

**EFFECT OF CREDIT ON HOUSEHOLD WELFARE: THE CASE OF
“VILLAGE BANK” MODEL IN BOMET DISTRICT, KENYA**

JACKSON KIPNGETICH LANGAT

**A Thesis submitted to Graduate School in partial fulfillment for the requirements of the
Master of Science Degree in Agricultural and Applied Economics of Egerton University**

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DECLARATION AND RECOMMENDATION

DECLARATION

This thesis is my original work and has not been presented for an award of a degree, diploma or certificate in this or any other University.

Jackson Kipng'etich Langat

Signature:

Date:

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This thesis is submitted with our approval as University Supervisors

Signature:

Date:

DR. B.K. MUTAI

Department of Agricultural Economics

Signature:

Date:

DR.E.A. Birachi

Department of Agricultural Economics

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DEDICATION

I dedicate this thesis to my wife Ann, daughters Joy and Jacinta for their moral support and kind understanding when my studies demanded that I stay far away from them.

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ABSTRACT

In recent years, governmental and nongovernmental organizations in many low-income countries have introduced credit programs targeted to the poor. Many of these programs specifically target the poor on the premise that they are more likely to be credit constrained and have restricted access to the wage labour market. Though participation is by choice, little is known about the role of credit on welfare. The purpose of this study was then to assess the role of credit service on welfare of the microfinance clients. It was also to enable the microfinance institutions assess if they are achieving the intended objectives of their program. The study area was Bomet District and the sample was drawn from Mulot and Silibwet “village banks”. A sample of 125 “village bank” members was selected, out of which 91 had used the credit service and the other 34 had not. Primary data on the selected respondents were collected using a structured interview schedule and secondary data were obtained from the selected “village banks” operating in the study area and relevant government departments in the district. The study used analysis of variance and Heckman’s selection model which corrects for selectivity bias in the sample. This consists of a probit equation (borrowing participation equation) and target equation of household expenditure. The results from the study indicated that farm income, off-farm income, distance to market and household assets influences the probability to participate in “village bank” credit. The household income of credit participants was also higher than that of the non-participants. There was a positive relationship between the amount borrowed and household expenditure. Age of the household head, farm income, distance to market and off-farm income also played a significant role in influencing the wellbeing of a household.

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ABBREVIATIONS AND ACRONYMS

CBS-Central Bureau of Statistics

CRS-Catholic Relief Services

FINCA-Foundation for International Community Assistance

FSA-Financial Services Association

GDP-Gross Domestic Product

GOK-Government of Kenya

KEPIM-Kenya Participatory Impact Monitoring

KIHBS-Kenya Intergraded Household survey

KNBS-Kenya National Bureau of Statistics

Kshs-Kenya Shillings

MFIs-Microfinance Institutions

NGO-Non-Governmental Organization

PRSP-Poverty Reduction Strategy Paper

SMEs-Small and Micro Enterprises

WMS-Welfare Monitoring Survey

CHAPTER ONE

INTRODUCTION

1.1 Overview of “Village banks”

“Village banks” are semi-formal, member-based model that are promoted by international nongovernmental organizations (NGOs), first by Foundation for International Community Assistance (FINCA) and then later – with modifications to the original model with respect to complementary services or greater decision autonomy granted to members - by Freedom from Hunger International (FHI), Catholic Relief Services (CRS), Save the Children, and others (Zeller and Johannes, 2006). The village bank is owned by the members, but ownership is not formally registered. Members can decide on interest rates for internally generated savings deposits and on-lending their internal fund, and usually attracts high interest rates on loans and savings deposits compared to going rates in the commercial banking sector. The banks serve a poorer clientele compared to credit unions and have a high share of female members. Village banks are promoted with the ultimate objective of reducing poverty. Emphasis is therefore on depth of outreach and effect on welfare, and NGOs often provide complementary services such as education or business training to enhance impact.

A village bank is less complex in structure and administration than a credit union, thus enabling less educated members to manage the bank. They are intended to be the building blocks for a network of institutions that offer financial services where no traditional Grameen Bank/FINCA-inspired system will ever reach (Wright *et al*, 2000). They seek to do this through business-oriented membership-based organizations. However, start-up costs for formation and training are believed to be relatively high and are externally financed by the supporting NGO and its donors. The main form of credit guarantee relies on social pressure. One of the major comparative advantages of village banks – especially for rural areas - is that they can eventually operate as autonomous institutions and thus are highly flexible in determining rules of admission and the level of savings and loan interest rates adapted to local socio-economic conditions. The expectation is that the village banks accumulate and retain sufficient equity capital to become self-reliant.

Collateral-free lending, proximity, timely delivery and flexibility in loan transactions are some of the attractive features of informal credit. However, informal finance may not be as

conducive to development as formal finance because: (i) it is expensive; (ii) it is short-term and largely used for consumption; and (iii) it is not generally large enough to spur investment and growth (Khandker and Faruque, 2003). Notwithstanding the limitations of informal finance, many governments have attempted in the past to develop alternative financial institutions to provide credit to farmers and other rural producers. Many such attempts have failed not only in delivering credit to target households but also in promoting a viable credit delivery system. High covariate risk of agricultural production, the asymmetric information, lack of enforcement of loan contracts, government imprudent interference in credit markets, and rent-seeking as a result of credit rationing are some of the factors alleged to be responsible for the poor performance of the government-directed credit schemes in many countries (Khandker and Faruque, 2003). With the dismal picture of state-owned rural finance organizations, non-governmental micro-finance institutions have been growing to meet the credit needs of small producers in many countries. Many of these organizations are subsidized not for absorbing high loan default costs but for covering high transaction costs associated with group-based lending and other social intermediation costs (Khandker and Faruque, 2003).

“Village banks” otherwise known as Financial Service Associations (FSAs) are a model that K-Rep Development Agency (KDA) has used to reach further into rural areas (Johnson *et al*, 2005). Members buy shares and the capital is used for on-lending. When the membership reaches at least 300 members, an FSA (“village bank”) elects a board of directors, employs a locally recruited manager and cashier, and commences lending. K-Rep Development Agency is promoting the model in Bomet District and currently there are six (6) “village banks” operating in the district.

1.2 Background of the Study

Many scholars have argued that micro enterprise development can be an effective means of assisting the poor in developing countries (Zeller and Sharma, 2000). Micro enterprises have the potential to create employment especially given that, in Africa, the agricultural sector has a limited ability to absorb new job seekers (Pretes, 2002). In the World Bank’s “World Business Environment Survey” (WEBS) of more than 10,000 firms in 80 countries, Small and Micro Enterprises (SMEs) worldwide on average named financial constraints as the second most severe obstacle to their growth, while large firms on average placed finance only fourth. Firms in

Central and Eastern Europe, the former Soviet Union, and Africa were most likely to cite finance as their most severe constraint, followed by those in South Asia and Latin America. World Bank researchers Beck, Demirguc-Kunt, and Maksimovic (2003) concur that SMEs are more financially constrained than larger firms. There have been some striking experiments mostly from outside Africa and have allegedly produced impressive results; usually measured in terms of outreach and repayment rates, and have been driven largely by the perceived demand for credit (Buckley, 1997).

Food insecurity had and also continued to be a major development problem across the globe, undermining people's health, productivity and often their very survival (Smith, 2007). Efforts to overcome the development challenges posed by food insecurity necessarily begin with accurate measurement of key indicators at the household level. This is due to the fact that identification of household behaviors relating to food access serves as a critical building block for the development of policies and programs for helping vulnerable populations, the effective targeting of assistance, and evaluation of impact (ibid).

The biggest challenge facing Kenya today is high levels of poverty among its citizens. Poverty has been persistent in Kenya despite government's effort to combat it through national development programs. This is reflected in the rising number of people without food, and with inadequate access to other basic necessities (Mango *et al.*, 2009). Kenya's current Poverty Reduction Strategy Paper (PRSP) perceives poverty as inadequacy of incomes and deprivation of basic needs and rights, and lack of access to productive assets, as well as social infrastructure and markets. The minimum level of consumption at which basic needs are assumed as satisfied is known as the poverty line (Mango *et al.*, 2009). Most of the poor live in the rural areas and include subsistence farmers and pastoralists (Mango *et al.*, 2009). The majority of Kenyans however live in rural areas with agriculture as their main occupation (Owuor *et al.*, 2001). Poverty is still largely a rural phenomenon and prevalence of absolute poverty in rural Kenya is 49.1%, while the ratio for male-headed households at 48.8% was slightly lower than for female-headed households at 50.0% (GOK, 2007).

Table 1.1: Summary of Poverty Measures

Region	Poverty Measure	WMSIII-1997	KIHBS-2005/2006
		Households (%)	Households (%)
Rural	Food	43.4	38.5
	Absolute	46.4	42.0
Urban	Food	32.4	31.2
	Absolute	43.5	27.4
National	Food	41.6	36.7
	Absolute	45.8	38.3

Source: GOK, 2007.

In the past, only pockets of privileged cash-crop producers had access to formal financing and women are typically excluded from formal finance regardless of their activities (Mknelly and Kevane, 2002). Extension of financial services into remote rural areas has been difficult and there are few examples of successful attempts to do so (Wright *et al.*, 2000). It is in this context that Financial Services Associations (FSAs) otherwise known as “village banks” are intended to be building blocks for a network of institutions that offer financial services where no traditional Grameen Bank inspired system will ever reach.

Kenya maintains a mixed economy in which the government is actively involved in development planning motivated by the need to optimize the use of the country’s limited resources to meet the national policy priorities. Poverty reduction has been a major goal of the government of Kenya since independence (GOK, 2007). The fundamental policy priorities which have been identified since independence are poverty, ignorance and poor health. Rural financial services help the poor, low-income households increase their incomes, and built the assets that allow them to mitigate risk, smoothen consumption, plan for future, increase food consumption, invest in education, and other lifecycle events (Kibaara, 2006). Lack of adequate access to credit have had significant negative consequences for various aggregate and household-level outcomes, including technology adoption, agricultural productivity, food security, nutrition, health, and overall household welfare (Diagne and Zeller, 2001). Studies and evaluation spend less effort on measuring impact on borrowers and more attention to analyzing the performance of the financial systems (Meyer and Larson, 1996). The second KEPIM (Kenya Participatory Impact Monitoring) report examines the perspectives of the poor on credit and extension services in the

six districts of Kisumu, Butere/Mumias, Bomet, Murang'a, Mwingi and Malindi. The study, which was carried out during October-December 2002, revealed that access to credit and extension services is limited. The majorities are excluded from the formal financial sector due to lack of collateral and bankable proposals, and thus mainly rely on merry-go-rounds. The provision of government-based extension services is also fraught with delays due to reduced workforce of extension workers and lack of financial resources.

1.3 Statement of the Problem

In Kenya, the proportion of rural poor is 49% (as per adult equivalent) (GOK, 2007). Lack of access to credit has had a negative impact on education, employment opportunities and health services, hence perpetuating the vicious cycle of poverty and adverse vulnerability. Many organizations are thus now using microfinance strategies as a way of providing affordable financial services targeting the vulnerable in a bid to improve on their welfare. The “village bank” model is one of such strategies. Despite concerted efforts by various microfinance organizations to mitigate problems facing the rural poor in Bomet District, the plight of the poor still remain unabated. However, since the implementation of the “village bank” strategy began in the district little is known about the effect of credit on welfare of the beneficiaries in question and the area at large.

1.4 Objectives

The overall objective was to evaluate the role of “village bank” credit service in influencing the household welfare in Bomet District.

The specific objectives were to:

- i. Establish the difference of incomes of the household who are participants and non-participants in “village bank” credit in Bomet District.
- ii. Determine the effect of the “village bank” credit on household expenditure in Bomet District.

1.5 Hypotheses

- i. The income of the households that accessed “village bank” credit does not differ from the income of those that have not accessed.

- ii. The “village bank” credit accessed does not lead to increase in household expenditure (i.e. education, food consumption and housing).

1.6 Justification

The first Millennium Development Goal (MDG) targets to reduce the proportion of people whose income is less than 1\$ a day and who suffer by hunger by halve by the year 2015 (UN, 2006). Also in June 2003, Kenya Government launched an Economic Recovery Strategy for Wealth Creation and Employment in order to halt and reverse further economic degeneration and poverty (GOK, 2004). Hence, credit programs given their mission to reach out to the poor by enabling them access financial services have attracted large sums of funds. Because government, donor and charitable institutions/foundations subsidize micro credit programs, impact assessment of their products form a basis for asking additional funds. The providers of funds however have wanted to know whether microfinance programs have impacted positively on participants, financial institutions and economies. Understanding welfare status changes within the household and the households’ basis of making rational decisions helps the policy makers in knowing who the poor are, and what makes them poor.

Micro credit contributes to mitigating a number of factors that contribute to vulnerability whereas the effect on income-welfare is a function of borrowing beyond a certain loan threshold and to a certain extent contingent on how poor the household is to start with. Smoothing of consumption, building assets, providing emergency assistance during natural disaster and contributing to female empowerment are some of the ways that micro credit reduces vulnerability. Given the cost effective nature of the program, it is imperative to assess the effect of their services to guide on expansion of their operation. It is also imperative to know the degree of correlation that exists between the services offered by the micro-credit programs (savings, credit and other services), and the change in the quality of life of their members. The rationale behind establishing the role of credit on welfare is the expectation that the findings will be used to bring about improvements in policies, programs, and thereby contribute to economic and social betterment. This knowledge will strengthen intervention strategies for credit programs and identify the main reasons for the dropout of members from the credit programs. It will help the credit programs to learn the effectiveness of their products and services and thus forms a basis to improve them in order to maximize impact on social and economic development on the

members. There is thus a justified need for an evaluation study of the effect of access to credit as a way of getting feedback from the borrowers. In addition, it will assist policy makers in identifying the right financial policies for rural areas, thereby improving the welfare of the rural poor. This will be an important step in policy formulations to aid in tackling the challenges of poverty by better directing and targeting credit services. With the aforementioned issues therefore, this study was not only relevant but also necessary.

1.7 Scope and Limitations

The parameters of interest are household income and expenditure as they influence and determine the welfare of households. The assets considered include only the movable assets which had a market value for example electronics and furniture. The expenditure expenses pertained to the recurrent expenses for consumables within the household.

The limitation of the study was lack of time series data, limited resources being time, finances, and accessibility of the clients given their locations and road infrastructure status in the rural areas in Bomet District.

1.8 Definition of Terms

Household: A group of people bound together by ties, kinship, or joint financial decision; who live together under single roof or compound, answerable to one person as the head and share the same eating arrangement.

Poverty: It includes lack of access to productive assets, lack of access to social services, dependency and inability to participate and lack of access to basic infrastructure.

Village Bank: This is a user-owned, user-financed and user-managed microfinance model with members having symmetrical information on each other's credit worthiness.

Food security: Access by all people at all times to enough food for an active, healthy life (Bickel *et al*, 2000).

Credit: A contractual agreement in which a borrower receives something of value now and agrees to repay the lender at some later date. In this study valuable item in transaction is money either in cash or cheque.

Vulnerability: Vulnerability of a person is conceived as the prospect a person has now of being poor in the future, i.e. the prospect of becoming poor if currently not poor, or the prospect of continuing to be poor if currently poor.

CHAPTER TWO

LITERATURE REVIEW

2.1.1 Access to Credit

Studies on impact of access to credit on credit service beneficiaries are extensive. Coperstake *et al.*, (2001) on assessing the impact of micro credit in Zambia had three objectives. The first was to identify the individual characteristics of the loan recipients such as gender, relative poverty and age of business; and to estimate the program's depth of outreach. The second was to identify and estimate the direct impact of loans on borrowers, their businesses and their households. The third objective was to identify indirect effects of the programme. The study drew upon three sources of data: a questionnaire-based sample survey of program participants, secondary survey data drawn from the wider population of businesses and households and a set of qualitative focus group discussions and key informant interviews. The randomly selected sample for the study was from three groups. Group 1 comprised borrowers who obtained their first loan between one and two years before the reference month; group 2 obtained their first loan between one year and eight months before, and group 3 had yet to receive a loan by the end of the reference month. The last group served as a control group, since it comprised people who had already been screened by the program as eligible for loans using the same criteria as the borrowing groups.

The findings of the study were that those who graduated from their first to a second loan on average experienced significantly higher growth in their profits and household income, as compared with otherwise similar business operators. These borrowers also diversified their business activities more rapidly. However, some borrowers became worse off, particularly among the 50 per cent or so who left the program after receiving only one loan. Qualitative enquiry suggests the trend to be due to rigid group enforcement of fixed loan repayment schedules without regard to income fluctuations arising from ill health, theft, job loss, and fluctuating demand.

Diagne and Zeller (2001) study analyzes the determinants of household access to and participation in informal and formal credit markets in Malawi and much of the analysis was devoted to measuring the effect of access to formal credit on the welfare of rural households. On considering the patterns of access to formal and informal credit, it was established that poor

households whose assets consists mostly of land and livestock but who wish to diversify into nonfarm income-generating activities may be constrained by a lack of capital, as both sectors of the market do not grant them access to credit (ibid). It thus follow that the benefits of access to credit for smallholder farmers depend on a range of agro ecological and socioeconomic factors, some of which are time-variant and subject to shocks such as drought. The full potential of credit access in increasing the welfare of the poor can only be realized if coupled with adequate investments in hard and soft infrastructure as well as investment in human capital (ibid).

Sharma (2000) with an objective to examine economic and social impacts of MFIs with an aim to evaluate the relative weight to attach to credit programs vis-à-vis other poverty alleviation programs to help them answer the question of whether shifting resources away from other poverty programs toward credit-based programs is a good social policy. How credit programs affect broader social goals such as adoption of agricultural technology, income generation, and attainment of food security determine how much public resource is to be allocated to them given the competing ends for the same resources (ibid).

The 2006 national survey on financial access in Kenya by Steadman Group (2007) had the objective to:

- i) Measure access to and demand for financial services and
- ii) Provide a benchmark measure of effective access to financial services.

On usage of credit service, the report established 30.7% of Kenyans have a formal or informal credit/loan service while 8.1% have used a credit service in the past. The categories however exclude those who only borrow from family friends.

2.1.2 Credit Impact Assessment Methodologies

In the methodological approaches to doing impact assessment, Brau and Woller (2004) identified three broad options namely: the scientific method with principally control-group surveys, the humanities approach with ethnography and other qualitative methods, and participatory learning and action (participatory qualitative tools that include, for example, participatory rural appraisal, rapid rural appraisal and farming systems research). He concludes that an optimal impact assessment mechanism should be a mix of the different methods for a fit between assessments objectives, program context, human resources, and timing.

Kay (2003) on a study to address the challenging issue of whether self-help micro credit programmes are tools for empowering poor women underscored that the measurement of impact of such programs should be broader. The yardstick for measuring the performance of these schemes should not be based on economic variables, such as loan repayment rates alone (ibid). The author examined that while financial viability is important for sustainability, indicators should also include the contribution to meeting basic needs for household subsistence, reducing vulnerability to risks and enhancing social capital and empowering women.

2.1.3 Outreach of Microfinance Programmes

The ability of microfinance to create significant impact on poverty is constrained by the failure of many organizations to achieve the depth of outreach hoped for (Mushtaque *et al.*, 2004). Therefore, increasing the capacity of MFIs to work effectively with very poor and excluded people and achieve a positive impact on them forms an important focus.

Johnson *et al.*, (2005) presented a spectrum of centralized and decentralized models with the objective to map the frontiers of microfinance in Kenya based on poverty incidence and population density. The paper argues that decentralized model which involve greater user-ownership and management have the potential to provide services to poorer people and in rural areas due to inherently lower cost structures and key characteristics of their services, despite many challenges to their long-term effectiveness and sustainability.

Johnson (2004) indicated that one of the less-discussed objectives of donor support to the entry of MFIs into financial markets has also been to demonstrate to other players in the market how financial services can be provided profitably to poor clients. In her study examining on the claim that MFIs enhance competition in the financial market, the evidence suggests that MFIs have in fact been small players in the overall financial market; while they have demonstrated the existence of a small business market for loans, they have not significantly developed products to appeal to a wider clientele.

Mknelly and Kevane (2002) used the experience of a micro credit program in Burkina Faso to draw to aspects of performance, design, and implementation of micro credit projects with the hope to extract useful lessons for other credit institutions that use group-lending methodologies. In general, the study established that services offered must be flexible to better meet client needs and maintain retention while keeping costs low. Standardized loans, self-

managed groups and highly decentralized delivery systems are very attractive in the start-up phase (ibid). However as the financial institution matures and borrowers become more sophisticated, new mechanisms must be developed that respond to the differentiated borrowing and savings products that clients need to improve their livelihood security, smooth consumption and cope with shocks and life-cycle changes (ibid).

2.1.4 Role of Credit on Poverty Alleviation

Khandker in Morduch and Haley (2002) underscores that if benefits of a credit program are limited to consumption, it appears to be more effective than other targeted poverty alleviation programs. It also seemed to be more cost-effective than non-targeted programs, such as rural-based formal finance or infrastructure development projects. For all programs considered in the study, credit program seems to incur the lowest cost for the same dollar worth of household consumption.

Kevin in Morduch and Haley (2002) alludes that income-poverty reduction was a function of two factors: the rate of growth and the distribution of income. Education generates important benefits in both areas, as it is positively associated with the rising productivity and innovation upon which economic growth depends.

Chen *et al.*, (2006) indicated that few studies focus on the relationship between financial development and income distribution. Existing studies explored the association between economic growth, financial development and income distribution, with income distribution treated as exogenous. Banerjee and Newman in Chen *et al.*, (2006) maintain that the initial income gap would not be reduced unless financial markets (especially the credit market) were well developed. Clark, Xu and Zou in Chen *et al.*, (2006) using cross-country data, explored how financial development influenced income distribution. They all found that financial development robustly reduced the level of income inequality.

Pretes (2002) argued that “microequity” finance, in the form of small business startup grants, might be preferable to micro credit programs that provide small loans. The study established that in most business ventures, a variety of financial services were needed to cover different stages and needs of the business at any given time. It indicated that in developing countries, loans (especially for very poor residents) might not be the most appropriate source of financing for new or innovative micro enterprises. Loans may instead be suitable in cases where

a micro enterprise was already profitable and can afford the risk of a loan for business expansion. It thus concluded that equity grants fill a real need in assisting micro enterprise startups, especially in new and innovative programs where risk was greater; and grant based programs also had the best chance of reaching the very poor.

Zeller and Sharma (2000) research on the demand for financial services pointed out that product innovation that responds to the food security motives of rural households led to higher outreach and higher impact on the poor. However, policy also needed to recognize that while the poor were creditworthy and able to save and insure, financial institution may still fail to cover their costs, even with improved products. Financially sustainable institutions could not serve many of the poor, particularly in remote areas having high transaction costs, (ibid). The primary role of policy should therefore be to foster institutional innovation such as Financial Services Associations (FSAs) also known as “Village banks”.

Diagne (2000) study on the practice and performance of joint liability group lending in Malawi provides evidence on the extent to which peer selection, peer monitoring, and peer pressure are taking place in the credit groups. Based on the study findings, it is concluded that the prominence given to the joint liability in explaining the high repayment rates does not hold up universally. In addition, MFIs targeted to poor people can operate successfully and achieve high loan recovery rates if they develop lending technologies that do not rely on collateral, but instead cultivate borrower’s expectations for higher and continuous access to credit, and establish an effective screening and monitoring system using their field staff. Empirical findings also suggest that joint liability can have a negative impact on loan repayment (ibid).

2.1.5 Food Security

United States department of agriculture (USDA) with a goal of reducing the prevalence of very low food security among low-income households suggested changes in nutritional assistance policies and programs (Nord, 2007). The study suggested that information about the composition, location, employment, education, and other characteristics of households with very low food security may provide important insights to guide these policy changes and improve the food security of economically vulnerable households. Hence achieving the food security objective may depend not only on improving the effectiveness and accessibility of nutrition assistance programs, but also on improving other key household circumstances (ibid).

Jayne et al (1994) indicated that protecting vulnerable groups' access to food often requires access to credit for both food and farm inputs. Poorly-functioning financial markets however generate side effects that reduce future productivity growth, i.e. liquidation of productive assets during droughts, forced labour migration, and malnutrition (ibid).GOK (2007) with an objective to determine the impact of the long rains on the food security indicated that there has been an additional improvement in the food security status in the country after the 2007 long rains. The findings indicated that households continue to recover from the adverse effects of a succession of poor seasons before the 2006 long rains. GOK (2004) established that the communities in arid and semi-arid lands of the country are particularly vulnerable to food insecurity because of the recurring natural disasters of drought, livestock disease, animal and crop pests, and limited access to appropriate technologies, information, credit, and financial services. Demands from farmers fall under different categories such as information, new technology, credit, value addition and marketing. Some of the demands can be provided immediately, while others require research or borrowing of technology from elsewhere or seeking for financial resources in case of demands on credit (ibid).

However despite the enormous literature on credit and its correlates, it was important to establish the effect of user-owned credit program like “village bank” model on the household welfare.

2. 2 Conceptual Framework

This study used utility theory within the agricultural household model (Singh, Square and Straus, 1986) to analyze effects of “village bank” credit on household’s welfare. The framework explains the effect of credit and household specific characteristics on welfare as measured by household assets, income, food security status and expenditure; given the interplay of institutional factors. The assumption is that the household’s ranking of goods to consume can be represented by a utility function of the form

$$\text{Utility}=\text{U}(\text{x}_1, \text{x}_2,\dots, \text{x}_n; \text{other things})\dots\dots\dots\text{Equation 1}$$

Where the x’s refer to the quantities of the goods that might be chosen, “other things” notation is used as a reminder that many aspects of individual welfare are being held constant (Nicholson, 2005). Households’ attempt to maximize their gains and they do this by increasing their purchases of a good until what they gain from an extra unit is just balanced by what they have to

give up to obtain it. In this way, they maximize "utility"—the satisfaction associated with the consumption of goods and services.

The utility the household derives from the various consumption combinations depends on the preferences of its members, which in turn is influenced by a vector of household size such as members' composition and structures.

The maximization of household utility is however subject to cash, time and output constraints (see Equations 2).

$$\text{Max } U(\chi_1, \chi_2, \dots, \chi_n; \text{welfare}) \dots \dots \dots \text{Equation 2}$$

Subject to:

- a) Cash constraint
- b) Time Constraint:
- c) Output Constraint

The cash constraint implies that the household needs cash to purchase goods that it cannot produce. The cash is generated from its marketable surplus. From its surplus income, the household must pay out hired labour and material inputs as well as paying for purchased marketed consumed goods. If the household's surplus income is not adequate to finance production costs, she must depend on external financial services such as transfers and borrowings. Hence, household's income in a single decision-making period is composed of its net farm earnings from production, and income that is "exogenous" to the farm production such as transfers and borrowing. In effect, credit enters the household's utility maximization objective function through the cash constraint.

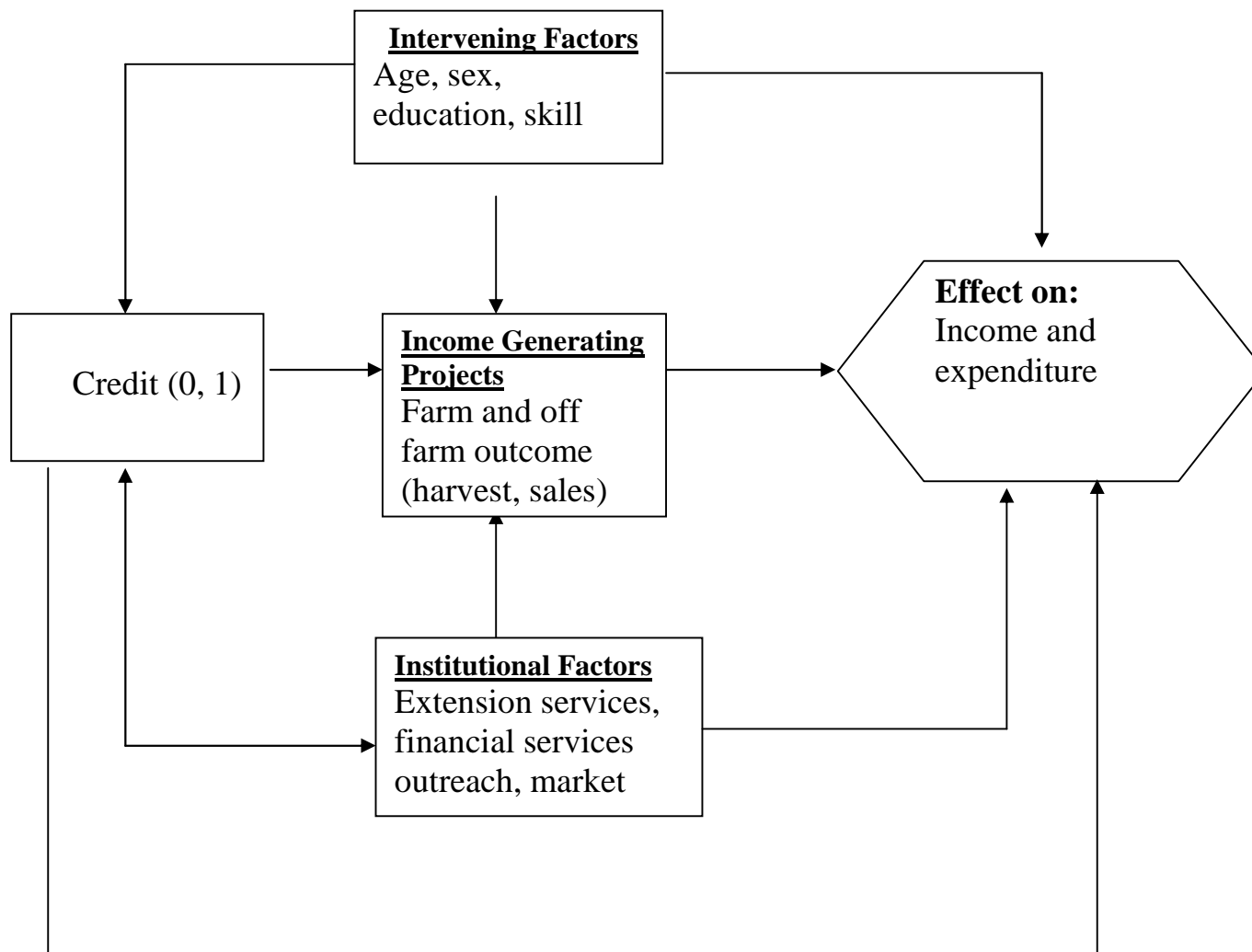


Figure 2. 1: Conceptual Framework

Source: Adapted from Sebstad *et al* (1996)

The household's utility maximization is also subject to time constraint because total income available must be allocated among leisure, farm production, and off-farm employment. In effect, credit enters a time-constrained household indirectly to buy out his leisure through hiring labour.

Production is also subject to a technical constraint and the household production capacity as defined by the amount of available variable and fixed inputs.

But taking a loan is a risk in itself, yet clients are willing to bear this risk. Credit default leads to loss of access to valued financial markets as well as loss of self-esteem, confidence, and social assets. However by the borrowers increasing their contribution to household income, they reduce their households' vulnerability and strengthen their options in dealing with shocks. Maintaining access to credit is integral to many clients' risk management strategy. By making credit available, credit organizations provide clients and their household's ways to protect them against risk and to take advantage of opportunities as they present themselves. Not surprisingly, clients go to great lengths to repay, even when confronted with a crisis or shock. Repayment can lead eventually to new loans and to starting on the road to recovery to restock a micro enterprise, rebuild a house, or pay school fees.

Credit (measured as a dummy or amounts) however leads to a selectivity problem. To correct for the selection bias, a Heckman selection econometric model is used. This model also helps in estimating the effect of "village bank" credit on household's economic performance.

The general model for effect of borrowing or participation on household outcome (Heckman, 1979; Greene, 2003) (with consideration of other factors of household expenditure, assets and food security status) follows next.

$$y_i = \beta_i x_i + \alpha_i c_i + \varepsilon_i \dots\dots\dots \text{Equation 3}$$

Where, y_i is the household outcome (household expenditure, income, assets and food security status), x_i is a vector of exogenous factors and c_i is amount of credit accessed. The estimator α_i measures the effect of the credit, but because credit is a measure of borrowing, it implies that borrowing is endogenous to y_i and exogenous to some variables in x_i . If the variable c_i were only endogenous to y_i and not exogenous to some other x_i factors, then equation (3) would be estimated by Two Stage Least Squares (TSLS), with c_i being instrumented with an appropriate instrumental variable or estimated via treatment model. However, for the case of this study, borrowing was also exogenous to other factors, such as household assets, income etc. Therefore,

equation (3) had to be estimated as a heckman selection model and because of selection problem; a participating function had to precede in the first stage to correct for sample selection problem (Heckman, 1979; Greene, 2003). The model expression is as follows:

$$\left. \begin{aligned} y_i &= \beta_1 x_{1i} + \alpha_i c_i + \varepsilon_{1i} \\ D &= \beta_2 x_{2i} + \varepsilon_{2i} \end{aligned} \right\} \dots\dots\dots \text{Equation 4}$$

Where, y_i are the outcomes for borrowers, x_{1i} are the factors that influence outcome functions for borrowers. D is the dummy variable for participation in borrowing ($D=1$, if borrowed/ participant and $D=0$, otherwise), x_{1i} is a vector of covariates that influence the probability of participating in borrowing. The outcome y_i variables are observed condition on the participation in credit criterion determined by the ‘D’ function, which is estimated via a probit model to yield $\hat{\varepsilon}_{2i}$ estimates. The estimated $\hat{\varepsilon}_{2i}$ were then used to generate Mills ratios which were incorporated in the second stage equation by being regressed on y_i . β_1, β_2 are thus the corresponding vectors of parameters and $\varepsilon_{1i}, \varepsilon_{2i}$ are random disturbance terms.

The estimation of the parameters is accomplished by maximization of the likelihood function using Heckman’s maximum likelihood estimation approach with details presented under model specification in chapter three.

CHAPTER THREE

METHODOLOGY

This chapter presents a brief description of the study site and method of data collection and analysis. The section covers the study area, sample selection, data collection, data analysis and specification of empirical models.

3.1 The Study Area

The study was conducted in Bomet District of Rift Valley Province in Kenya (Figure 3.1 and 3.2). The district lies between 0 degrees 29' and 1 degree 03' south, and 35 degrees 05' and 0 degrees 35' east. It covers an area of 1,416.2 square kilometers. Narok district borders Bomet to the east and southeast, Bureti to the north, Nyamira to the west and TransMara to the southwest. The district is administratively divided into six divisions, namely Bomet Central, Longisa, Sigor, Siongiroi, Mutarakwa, and Ndanai. This study covered more specifically, Bomet central, Longisa and Sigor divisions, which are the main operational areas for the “village bank” program. In all, the study covered two “village banks”, namely Mulot and Silibwet whose clients spread across the district. The climatic condition of the area ranges from semi arid to highland, with a diversified economy of which maize and tea are the main crops and dairy farming being the predominant livestock activity. There are six “village banks” (Mulot, Makimeny, Bingwa, Siongiroi, Ndanai and Silibwet).

By 2002 the population of Bomet district was estimated at 415,091 persons as per Bomet District Development Plan of 2002. The district has a male to female ratio that is estimated at 94.5:100. The district’s population growth rate was also estimated at 2.7%. The overall number of households in the district is estimated at 76,493. By 2002, 21.3% of the population was aged between 15-25 years. The population of primary school going age was estimated at 23.9% while the population of secondary school going age was estimated at 9.8% as per the district development plan of 2002.

KENYA

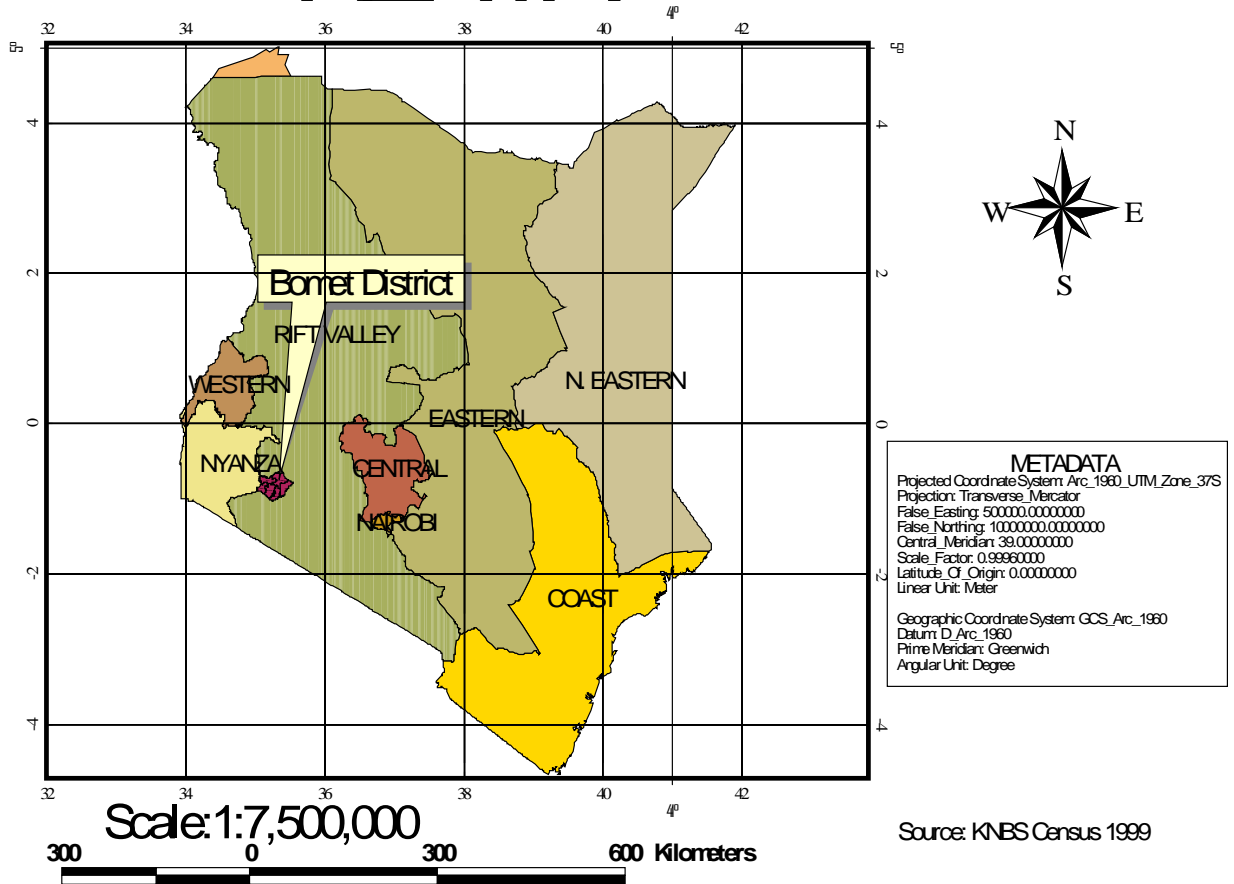


Figure 3.1: Map of Kenya

BOMET

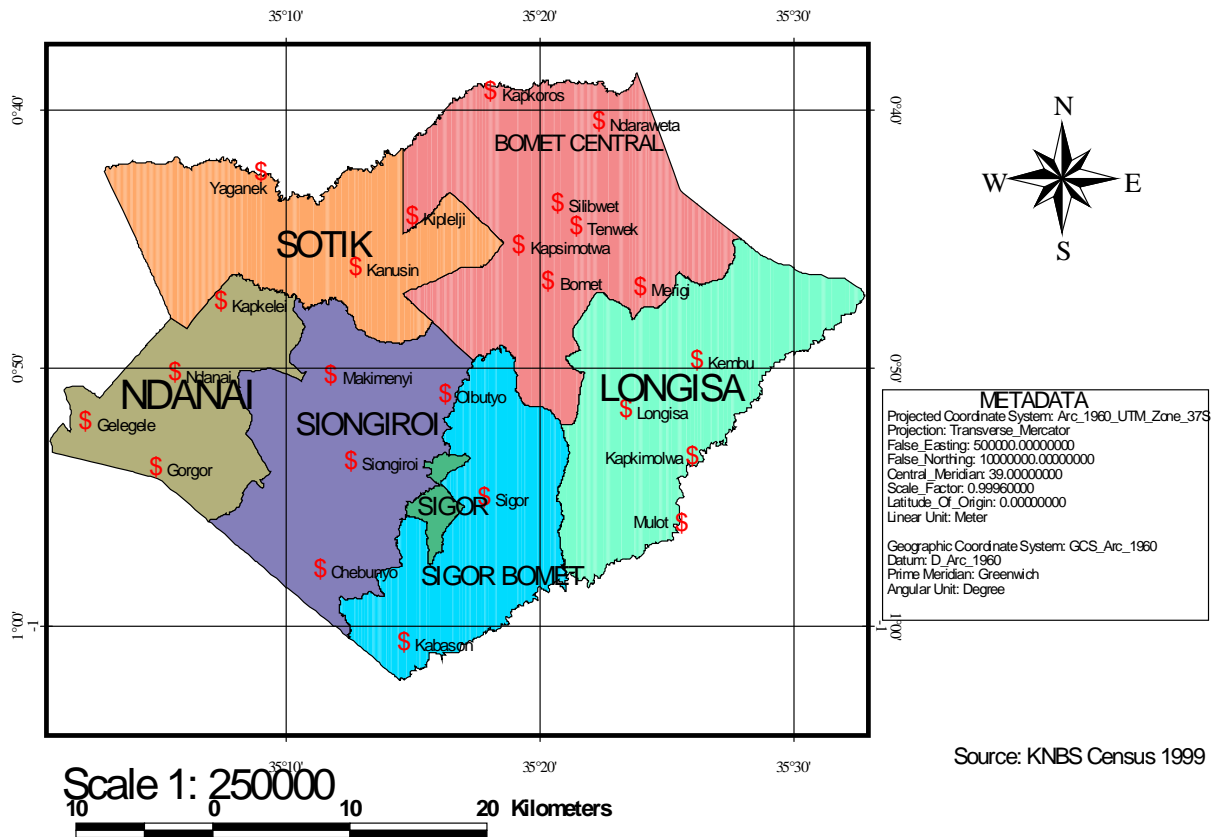


Figure 3. 2: Map of Bomet District

3.2 Sample Selection

Two of the “village banks” purposefully chosen are Mulot and Silibwet both on the reason of the contrasting climatic condition of their catchments area and the period since establishment of the “village bank”. Mulot’s catchment area is mainly semi-arid whereas Silibwet operational area is of highland more potential weather conditions. The members identified as per the division, location, sub-location and village in which they are located is composed of those with credit and those without. Membership in the selected “village banks” were then stratified into those who have used credit service and those who have not. However, only borrowers that were at least one year old in the credit program were considered by selecting those who had taken credit by end of 2006 and those that had not used the credit facility being the control group. A random sample was selected from the membership list as a sampling frame of 8,490 members of which 5,085 were from Silibwet and 3,405 from Mulot. Those with loans were 2,094 and 2092 for Silibwet and Mulot respectively. Sample size made of 150 members was selected proportionately to the strata size but due to non-response 125 members were used in the analysis.

$$n = \frac{K^2 R(1 - R)}{D^2}$$

- o Confidence level (K) (i.e., Z-value)
95% (2-tail) = 1.96
- o Expected proportion in population (R)
(50% most conservative)
- o Acceptable margin of error in percent (D)

Hence

$$n = \frac{(1.96)^2 0.5(1 - 0.5)}{(0.1)^2}$$
$$n = 96$$

Hence the computed sample size is 96 but 150 respondents were interviewed to take care of non-response and incomplete responses.

3.3 Data Collection

Primary data was collected using a structured interview schedule while secondary data was collected from the “village bank” and relevant government departments. Parameters of

interest included social and economic factors, demographic patterns, investment enterprises and decisions, per capita expenditure and respondents' consumption patterns.

3.4 Data Analysis

Descriptive and quantitative methods of analysis were used. The sampled households are categorized based on age; education level, incomes, and gender of its membership were processed. Subsequently data were analyzed using statistical package for social sciences (SPSS) 15, and Stata 9.

3.5 Specification of Empirical Models

3.5.1 Analysis of Variance

To determine the difference in income between borrowers and non-borrowers, a univariate analysis of variance (ANOVA) for independence of means was used to compare the two categories of households. ANOVA is a statistical technique used to analyze the variance to which the response was subject to its various components corresponding to the sources of variation which can be identified. Therefore, to test the equality of the sample means of the two categories of households, an F test at 90% confidence level was used.

3.5.2 Specification of Heckman Selection Model

To achieve the second objective of estimating the effect of credit on household expenditure this study employed two-step selection model, which is accomplished using Heckman's selection correction method.

As pointed in the previous chapter, Heckman selection regression model involves two stages. The first stage involves a probit model to predict the probability of borrowing status. From probit estimation, appropriate inverse mills ratio (IMR) is generated which is included as a parameter estimator in the second stage of the structural equations. This procedure solves the sample selection problem. The effect of borrowing on household assets, expenditure and food security status is then determined by the significance of the *betas*. In a simplified form, the structural equations and participating equation would be:

$$y_i = \delta_i c_i + \beta_i x_{1i} + \mu_i \text{ ----- borrowers structural functionEquation 5.}$$

$$D = \alpha_i x_{2i} + \varepsilon_i \text{ ---the participating functionEquation 6.}$$

By breaking the expressions above, the estimation for participation function in its first stage becomes:

$$Pr(D_i) = \alpha + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \epsilon_i \dots \text{Equation 7.}$$

The left-hand side variable denotes probability of borrowing from “village bank”. The x_{2i} is a vector of factors that influence borrowing or not borrowing. The following factors are considered; *age, education, if the household own land (indicator of traceability of the borrower), farm income, off-farm income, transfer income, assets, distance to market (indicator of location of the borrower), household head farming years, gender if female head, household size, and household owned land size*. In stage two, structural target equations for participants are specified as below:

$$\ln y_i = \delta_i \ln c_i + \sum_i^n \beta_i x_{1i} + \lambda_i IMR_i + \mu_i \dots \text{Equation 8.}$$

Where, y is household expenditure per capita. Total household expenditure is an aggregate of cost of staple food items, non-staple fresh food items, non-fresh food items, non-food items and contributions by the households. The independent variables considered are *credit from “village bank”, credit from the other sources, farm income, off-farm income, transfer income, distance to market (all transformed by taking natural logarithms), household head age, and education, household size and IMR (Inverse mills ratio)*.

The parameters then to be estimated are α , β , and λ whereas μ_i and ϵ_i are the respective error terms. Heckman selection model was used to correct for selection bias of beneficiaries of credit service by the “village bank” model.

3.5.3 Variable Measurement

The variable of interest are described and measured as below (Table 3.1)

Table 3.1 Variable Measurement

Variable	Description	Measure
hhdage	Household head age	Years
hhdgender	Household head gender	1=male, 2=female
hhdeducyrs	Household head education	Years
hhdsize	Household size	Number
housexpcap	Household per capita expenditure	Kenya shillings
hhdfarmown	Household head land ownership	1=yes, 0= no
offfarmypcap	Off-farm per capita income	Number
transan	Transfer income	Kenya shillings
farmycap	Farm per capita income	Kenya shillings
asetpcap	Per capita assets value	Kenya shillings
ownlndsz	Household owned land size	Acre
vbcrdt	Amount of village bank credit	Kenya shillings
otherdt	Amount of credit from other sources	Kenya shillings
Probability to borrow	Participation in village bank credit	1=yes, 0= no
hsexpcap	Household expenditure per capita	Kenya shillings
distmkt	Distance of the tarmac road to the market	Kilometers

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of the Sampled Farmers

The socio-economic characteristics presented under this section include: gender, age, major activity of the household head, and education years of the household head. Other characteristics include: household size, source and amount of income, landholding sizes, food security status, value of assets, amount borrowed, credit sources and household expenditure.

4.1.1 Gender of the Household Heads

Fifteen percent of all those who drew membership from village bank had their households headed by females while 85% were males. In the borrowers' category 84% were male headed households and 16% were female headed households.

The majority (85%) of the sampled households were male headed, while female headed households constituted only 15%, of which 75% of them had benefited from credit facility from the lending institutions (Table 4.1).

Table 4.1: Household Head Gender Distribution According to Participation in Credit Programme

Gender	Borrowers (%)	Non-Borrowers (%)
Male	84	87
Female	16	13
Total	100	100

Source: Survey data.

4.1.2 Age Distribution for the Household Heads

A greater proportion of the household heads in the sample fell between the ages of 19 and 49 years, where males represent 69% whereas 65% are females whereas those of age above 50 years are composed of 30% males and 35% females (Table 4.2).

Table 4.2: Household Head Gender and Age Category Distribution

Age Category(Years)	Male (%)	Female (%)
12-18	1	0
19 – 49	69	65
>=50	30	35
Total	100	100

Source: Survey data

4.1.3 Household Membership Distribution

Most of the household members in the sample were residing in the household (Table 4.3) and of the members of age less than 12 years, 87% were resident members whereas 13% are non resident members.

Table 4. 3: Paired Mean Differences of Household Membership according to Residence

Resident to non-resident	Mean	Std. Dev	Std. Error Mean	t	Sig. (2-tailed)
<12	1.777	2.242	0.197	9.036	0
12 to 18	0.977	1.963	0.172	5.675	0
19 to 49	1.585	3.049	0.267	5.925	0
>50	0.308	1.041	0.091	3.371	0.001

Source: Survey data.

That of 50 years and above age category was composed of 70% and 30% resident and non-resident membership respectively (Table 4.4). Hence movement of resources out of the household in terms of remittances and into the household in terms of transfer income become key variables of importance.

Table 4.4: Household Members Gender Distribution among given Age Categories

Age category(Years)	Resident (%)	Non – Resident (%)
<12	7.30	12.70
12 to 18	74.41	25.59
19 to 49	72.59	27.41
>=50	69.61	30.39

Source: Survey data.

The distribution of household membership according to gender however indicates that females were more than male members in the ‘less than 12’ and ‘19 to 49’ years of age categories with males being more than females for the ‘12 to 18’ years of age category (Table 4.5).

Table 4.5: Paired Mean Differences of Household Membership according to their Gender

Mean number of males to females	Mean	Std. Dev	Std. Error Mean	t	Sig. (2-tailed)
<12	-0.362	1.661	0.146	-2.481	0.014
12 to 18	0.193	1.206	0.106	1.825	0.07
19 to 49	-0.469	1.744	0.153	-3.068	0.003
>50	0.062	0.583	0.051	1.208	0.229

Source: Survey data.

The males in the ‘12 to 18’ years of age category are 25% whereas females were 23%. In the ‘less than 12’ and ‘19 to 49’ years of age categories females were 26% and 39% respectively compared to male counterparts who were 24% and 36% respectively (Table 4.6).

Table 4.6: Number of Household Members by Age Category and Gender

Age category(Years)	Males (%)	Females (%)
<12	23.55	26.14
12 to 18	25.16	22.55
19 to 49	36.13	38.56
>50	15.16	12.75

Source: Survey data.

4.1.4 Sources of Credit Accessed.

Among the 134 members interviewed, 62% had used the credit facility from the “village bank” whereas 5%, 22%, and 11% had used credit facility from semiformal, informal, and formal sources respectively (Table 4.7). Given also the fact that Mulot “village bank” started its operation earlier i.e. 1999 as compared to Silibwet “village bank” in 2003, the borrowing is 66% and 57% for Mulot and Silibwet respectively.

The comparable sources of credit for both “village banks” are of similar trend except for semiformal sources whereby Mulot members get 1% of its credit from the source as compared to Silibwet with 10% of its members getting their loans from it.

Table 4.7: Credit Accessed Sources Distribution as per “Village Bank”

Credit source	Mulot	Silibwet	Total
Village bank (%)	66	57	62
Informal (%)	21	22	22
Semiformal (%)	1	10	5
Formal (%)	12	10	11

Source: Survey data.

In the non-borrowers category, 29% and 28% participated in extension services and farmer trainings respectively whereas the participation of borrowers is 71% and 72% respectively (Table 4.8).

Table 4.8: Participation in Extension Services and Farmer Trainings

Village bank Members	Non-Borrowers (%)	Borrowers (%)
Members who had extension contacts	28.89	71.11
Members who attended farmer training	28.00	72.00

Source: Survey data.

4.2 Empirical Results

4.2.1 Effect of Credit on Household Income

Income has been a common denominator on which welfare status is gauged. Hence analysis of variance was used to analyse the difference of household income for those who have taken credit from the “village bank” and those who have not.

The premise behind the analysis was that credit is usually used as a policy tool in the acquisition and use of purchased productive inputs with expected increase in production and subsequently increased income. Borrowers were therefore, expected to acquire and use more of such inputs and consequently realize higher returns compared to non-borrowers. Factors such as fertilizers, crop and animal protection chemicals, purchased livestock feeds and hired labour can easily be accessible when farmers are less cash constrained. “Village bank” credit non-participants were households who although members of the “village bank” group, had not participated in borrowing.

The income of those that indicated participation in credit was found to be higher than their counterpart who did not participate in the credit programme (Table 4.9).

Table 4.9: Summary Statistics of Household Income (Natural log of total income)

Accessed credit	Mean	Std. Dev.
No	11.871	1.386
Yes	12.299	1.200
Total	12.161	1.274

Source: Survey data

Hence the “village bank” credit participants in Bomet had significantly higher mean income of 12.30 compared to non-participants mean of 11.87, with p-value of 7% (Table 4.10). Hence it can be inferred that participation in credit increases the income through improved frequency of attendance to farming training and increased extension contacts, among other factors.

Table 4.10: Analysis of Variance Household Income as per Participation in the Credit of “Village Bank”

Source	SS	df	MS	F	Prob > F
Between groups	4.349	1	4.349	3.250	0.074
Within groups	171.426	128	1.339		
Total	175.775	129	1.363		

Source: Survey data

The findings conforms to that of Remenyi *et al.*, (2000) that indicated that household incomes of families with access to credit is significantly higher than for comparable households without access to credit.

4.2.2 Effect of Credit on Household Expenditure

Household expenditure, unlike income or assets depicts real purchasing power as other sources of income for expenditure are rarely captured in the income variable. Expenditure here was composed of food and non-food household expenses. These were expenses on consumable items and remittances which were recurrent except for the purchase of assets. The model wald test chi-square of 3,405.13 was significant with a p-value of 1% which indicates that the variables included in the model best specify the functional relationship in the model (Table 4.11). The likelihood ratio test that is significant also with p-value of 1% indicates the correlation of the

error terms in selection and target equation and hence justifies the use of Heckman selection model.

Table 4.11: Summary Statistics of Variables used in the Heckman Selection Model

Variable	N	Mean	Std. Dev.
lnhsexpcap	130	9.754	1.167
lnvberdt	130	6.801	4.824
lnothcrdt	130	3.244	4.640
hhdage	130	42.515	11.939
hhdsiz	130	8.569	5.019
hhdeducyrs	130	9.831	3.979
lnoffarmypcap	130	7.775	4.143
lnfarmypcap	130	8.716	2.226
lndistmkt	130	2.403	1.267
lntransan	130	1.735	3.742
hhdgender	130	1.154	0.362
lnasetpcap	130	9.349	1.051
hhdfarmown	125	1.008	0.089
lnownlndsz	130	1.035	0.860

Source: Survey data

The partial correlations of the exogenous variables in the selection and target equation were insignificant and hence there is no collinearity among the said variables (Table 4.12). If collinearity was high, estimation of regression coefficients though possible would have had large standard errors and thus the population values of the coefficients would not have been estimated precisely (Gujarati, 2004).

Table 4.12: Partial Correlation of Independent Variables used in the Selection and Target Equations

	lnvbrdt	lnotherdt	hhgender	hhage	hheducyrs	hhsize	lndistmkt	lnoffarmypcap	lnfarmypcap	lnasetpcap	hhdfarmown	lnownlndsz	lntransan
lnvbrdt	1												
lnotherdt	-0.0866	1											
hhgender	-0.0084	-0.12	1										
hhage	0.1495	-0.0782	0.1163	1									
hheducyrs	0.1718	-0.0406	-0.1709	-0.1979	1								
hhsize	0.0933	0.2161	-0.1363	0.213	-0.0443	1							
lndistmkt	0.2322	0.1353	0.1492	0.1127	0.06	0.0012	1						
lnoffarmypcap	0.2909	0.1081	0.0098	-0.057	0.3246	0.0325	0.1041	1					
lnfarmypcap	0.1161	-0.0389	0.2335	-0.0021	0.0336	-0.1649	-0.0112	-0.0933	1				
lnasetpcap	0.0008	0.1701	0.1937	0.0287	0.1479	-0.0884	0.2429	0.2632	0.129	1			
hhdfarmown	0.0619	0.0957	0.2189	-0.0233	-0.107	-0.085	0.158	0.0875	0.0061	0.0368	1		
lnownlndsz	0.0728	0.065	0.085	0.4225	-0.021	0.3341	0.1899	-0.0478	0.1109	0.3225	-0.1159	1	
lntransan	0.0273	0.1528	0.1244	0.1564	-0.2089	0.0525	0.2051	0.1402	0.0537	0.241	0.1801	0.2944	1

Source: Survey data

The significant variables in the selection equation are distance to market, farm income, off-farm income and assets per capita (Table 4.13). Their influence on probability of participating in the credit programme is given by their marginal effects.

Table 4.13: Step 1 Selection Probability of Participation Equation

Variable	Coeff	Std.Err	z	p>z
hhdgender	-0.014	0.352	-0.040	0.967
hhdage	0.016	0.012	1.380	0.167
hhdeducyrs	0.028	0.036	0.800	0.426
hhdsiz	0.025	0.030	0.840	0.399
lnfarmmkt	0.287	0.122	2.350	0.019
lnofffarmypcap	0.115	0.034	3.380	0.001
lnfarmypcap	0.182	0.069	2.610	0.009
lnasetpcap	-0.412	0.118	-3.490	0.000
hhdfarmown	-0.115	0.949	-0.120	0.904
lnownlndsz	0.122	0.173	0.700	0.483
lntransan	-0.021	0.037	-0.580	0.565

Source: Survey data

The elasticity of probability to participate in credit with respect to change in off-farm income, distance to market, farm income and assets per capita are 0.315, 0.242, 0.579, and -1.390 respectively (Table 4.14). It follows therefore then that a 10% increase in off-farm income leads to a 3.15% points increase in the probability of borrowing from the “village bank”. It’s worth nothing here that most of the off-farm enterprises that the households are engaged in generate more regular income and are not as prone to vagaries of weather as the farming enterprises. Hence it would be a good basis for assessing the ability of the potential borrower to service loans.

Likewise the farm income was positively and significantly related to the probability of participating in credit. A 10% increase in farm income led to 5.8% points increase in the probability to access credit. It’s always the case in developing economies that most of the enterprises that the rural households engage in are agriculture-based. Hence since most of the enterprises that credit is based on are farming enterprises; the amount of income generated from the said enterprises would be of significance in gauging the ability to repay the loans.

Distance to market indicates the location of the household in relation to a nearby urban market. Hence the more the distance, the further the household is from the said market. It is therefore north worthy that the further the household from the market, the lower the access to the

financial institutions. Hence the positive significant relationship between distance to market and participation in “village bank” credit indicates the importance of the program to rural households in the remote inaccessible areas. A 10% increase therefore of distance to market leads to a 2.4% points increase in the probability to participate in the credit program from the “village bank”.

Household assets as the other significant factor that influences participation in credit had a negative effect. It is not surprising though given that apart from the ability to generate income by the household, the other major factor to consider is character of the borrower and not the assets in the rural settings. Given the informal nature of the “village banks” their capacity to enforce legally their credit contracts in case of default is limited. Also the members with high value of asset base would opt to go to alternative sources of credit given the high interest in the village bank (of up to 4% per month) and the condition of joining a group for one to access loan. Hence a 1% increase in per capita assets will lead to 1.4% points reduction in the probability to participate in the “village bank” credit.

Table 4.14: Elasticities/Marginal Effects of Selection Equation after Heckman

variable	dy/ex(dx)	Std. Err.	z	P>z	X
lnoffarmypcap	0.315	0.094	3.370	0.001	7.664
lnfarmypcap	0.579	0.222	2.610	0.009	8.937
Indistmkt	0.242	0.102	2.380	0.018	2.360
Intransan	-0.014	0.024	-0.570	0.565	1.804
lnasetpcap	-1.380	0.399	-3.460	0.001	9.390
lnownlndsz	0.047	0.067	0.700	0.485	1.082
hhdage	0.006	0.004	1.390	0.164	43.056
hhdsiz	0.009	0.011	0.850	0.397	8.536
hhdeducyrs	0.010	0.013	0.800	0.426	9.784
hhgender	-0.005	0.126	-0.040	0.967	1.144
hhdfarmown	-0.041	0.339	-0.120	0.904	1.008

Source: Survey data

In the second step the model shows results of the effect of credit and household characteristics on per capita expenditure. Per capita household expenditure best capture the welfare of the household as it indicates how much expenditure a household spend per member. The per capita expenditure also captures the distribution of expenditure apart from the amount of it.

The factors that significantly influences the household expenditure and hence welfare were “village bank” credit, credit from the other sources, age of the household head, off-farm income, farm income and distance to market (Table 4.15).

Table 4.15: Step 2 Target Equation with Household Expenditure Per Capita (natural log) as Dependent Variable

	Coeff.	Std. Err.	z	P>z
lnvbcrdt	0.381	0.098	3.900	0.000
lnotherdt	0.058	0.031	1.880	0.060
hhdage	0.030	0.013	2.360	0.018
hhdsiz	-0.021	0.033	-0.620	0.535
hhdeducyrs	0.002	0.040	0.050	0.962
lnofffarmypcap	0.098	0.042	2.340	0.019
lnfarmypcap	0.228	0.079	2.890	0.004
lndistmkt	0.555	0.147	3.780	0.000
lntransan	-0.010	0.040	-0.240	0.813
/athrho	0.883	0.231	3.830	0.000
/lnsigma	0.316	0.093	3.380	0.001
rho	0.708	0.115		
sigma	1.371	0.128		
lambda	0.971	0.223		
N		125		
Wald χ^2 (9)		3405.13		
Prob > χ^2		0.0000		
Log likelihood		-199.5702		

LR test of indep. eqns. (rho = 0): $\chi^2(1) = 10.74$ Prob > $\chi^2 = 0.0010$

Source: Survey data

The elasticities of their effects on per capita household expenditure are 0.325, 0.024, 0.094, 0.225, 0.164 and 0.004 for “village bank” credit, credit from the other sources, off-farm income, farm income, distance to market and household head age (Table 4.16). The amount of credit from the village bank is the accumulative amount of credit accessed from the year 2006 to end of year 2007. The rationale for taking the credit for the selected period is the fact that it takes time for effect of credit to be realised and that taking repeat loans improves on their effect on household welfare. Hence a 10% increase in the credit accessed will lead to a 3.25% increase in the per capita household expenditure. This confirms to the findings of Wright *et al* (2000) that established a positive relationship between credit and nutrition, health and primary schooling.

The findings are further affirmed by Dunn and Elizabeth in Morduch (2002) that established that borrower households spend 20% more on education than non-client households.

The amount of credit accessed from the other sources likewise leads to an increase in the per capita household expenditure. A 10% increase of amount of credit accessed from the other sources leads to a 0.24% increase in the per capita household expenditure. It follows therefore that credit from whichever source has positive influence on the household welfare.

Off-farm enterprise activities as a source income positively influence both participation in credit program and household welfare. It improves the household level of participation on credit and subsequently also increases the welfare status of the household through increased per capita expenditure. Hence a 10% increase in the off-farm income leads to a 1% increase in the per capita household expenditure.

Likewise farm enterprise activities as a source of income significantly influence the household per capita expenditure positively. Farm income also positively influences participation in credit programme and thus a dual positive effect on the household welfare. Hence it has an effect of improving the household borrowing from the village which also have a positive effect on the per capita expenditure of the households. Subsequently, a 10% increase in the farm income leads to a 2.25% increase in the household's per capita expenditure.

As used in the selection equation the distance to market measures the household location effect. The significant positive relationship of distance to market and per capita household expenditure indicates that the further the household is away from the market, the higher the per capita expenditure. Hence a 10% increase in the distance to market leads to a 1.64% increase in the per capita expenditure. This can be explained by the variation in the agriculture potentiality of the said areas. It worth nothing also that the further the household away from the market is the higher the participation in the credit programme and hence improved per capita expenditure.

The age of the household as another significant variable influences the level of per capita household expenditure positively. Household head age and farming years are highly correlated indicating that the older the household head, the better the farming experience. Hence the older the household head, it is presumed that the more the assets they have accumulated and subsequently the higher the incomes they generate. Hence a 10% increase in the age of the household head leads to a 0.4% increase in the per capita household expenditure.

Table 4.16: Elasticities of Target Equation after Heckman

variable	ey/ex(dx)	Std. Err.	z	P>z	X
lnvbrdt	0.325	0.094	3.460	0.001	6.825
lnothcrt	0.024	0.013	1.870	0.062	3.309
lnoffarmypcap	0.094	0.040	2.370	0.018	7.664
lnfarmypcap	0.255	0.083	3.090	0.002	8.937
lndistmkt	0.164	0.043	3.780	0.000	2.360
lntransan	-0.002	0.009	-0.240	0.813	1.804
hhdage	0.004	0.002	2.430	0.015	43.056
hhdsiz	-0.003	0.004	-0.620	0.537	8.536
hhdeducyrs	0.000	0.005	0.050	0.962	9.784

Source: Survey data

This conforms to the findings of Hashemi, and Morshed, in Morduch (2002) that there was an increased caloric intake for households of Grameen bank participants. Further this was in agreement with the findings of Khandker (2001) that microfinance participants do better than the non-participants in per capita income, per capita expenditure and household net worth.

In summary, the assessment of impact of credit on the wide range of household parameters helps to mitigate on the problem of loan fungibility. Hulme and Mosley (1997) indicated that for all studies except for those that focus exclusively on ‘the enterprise’ the concern about fungibility may be irrelevant. Since the study is looking at the household, or the household economic portfolio, fungibility is not a problem but it is rather a vital strategy for the client. The best investment returns may be on ‘consumption’ (in terms of developing or maintaining human capital through school fees and doctors’ bills, or buying food at a time of crisis when the credit terms on ‘in-kind’

Geda *et al.*, (2001) applied a binomial model on the 1994 WMS data to compute probabilities of being extremely poor, moderately poor and non-poor, given the characteristics of the population. The study found that poverty is concentrated in rural areas and in the agricultural sector in particular as being employed in the agricultural sector accounts for a good part of the probability of being poor. Secondly, the educational attainment of the household head was found to be the most important factor that is associated with not being in poverty, and primary education in particular was found to be of paramount importance in reducing extreme poverty in rural areas. Thirdly, female-headed households were more likely to be poor.

It is thus acknowledged that credit services plays a crucial role in improving welfare as acknowledged by Wolday (2003) that the delivery of microfinance services to the rural poor in Ethiopia is one effective instrument to promote food production and food security. Schreiner (2002) established that the microfinance programmes that have proven successful in urban areas are not likely to accept small deposits and give small loans for the poor in rural areas. There is however ample evidence to prove that there is a positive effect of microfinance on welfare (Morduch, 2002). Microfinance is an instrument that, under the right conditions, fits the needs of a broad range of the population—including the poorest—those in the bottom half of people living below the poverty line (ibid). Providing microfinance can give poor people the means to protect their livelihoods against shocks as well as to build up assets and diversity—also a means of protecting—their livelihood activities by investing loan capital (Johnson *et al.*, in Morduch, 2002).

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The use of income and household expenditure was to counter the methodological problems relating to the fungibility of money. The following conclusions are drawn from the study. The study found out that the “village bank” members who have used credit facility are better off than those who have not used the service. This was expressed through higher household expenditure and income which influence positively on improvement of welfare of the households. It was also established that the “village bank” program as an innovation of user-owned financial institution that provide the much needed financial services in areas that are otherwise excluded from the mainstream financial system is playing a crucial role and influencing positively on the various household outcomes. Hence the program occupies a central position in the endeavour to improve the welfare of rural households.

The model fills a gap left by formal banks due to ease of flow of information of client’s credit history. “Village bank” members who have used credit facility also participated more in the use of extension services and attendance to farmer training. Hence participation in the credit facility provides a forum for access to other supplementary services which enable the participants to improve on their farming skills and hence improved production.

Even without having conducted a systematic study on the impact of the delivery of financial services on welfare, we can logically arrive at the following conclusion: If welfare improves as a result of better physical capital endowments and if the delivery of financial services as indicated earlier provides opportunities to increase income and household per capita expenditure, then it is clear that the microfinance interventions contributes to the improvement of welfare.

Nevertheless although economic factors are certainly significant in explaining poverty levels among rural agricultural households, they fail to account for all causes of household poverty, and why some households become and remain poor while others come out of poverty yet they seem to operate within the same economic environment.

5.2 Recommendations

The following recommendations have been made from the study.

- a) The “village bank” program should be expanded and target even the most vulnerable group such as female headed households in order to realize reduced rural poverty, women empowerment and increased asset ownership and food security.
- b) There is a need for “village banks” to liaise with ministry of agriculture, livestock, Sports and social services officials to improve on extension services and farmer training.
- c) Most credit of the village bank is for a short period with an average repayment period of five months and the interest rate charged is high at 4% per month. It is recommended that the government allocates some funds to the loan fund to enable the “village banks” meet their loan demand and make sufficient income which will enable them reduce the interest of their loans and extent their repayment period. The study suggests that policies which help households to smooth income can dramatically reduce poverty.
- d) Further research on the subject matter is recommended to capture other issues which this study has not been able to capture due to its limitations. Of importance is a study to assess the institutional capacity of “village bank” mainly as pertain to the strengths, weaknesses and areas of improvement.

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APPENDIX A: HECKMAN MAXIMUM LIKELIHOOD OUTPUT

Heckman selection model

Number of obs = 125

Censored obs = 40

Uncensored obs = 85

Wald chi2(9) = 3405.13, Prob > chi2 = 0.0000

Log likelihood = -199.5702

	Coef.	Std. Err.	z	P>z
lnhsexpcap				
lnvbcrdt	0.381	0.098	3.900	0.000
lnothcrdt	0.058	0.031	1.880	0.060
hh dage	0.030	0.013	2.360	0.018
hh size	-0.021	0.033	-0.620	0.535
hheducyrs	0.002	0.040	0.050	0.962
lnoffarmypcap	0.098	0.042	2.340	0.019
lnfarmypcap	0.228	0.079	2.890	0.004
ln distmkt	0.555	0.147	3.780	0.000
lntransan	-0.010	0.040	-0.240	0.813
Probability of borrowing equation				
hh dgender	-0.014	0.352	-0.040	0.967
hh dage	0.016	0.012	1.380	0.167
hheducyrs	0.028	0.036	0.800	0.426
hh size	0.025	0.030	0.840	0.399
ln distmkt	0.287	0.122	2.350	0.019
lnoffarmypcap	0.115	0.034	3.380	0.001
lnfarmypcap	0.182	0.069	2.610	0.009
lnasetpcap	-0.412	0.118	-3.490	0.000
hhdfarmown	-0.115	0.949	-0.120	0.904
lnownlndsz	0.122	0.173	0.700	0.483
lntransan	-0.021	0.037	-0.580	0.565
/athrho	0.883	0.231	3.830	0.000
/lnsigma	0.316	0.093	3.380	0.001
rho	0.708	0.115		
sigma	1.371	0.128		
lambda	0.971	0.223		

LR test of indep. eqns. (rho = 0): chi2(1) = 10.74 Prob > chi2 = 0.0010

Source: Survey data

APPENDIX B: MARGINAL EFFECTS AFTER HECKMAN

variable	ey/ex	Std. Err.	z	P>z	X
lnvbrdt	0.325	0.094	3.460	0.001	6.825
lnothcrt	0.024	0.013	1.870	0.062	3.309
lnoffarmypcap	0.094	0.040	2.370	0.018	7.664
lnfarmypcap	0.255	0.083	3.090	0.002	8.937
lndistmkt	0.164	0.043	3.780	0.000	2.360
lntransan	-0.002	0.009	-0.240	0.813	1.804

variable	ey/dx	Std. Err.	z	P>z	X
hhdage	0.004	0.002	2.430	0.015	43.056
hhdsiz	-0.003	0.004	-0.620	0.537	8.536
hheducyrs	0.000	0.005	0.050	0.962	9.784

variable	dy/ex	Std. Err.	z	P>z	X
lnoffarmypcap	0.315	0.094	3.370	0.001	7.664
lnfarmypcap	0.579	0.222	2.610	0.009	8.937
lndistmkt	0.242	0.102	2.380	0.018	2.360
lntransan	-0.014	0.024	-0.570	0.565	1.804
lnasetpcap	-1.380	0.399	-3.460	0.001	9.390
lnownlndsz	0.047	0.067	0.700	0.485	1.082

variable	dy/dx	Std. Err.	z	P>z	X
hhdage	0.006	0.004	1.390	0.164	43.056
hhdsiz	0.009	0.011	0.850	0.397	8.536
hheducyrs	0.010	0.013	0.800	0.426	9.784
hhdgender	-0.005	0.126	-0.040	0.967	1.144
hhdfarmown	-0.041	0.339	-0.120	0.904	1.008

Source: Survey data

APPENDIX C: RESEARCH SURVEY QUESTIONNAIRE

RESEARCH TOPIC: Impact of credit on poverty alleviation and food security: The Case of “Village Bank” model in Bomet District, Kenya

AGRICULTURAL ECONOMICS AND AGRIBUSINESS MANAGEMENT DEPARTMENT

EGERTON UNIVERSITY

Section A: General Information

14. Date of interview [_____]
 15. Name of enumerator[_____]
 16. Division[_____]
 17. Location[_____]
 18. Sub-Location[_____]

19. SECTION B : Household profile

19.1. **Number of Household members** (including HH head) living permanently on the compound: [A person is in residence if they sleep in the house a majority of nights per week]

<u>Age Categories</u>	Males	Years of schooling	Female	Years of schooling	Total	Number Actually working on the farm at once a week
< 12 years	[____]	[____]	[____]	[____]	[____]	[_____]
12 – 20	[____]	[____]	[____]	[____]	[____]	[_____]
21 –50	[____]	[____]	[____]	[____]	[____]	[_____]
> 50years	[____]	[____]	[____]	[____]	[____]	[_____]
Total	[____]	[____]	[____]	[____]	[____]	[_____]
Maximum years of Schooling						
Number of children attending school						

19.2. Number of Non-Resident Household members, living away but who occasionally benefit or assist the farm activities

<u>Age Categories</u>	Males	Years of schooling	Female	Years of schooling	Total
< 12 years	[____]	[____]	[____]	[____]	[____]
12-20	[____]	[____]	[____]	[____]	[____]
21-50	[____]	[____]	[____]	[____]	[____]
> 50 years	[____]	[____]	[____]	[____]	[____]
Total	[____]	[____]	[____]	[____]	[____]
Maximum years of schooling					

19.3. Provide the following detail about the household head

Gender 1 = Male, 2 = Female	Age (years)	Primary activity	Farming experience (years)	Education (Years)
[___]	[__ ___]	[___]	[___]	[___]

20. Is the household head the **farm owner**? [___] **1=Yes 2=No**. If not, who is the **farm owner** ? [_____]

21. Type of wall for the house 1. mud, 2. wooden 3. Bricks 4. Stone,

22. Type of roof for the house, 1. grass, 2. iron-sheet, 3. tiles

23. Type of floor 1. earth 2. cemented 3. Tiled floor

24. SECTION C: Structure of landownership (acres)

Total size		Tenure system (acres)			
		Owned	Rented in	Rented out	Communal
Acres	[_____]	[_____]	[_____]	[_____]	[_____]

12. CROP ENTERPRISES

12.1 Land use long rains 2007

Crop Enterprise Name	Acres	Seeds kg used	Insecticides Crops litres	Planting fertilizer (kg)	top dressing (kg)	FYM Kg	Compost kg	Family labour hours	Hired labour hours	Production in kg	Output price /kg/unit	Production in ksh
	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]
	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]
	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]
	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]

24.1. Land use short rains 2007

Crop Enterprise Name	Acres	Seeds kg used	Insecticides Crops litres	Planting fertilizer (kg)	top dressing (kg)	FYM Kg	Compost kg	Family labour hours	Hired labour hours	Production in kg	Output price /kg/unit	Production in ksh
	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]
	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]
	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]
	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]

25. Asset endowments (numbers)

Asset	Number	If would sell now, at what price Ksh	Cost When Acquired Ksh	Current Replacement Cost Ksh
Oxen				
Dairy Cattle				
Local Cattle				
Donkeys				
Camels				
Goats				
Sheep				
Pigs				
Poultry				
Carts				
Vehicle				
Tractors				
Plough				
Wheel barrows				
Hoes/Jembes				
Pangas/Slashers				
TV				
Radio				
Bicycles				
Computer				
Furniture				
Other assets				

26. HOUSEHOLD INCOME SOURCES IN KSH IN 2007

Type of earning	Amount in ksh	Time period in days
Employment income		
Total Income from business		
Total Income from crop produce		
Total Income from milk sales		
Total Income from sale of livestock and other assets e.g. land, vehicle		
Transfer earnings from relatives, sons, daughters etc		
Value of gifts		
Land rented out income		
Buildings rented out income		
Other structures rented out income		
Motor vehicle rented out income		
Other income		

13 (a) Employment Income

We would now like to talk about all *salaried employment* that anyone in your household engaged in during the past months from January 2007 to December 2007 including **pensions and remittances**. Include only income remitted back to household.

Person name Please list the names of all persons from the demography table who indicated they had engaged in <i>salaried employment activities</i> , then enter their corresponding person code	Person code	From the list below, please list all the <i>salaried employment activities</i> in which this person was engaged at any time during the past 12 months	What is this person's current monthly wage? Kshs	Did this person earn this same monthly wage during all of the past 12 months? 1=yes (go to next activity) 2=no	If the person did <i>not</i> earn the same wage during all 12 months, please indicate the wage earned for each month individually (Kshs)											
					<i>Skip this section if person received the same monthly wage during the whole year</i>											
					1/07	2/07	3/07	4/07	5/07	6/07	7/07	8/07	9/07	10/07	11/07	12/07
NAME	mem	activity	mnwage	samewage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	NOV	Dec

Wage labor codes 38=Accountant 18= Banker/receptionist 1 =Cane cutter 34=Carpenter/mason 2 =Chief 20=Civil leader	23=Cleaner 3 =Clerk 35=Committee member 25=Conductor 4 =Driver 5= Doctor 40=Electrician	36=Engineer 6 =General farm worker 7 =House help 8 =Industrial worker 33=Lab attendant 21=Lecturer/tutor 30=Lumber	19=Manager 39=Mechanic 28=Messenger 9 =Nurse 27=Pastor/religious services 10=Pension 11=Policeman/woman	12=Remittance 22=Road constructor 13=Sales person 31=Secretary 24=Shop keeper/attendant 29=Subordinate civil services 32=Surveyor	41=Tailor 14=Tea picker 15=Teacher 26=Veterinary doctor 16=Waiter/cook 17=Watchman 42=Other (specify)_____														

		Frequency purchased	Period 1=day 2=week 3=month 4=6 months 5=Yearly	Quantity	Unit	Average price per unit			Frequency purchased / contribution made	Period 1=day 2=week 3=month 4=6 months 5=yearly	Quantity	Unit	Average price Per Unit/
	Prod	freq	period	qty	unit	avexp		Prod	freq	period	qty	unit	avexp
Staples							Non-Fresh Food Items						
Millet	1						Sugar	23					
Sorghum	2						Salt	24					

27. Household Expenditures in Kshs

Wheat flour	3						Cooking oil	25					
Rice	4						Coffee/Tea	26					
Cassava (Fresh or Dry)	5						Drinks	27					
Maize (Grains)	6						Tobacco/Cigarettes	28					
Maize meal (Posho/sifted)	7						Other non Fresh Items	29					
Sweet potatoes	8						Non-food Items						Amount
Irish potatoes	9						School fee, textbooks, etc	30					
Matoke	10						Medical fee	31					
Beans	11						Transportation	32					
Other Staples	12						Clothing/Shoes	33					

Non-Staple Fresh Food						Cooking/Lighting fuel	34				
Green Peas	13					Soap/washing products	35				
Meats	14					Other non food items	36				
Eggs	15					Contributions					Amount
Chicken (meat)	16					Remittances to relatives	37				
Fish	17					Churches/Mosques					
Fish (omena)	18						38				
Vegetables	19					Mutual Support Groups/Funeral	39				
Fruits	20					Cooperatives/committees	40				
Dairy products(ghee, milk etc)	21					Other local organizations	41				
Other Non-staples	22										

28. Access to market

		Time in minutes	Fare in Ksh	Km Tarmac	Km Earth
Input/output market	Nearest local market				
	Most important (urban)				

29. INSTITUTIONAL SUPPORT

- 29.1. Have you received extension contacts in the last year: 0-No, 1-Yes
- 29.2. if yes, How many times[_____]
- 29.3. Have you attended farmer training last year? 0-No, 1-Yes
- 29.4. If yes, how many times [_____]
- 29.5. Did you borrow last year (Yes-1, No-0)

29.6. If yes, fill in the table below:

		Borrowed 0-No 1-Yes	Credit type Money -1 In kind-2	Amt Season one (Ksh)	Amount Season two (Ksh)	Total annual amount (Ksh)
Formal	Commercial banks					
Semi-formal	AFC					
	Cooperatives					
	Micro-Finance institution					
	NGO project					
	Other					
Informal	Input-store					
	Self-help Groups					
	Moneylender					
	Neighbors					
	Friends					
	Family					
	Other					

29.7. Did you get credit from other sources tick Yes or No such 1. Bank YES/NO 2. Cooperative YES/NO, 3. Input Supplier_ YES/NO, 4. Money lender (shylock), YES/NO_, 5. Friends/ neighbors/relatives, YES/NO_, 6. Other Non-linked group YES/NO 7. other (specify)

29.8. HOW MUCH did you borrow from each source 1. From Bank _____ Ksh. 2. From Cooperative _____ Ksh. 3. From input supplier _____ Ksh.4. From money lender/shylock _____ Ksh. 5. From Friends/ neighbors/relatives _____ Ksh

29.9. How did you spend the loan last year specify uses and amounts here:

Source of borrowing last year	Total borrowed Ksh	% Spent on crops	% Spent on livestock	% Spent on business	% Spent on food	% Spent on fees	% Spent on social events	% Spent on utensils /hhd goods	% spent on other Specify
From Village Bank									
From Cooperative									
From Input supplier									

From Money lender/shylocks									
From friends/neighbours									
From relatives									
Other									

30. Any constraints in credit provision from the village bank (let the respondent specify as many as possible, _____)

31. Constraints from other sources you used (let respondent specify the other sources and respective constraints as many as possible _____)

19. FOOD-SECURITY SURVEY MODULE:

3-STAGE DESIGN (2 INTERNAL SCREENERS)

Questionnaire transition into module--administer to all households: These next questions are about the food eaten in your household in the last 12 months, since (current month) of last year, and whether you were able to afford the food you need.

General food sufficiency question/screener: Questions 1, 1a, and 1b (OPTIONAL: These questions are NOT used in calculating the food-security/hunger scale.) Question 1 may be used as a screener: (a) in conjunction with income as a *preliminary* screen to reduce respondent burden for *higher income households only*; and/or (b) in conjunction with the 1st-stage internal screen to make that screen "more open"--i.e., provide another route through it.

1. [IF ONE PERSON IN HOUSEHOLD USE "I" IN PARENTHETICALS, OTHERWISE, USE "WE."]

Which of these statements best describes the food eaten in your household in the last 12 months?: --enough of the kinds of food (I/we) want to eat; --enough, but not always the kinds of food (I/we) want; --sometimes not enough to eat; or, --often not enough to eat?

[1] Enough of the kinds of food we want to eat [SKIP 1a and 1b]

[2] Enough but not always the kinds of food we want [SKIP 1a; ask 1b]

[3] Sometimes not enough to eat [Ask 1a; SKIP 1b]

[4] Often not enough [Ask 1a; SKIP 1b]

[] DK or Refused (SKIP 1a and 1b)

1a. [IF OPTION 3 OR 4 SELECTED, ASK] Here are some reasons why people don't always have enough to eat. For each one, please tell me if that is a reason why YOU don't always have enough to eat. [READ LIST. MARK ALL THAT APPLY.]

YES NO DK

[] [] [] Not enough money for food

[] [] [] Not enough time for shopping or cooking

- Too hard to get to the store
- On a diet
- No working stove available
- Not able to cook or eat because of health problems

1b. [IF OPTION 2 SELECTED, ASK] Here are some reasons why people don't always have the quality or variety of food they want. For each one, please tell me if that is a reason why YOU don't always have the kinds of food you want to eat. [READ LIST. MARK ALL THAT APPLY.]

YES NO DK

- Not enough money for food
- Kinds of food (I/we) want not available
- Not enough time for shopping or cooking
- Too hard to get to the store
- On a special diet

BEGIN FOOD-SECURITY CORE MODULE (i.e., SCALE ITEMS)

Stage 1: Questions 2-6 --ask all households:

[IF SINGLE ADULT IN HOUSEHOLD, USE "I," "MY," AND "YOU" IN PARENTHETICALS; OTHERWISE, USE "WE," "OUR," AND "YOUR HOUSEHOLD;" IF UNKNOWN OR AMBIGUOUS, USE PLURAL FORMS.]

2. Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months, that is, since last (name of current month).

The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." Was that often true, sometimes true, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

3. "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true

DK or Refused

4. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

Often true

Sometimes true

Never true

DK or Refused

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q5 - 6;

OTHERWISE SKIP TO 1st-Level Screen.]

5. "(I/we) relied on only a few kinds of low-cost food to feed (my/our) child/the children) because (I was/we were) running out of money to buy food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

Often true

Sometimes true

Never true

DK or Refused

6. "(I/We) couldn't feed (my/our) child/the children) a balanced meal, because (I/we) couldn't afford that." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

Often true

Sometimes true

Never true

DK or Refused

1st-level Screen (screener for Stage 2): If AFFIRMATIVE RESPONSE to ANY ONE of Questions 2-6 (i.e., "often true" or "sometimes true") OR response [3] or [4] to Question 1 (if administered), then continue to Stage 2; otherwise, skip to end.

Stage 2: Questions 7-11 --ask households passing the 1st-level Screen.

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q7; OTHERWISE SKIP TO Q8]

7. "(My/Our child was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

Often true

Sometimes true

Never true

DK or R

8. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

Yes

No (SKIP 8a)

DK or R (SKIP 8a)

8a. [IF YES ABOVE, ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

Almost every month

Some months but not every month

Only 1 or 2 months

DK or R

9. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?

Yes

No

DK or R

10. In the last 12 months, were you every hungry but didn't eat because you couldn't afford enough food?

Yes

No

DK or R

11. In the last 12 months, did you lose weight because you didn't have enough money for food?

Yes

No

DK or R

2nd-level Screen (screener for Stage 3): If AFFIRMATIVE RESPONSE to ANY ONE of Questions 7 through 11, then continue to Stage 3; otherwise, skip to end.

Stage 3: Questions 12-16 --ask households passing the 2nd-level Screen.

12. In the last 12 months, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?

Yes

No (SKIP 12a)

DK or R (SKIP 12a)

12. [IF YES ABOVE, ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

Almost every month

Some months but not every month

Only 1 or 2 months

DK or R

[IF CHILDREN UNDER 18 IN HOUSEHOLD ASK 13-16; OTHERWISE SKIP TO END.]

13. The next questions are about children living in the household who are under 18 years old. In the last 12 months, since (current month) of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?

Yes

No

DK or R

14. In the last 12 months, did (CHILD'S NAME/any of the children) ever skip meals because there wasn't enough money for food?

Yes

No (SKIP 14a)

DK or R (SKIP 14a)

14a. [IF YES ABOVE ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

Almost every month

Some months but not every month

Only 1 or 2 months

DK or R

15. In the last 12 months, (was your child/ were the children) ever hungry but you just couldn't afford more food?

Yes

No

DK or R

16. In the last 12 months, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?

Yes

No

DK or R

END OF FOOD-SECURITY/HUNGER CORE MODULE