to 15 Years		
16 to 20 Years		
More Than 20 Years		

5. How likely would certain farm borrowers obtain a loan from your institution vis-à-vis other types of farm borrowers of the same credit risk and loan request?

Likelihood	Uncertified Organic Farms (relative to Certified Organic Farms)	Uncertified Organic Farms (relative to Conventional Farms)*	Certified Organic Farms (relative to Conventional Farms)*
Unlikely (0% chance)			
Less Likely (25% chance)			
Likely (50% chance)			
More Likely (75% chance)			
Absolutely (>75% chance)			

Note: * Conventional farms are those that use traditional planting methods involving chemicals and synthetic materials for fertilization, pest and herb control, and other production activities.

6. What is your institution's general perception of organic farm borrowers compared to conventional farm borrowers? *Please choose all that apply and ranking your responses as 1 (most prevalent idea), 2 (2nd most prevalent idea), 3 (3rd most) and so on and so forth.*

_____ Hobby or lifestyle farmers
_____ Significantly smaller operations than conventional farms
_____ Health conscious farmers
_____ Environmentally conscious farmers
_____ Have too small loan requests (microfinance)
_____ Fussy farmers – making big deal of trivial stuff
_____ Sustainable farm businesses
_____ Stagnant operations with very limited expansion plans
_____ Less viable farm businesses
_____ Less optimal business decisions
_____ Others (please specify) _____

III. Organic Farms' Credit Risk Assessment

1. Do you use different credit scoring (or credit risk assessment) models for different types of borrowers?

Differences in Credit Risk Assessment Models	Small versus Large Borrowers	Short- versus Long-Term Loans	Organic versus Conventional Farms
Yes			
No			

2. How much weight (in percent) would the following financial variables and credit risk factors have in evaluating loan applications from conventional farms?

Credit Risk Factor	Borrower Size		Loan Type	
	Small	Large	Short Term	Long Term
Liquidity				
Solvency				
Profitability				
Repayment Capacity				
Financial Efficiency				
Product Diversification				
Collateral Coverage Ratio				
Credit Score (FICO, Beacon, etc.)				
Others: Please specify				

3. How much weight (in percent) would the following financial variables and credit risk factors have in evaluating loan applications from organic farms?

Credit Risk Factor	Borrower Size		Loan Type	
	Small	Large	Short Term	Long Term
Liquidity				
Solvency				
Profitability				
Repayment Capacity				
Financial Efficiency				
Product Diversification				
Collateral Coverage Ratio				
Credit Score (FICO, Beacon, etc.)				
Others: Please specify				

4. Organic farms are highly diversified operations (producing a wider array of crops and farm products) than conventional farms. Does diversification affect their credit risk rating and the usual commodity insurance requirement tied up to a loan transaction?

Affecting Lender's Decisions	Credit Risk Rating	Commodity Insurance Requirement
Yes, significantly		
Yes, to some extent		
Yes, slightly		
Not at all		

5. Organic farms spend more on intangible assets or investments than conventional farms. For example, their farmlands have richer soils because of soil enhancement inputs applied over quite a period of time. How do these intangibles affect the following?

Affecting Lender's Decisions	Farmland Appraisal for Loan Collateralization	Calculation of Equity-Asset Ratio and other related ratios
Yes, significantly		
Yes, to some extent		
Yes, slightly		
Not at all		