RURAL FINANCE PROGRAMMES IN TANZANIA: WHO BORROWS AND TO WHAT EXTENT

HARUNI JEREMIA MAPESA

Senior Lecturer School of Business, Mzumbe University, Tanzania

ABSTRACT

Despite the potential promises of poverty reduction of microfinance, their impact depends on the nature and extent of demand of credit and other financial services by the poor. While empirical works are well established on the determinants of micro credit demands in some countries (e.g. Bangladesh and India), scanty literatures exist in Tanzania context. This paper presents empirically the key determinants and extent of borrowings for micro credit among rural finance programme in Tanzania. The paper presents the implications of socio-economic characteristics of rural households and MFIs specific characteristics on borrowing behaviour of micro credit programme members. The paper is based on a survey of 210 rural farm households in Tanzania. Using qualitative and quantitative analyses the study found that demand for credit among rural households significantly vary across MFIs. Households who are members of MFIs banks demonstrated a high amount of demand compared with those with membership in other types of MFIs such as SACCOS, NGOs and Government Operated Programmes. Results further showed that specific location and household socio-economic factors affect demand for credit in rural areas of Tanzania. Policy implications should focus on alleviating the capital constraints of MFIs and addressing rural physical infrastructure and rural household entrepreneurship development.

KEYWORDS: Mfis, Micro, Credit, Demand, Rural, Households, and Tanzania

INTRODUCTION

Microfinance services is a general tem describing the practice of extending small (micro) loans and other financial services, such as loans, savings accounts, and insurance to poor borrowers for income generating self- employment projects (CGAP, 2007). Microfinance institutions (MFIs) and Rural Finance Program (RFP) are the core providers of microfinance services in rural areas. They seek to pursue a double bottom line- to achieve and demonstrate social as well as financial performance (Morduch, 2000). The role of microfinance institutions differs from one context to another: Filling gaps in financial markets, providing risk tools to vulnerable groups or individuals, allowing micro-entrepreneurs to take advantage of economic opportunities, and building social networks (Hartarska and Nadolnyak, 2008; Cheston and Kuhn, 2002; Umara *et al.*, 2011; Tchouassi, 2011).

MFIs are characterized by their clients, their specific mission and objectives (Morduch, 2000; Shahidur *et al.,* 2004; Coleman, 1999; Johnston and Morduch, 2007). Microfinance clients are typically low-income persons who are self employed or salaried employees such as factory workers. In rural areas, they generate some income from farming, food processing or trade at local markets whereas in urban areas they tend to be shopkeepers, street vendors, entrepreneurs, service providers, and craftsmen whose activities may sometimes be seasonal but appear more or less stable (Ahmed, 2009; World Bank, 2003).

In Tanzania, microfinance institutions were not given attention as peoples' development tool until the early 1990s (Wangwe, 2004; URT, 2001). The government extensively controlled the financial sector with the professed purpose of directing financial resources towards socially and economically desirable activities (Temu, 1994; Wangwe, 2004). This involved government ownership of banks, control on interest rates, and directing credit towards' priority sectors at subsidized rates (URT, 2001). However the demise of state owned financial institutions (*e.g*. Tanzania Housing Bank-THB) in the early 1990s necessitated the government of Tanzania, with the support of the World Bank and the International Monetary Fund (IMF) to adopt economic reforms in order to alleviate the worsening situation. The reforms aimed at increasing growth, encouraging private sector development, market integration and industrial competitiveness (URT, 2001; Wangwe, 2004). Major financial policy actions included liberalization of interest rates, elimination of administrative credit allocation, strengthening the central bank's (Bank of Tanzania) role in regulating and supervising the financial institutions, restructuring state owned financial institution, and allowing entry of private sector banks into the industry (URT, 2006). The reforms underscored the importance of allowing financial institutions to develop their own financial services on the basis of their own objectives and setting interest rates according to market forces. This in turn would facilitate faster development of financial markets and services and thus enhancing access of microfinance to majority of Tanzanian especially in the rural areas.

To enhance access to microfinance in both urban and rural areas of Tanzania, the government established a microfinance policy in 2001. The policy invites the donor community to facilitate the development of micro finance institutions. The policy articulates the vision and strategy for the development of sustainable microfinance industry as an integral part of the financial sector, specifying the respective role of the key stakeholders- the government and its principal agencies, institutional providers of microfinance services and the donor community (URT, 2001).

Since the implementation of the national microfinance policy, there has been good progress toward the establishment of the microfinance institutions in Tanzania. There are now more than 1800 microfinance institutions operating in Tanzania (BoT, 2014). These include donor funded microfinance institutions, community banks, village or ward banks, and cooperative societies. The principal microfinance providers (especially in rural areas) are the Savings and Credit Cooperatives Societies (SACCOS), government supported organizations (*e.g*. SIDO, SELF, PTF,) community banks and foreign donor- assisted Non – governmental Organizations such as PRIDE, FINCA, DUNDULIZA, BRAC and SEDA (BoT, 2014).

Ensuring access to credit among rural poor population for augmenting agricultural production, alleviating poverty, and improving the efficiency of rural credit delivery systems has been an area of focus in the planning process in Tanzania (*e.g*. Kilimo Kwanza- Agriculture First Vision, URT, 2009). The government believes that microfinance programs can alleviate financial liquidity constraints, stabilize consumption and thus impact both income and consumption for the poor, thereby augmenting the poor's welfare. The poor are expected to use financial services to invest in health and education, manage household emergencies, and meet the wide variety of other cash needs that they encounter. Proponents of microfinance schemes (Yunus, 2006; Littlefield *et al*., 2003; Morduch, 2009) believe that microfinance around the world can increase household income, build assets, and reduce vulnerability of poor households and individuals. It is further believed that access to financial services among the poor households can also translate into better nutrition and improved health outcomes, such as higher immunization rates. Microfinance institutions services can also allow poor people to plan

for their future and send more of their children to school for longer make women more confident and assertive and thus better able to confront gender inequalities (Makombe *et al*., 1999; Tchouassi, 2011; Umara *et al*., 2011).

While greater focus of empirical studies has been and continue to be on impact of microfinance institution on various financial services, scanty empirical works are focusing on the determinants of demand for financial services, especially credit from MFIs in Tanzania. The extents to which household socio-economic characteristics facilitate or hinder demand for credit especially among rural households are not clearly documented in Tanzania. Thus it is interesting to add to the existing literature and general understanding on the extent to which lending conditions and other specific characteristics of microfinance institution and rural finance programs limit the demand for credit.

RELATED LITERATURE

Despite the potential promises of MFIs (Meyers, 2002; Zaman, 1998b) evidences suggest that the potential impact of MFIs depends on who participates (socio-economic characteristics of participants) and the extent of demand for financial services (Evans *et al*., 1999; Shailesh, 2008)). The eligibility, selection process of members and the socio-economic characteristics of participants together with MFIs characteristics and location characteristics determine the extent of credit demand and ultimately the extent of impact (Robinson, 2001; Diagner and Zeller, 2001; Mosley and Hulme, 1998).

Demand for microfinance institutions services depends on socio economic characteristics of farm households, government policy and MFIs policy (Mosley and Hulme, 1998; Zaman 1998b; Coleman, 1999). The amount of funds procured by borrowers determine the type of investments (farm, non-farm or consumption) undertaken and the nature of capital asset procured and ultimately the extent of impact (Mosley and Hulme, 1998; Coleman, 1999; Copestake *et al*., 2001).

Adopting the farm household model (Taylor and Adelman, 2003), farm households are assumed to be economic units with rational decisions. Farm households make decisions on various economic issues including on questions such as how much labour to devote in a production process, whether or not to use fertilizers and other inputs, which crop to grow and in which fields, how much funds to procure and from which source and so on (Reardon *et al.*, 1994; de Janvry and Sadoulet, 2001. The determinants of demand for credit among farm households can be assessed by looking at the nature of microfinance credit as a commodity. The nature of the actual expenditure would determine the amount and timing of the loan demanded (Shailesh, 2008; Von Pischke and Adams, 1980; Hulme, 2000). If money is to be used for productive purposes as a source of capital to finance land, labour, technology, and capital assets, its demand would be a derived demand. The demand for credit under such circumstances would be a result of a trade-off between interest payments and the marginal returns on the economic activities for which credit is used (Reardon *et al.,* 1994; Lipsey and Christal, 2004; Harper, 2005). In turn the return on economic activities depends on risks involved (Harper, 2005).The extent of risks depends on the nature of the economic activities undertaken i.e farm vs non-farm, and the ability of the household to mitigate risks associated with the economic activities (Reardon *et al.* 1994) .

The lending condition, procedure, and capital capacity of the MFIs would also affect the extent of credit demand of household (Pitt and Khandker, 1998; Schreiner, 2001; Morduch, 2000; Morduch 2005). The lending procedure to members and credit disbursement conditions, and timing (compulsory savings, group lending, and collateral requirements)

reflect the transaction cost and nature of investment to be undertaken on the part of household and capital capacity (managerial and financial capacity) on the part of the MFIs. Thus the relationship among variables that determine demand for credit can be presented as in Figure 1 below.
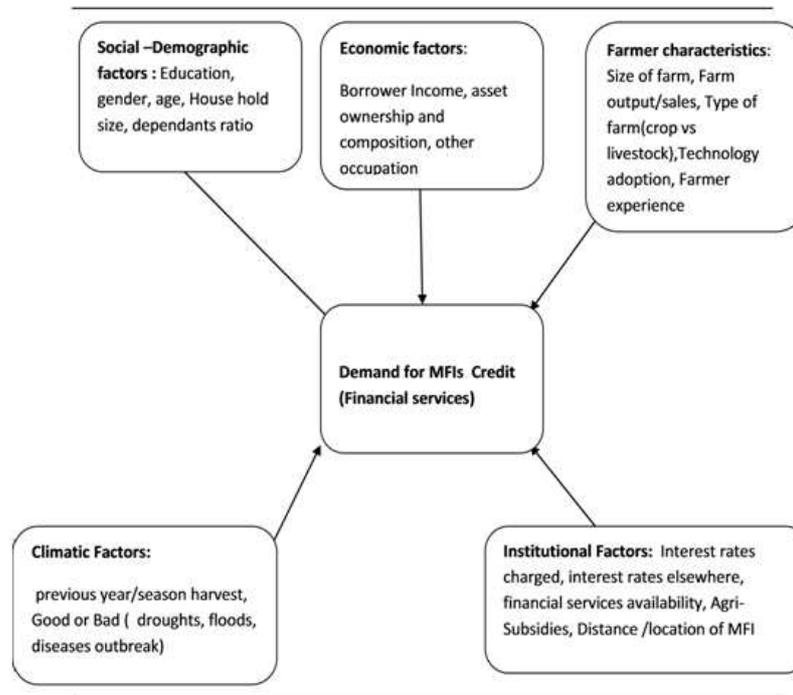
Source: Author, based on literature review

Figure 1: Conceptual Framework of Determinants for Demand for Credit

METHODS

The study was a survey of MFIs and rural farm households in Iringa region of Tanzania. Farm households' information collected during the survey were household demographic variables, asset ownership and composition, agricultural output, crops prices, input prices, farm expenditures, household borrowings, savings, wages, farm and non-farm income. Qualitative information obtained was related to demand decisions in microfinance, quantities of loans and types obtained by households members, problems associated with microfinance involvements, lending conditions and procedures, and benefits so far obtained by microfinance participants.

Study Area

Iringa region is one of the "Big six" regions well known for producing surpluses in food crops such as maize and potatoes in Tanzania (IRSEP, 2007). Other regions in the big-five group are, Mbeya, Ruvuma, Morogoro, Rukwa, and Kigoma. These regions are known as typical agrarian regions in Tanzania and also are served by various microfinance institutions (BoT, 2009) and therefore suitable for the study. The region comprises of seven districts of, Iringa Rural, Kilolo, Makete, Mufindi, Njombe, Ludewa and Iringa Urban. The region is part of mainland Tanzania, found in the southern highlands zone and located between latitudes 6^0 $55'$ and 10^0 $30'$ south of Equator, and between longitudes 33^0 $45'$ and 36^0 $55'$ east of Greenwich. To the north the region borders Singida and Dodoma regions and in the east it borders

Morogoro region, while in the south is Ruvuma region and in the west is Mbeya region.

Being one among the well known big six agricultural region in Tanzania, Iringa region was purposively selected because it is a home to one of the well known community banks in Tanzania– the Mufindi Community Bank. Mufindi Community Bank (MUCOBA) is a community based bank that deals with farmers as well as small and medium enterprises. It is one among the few community banks in Tanzania that provide microfinance to small and medium businesses in farm and non-farm businesses. Others community banks in Tanzania are: Dar es Salaam Community Bank, Mwanga Community Bank, and Mbinga Community Bank (Chijoriga *et al.,* 2009). The formal MFIs providing financial services to small and medium enterprises in town and in rural areas in Iringa region are: PRIDE, FINCA, PTF, SELF and SACCOS. In remote rural areas financial services are generally dominated by Savings and Credit Co-operative Societies (SACCOS). The number of SACCOS and its membership has been on the increase over time. Njombe district has the highest number of SACCOS members than any other district in the region while Kilolo and Ludewa districts have the lowest MFIs and membership.

Sampling Procedures

Two districts with the highest number of microfinance institutions were selected and one district with the lowest number of microfinance institutions was selected. According to regional statistics (IRSEP, 2007) and Bank of Tanzania (BoT, 2009) there were 115 SACCOS, two microfinance- NGO (PRIDE and FINCA), two governmental microfinance institutions (SIDO and SELF), and two microfinance banks (Mufindi Community Bank, and NMB).

To ensure randomness on the selection of microfinance institutions, a list of all 121 microfinance institutions in the districts was obtained from the Iringa regional office. Two microfinance institutions were randomly (ballot procedure) selected from each district. In addition to Mufindi Community Bank which was purposively selected due to its unique features in dealing with farm households. In Mufindi district, Madibira SACCOS and Tujikomboe SACCOS were selected. In Njombe district, Ng'anda SACCOS and Mlevere SACCOS were selected. In Kilolo PRIDE and SIDO were selected. The sample for farm households who were participants in microfinance institutions was obtained from a list of all members in particular MFIs office in a village.

Data Collection Instruments and Collection Procedures

The data collection instrument was the semi-structured self administered questionnaire. The data collection exercise involved research assistants and the researcher. Respondents were interviewed in isolation in order to ensure confidentiality. This approach yielded maximum response rate and ensured filling of all information required. The data and information collected were for the calendar (season) year of 2009.

Sample Size and Composition

The study sample was 227 households who were members in various MFIs. Table 1 presents the the distributions of the household by their membership in various microfinance institutions.The sample was mainly composed of SACCOS members at 42.3%, and microfinance bank members at 33.9%, NGOs -MFIs and Governmental institutions with a combined proportion of 16.3%.

Table 1: Distribution of Sampled Households by Type of Microfinance Institutions Membership

Microfinance Institution	Number	%
Banks (MuCoBa, NMB Bank,)	77	33.9
SACCOS (Tujikomboe, Mlevere, Ng'anda, Madibila)	96	42.3
NGO (PRIDE& FINCA)	15	6.6
Governmental (SIDO)	22	9.7
Multiple Membership	17	7.5
Total	**227**	**100**

Model Specification

To estimate the significance of the determinants of demand for microfinance credit among MFIs members, the Ordinary Least Squares (OLS) regression models were used. OLS regressions were selected used because the dependent variable (household outstanding credit/borrowings) is metric in nature. The econometric equation used to was in the following form:

$$\ln B = \beta_0 + \sum_{i=1}^{n} Xi + \sum_{i=1}^{n} Zi + \sum_{i=1}^{n} Mi + \sum_{i=1}^{n} Li + \sum_{i=1}^{n} Gi + \mu \ldots \qquad \ldots\ldots\ldots(1)$$

Where B = outstanding amount of borrowed money at the time of survey for the household; β_0 is constant term; *X,* is a vector representing the variables of household structure and asset; *Z* is a vector representing household location characteristics (districts) in form of dummy variables; *M* is a vector representing microfinance institution type/characteristics (dummy variables), *L* is a vector representing loan transaction characteristics variables; and μ is the error term, representing other variables not included in the model that influence demand for credit.

The credit demand equation (1) was estimated using data from farm households who were members of microfinance institutions only. Households who were non-microfinance members were excluded in the analysis because demand for credit by this group was not observable and was exogenously constrained to be zero. Thus only the control group (newly joined microfinance members) and the treatment group (i.e old microfinance participants) farm households surveyed were used in the analysis. The sample was composed of 210 MFIs members of which 75 farm household (new microfinance members) were in the control group and 135 farm households were from the treatment group (old members).

Description of Variables for the Analysis

The dependent variable was the household outstanding loan amount at the time of survey. The loan amount from various microfinance institutions was obtained by observing the balances on membership pass book and interviewing the members. The explanatory variables analysed are the location characteristics, MFIs characteristics, actual use of loans, and government agricultural subsidy. The expected signs of the relationships and the measurement of the variables used in the analysis are indicated in Table 2.

Table 2: Explanatory Variables Used on Credit Demand Analysis and the Expected Influence

Variable Name	Description and Measurement	Expected Influence	Reason
Location variables (Mufindi, Madibira, Njombe, and Kilolo locations)	Dummy variables=1 for respective location and 0= otherwise		Reflects how differences in location characteristics (e.g. markets, infrastructure) affect credit demand
Duration of loan	The length of the period of loan repayment in months	+	Reflects how loan duration affect credit demand
Collateral requirement	Whether the household provided/ indicated collateral: dummy 1= yes; 0= No	+	Reflect how collateral condition affect credit demand
Membership duration	The length of the period for which a household have been a member to MFIs (in months)	+	Reflects how experience of household with MFIs services affect demand
Type of MFI	The type of MFI for which a household is a member. Dummy variables (Bank, SACCOS, NGO, Governmental)		Reflects how lending conditions of MFI affect credit demand.
Education of household head	The highest education of household head dummy (no formal education; primary school ; secondary school or above)	+	Education reflects the stock of skills and knowledge , thus ability to bargain for loan in MFIs and hence affects demand

The effects of microfinance characteristics on demand for credit among farm was represented by dummy variables. Four dummy variables were formulated to represent each type of MFI surveyed. The four types of MFIs involved are namely; banks (Mufindi Community Bank, and NMB); second, SACCOS (Madibira, Mlevera, Tujikomboe, Ng'anda); third, NGOs (FINCA, PRIDE, SELF); fourth Governmental programmes Programme (SIDO).

Four location dummy variables were used to represent the effect of factors such as availability of crop markets, price of inputs, price of output, infrastructure development (roads, and electricity), weather conditions, availability of non-farm economic activities, and other geographical location characteristics. The locations four locations are: First, Mufindi highlands (Mudabulo dividion, Malangali division generally served by Tujikomboe SACCOS and Mufindi Community Bank) second; Madibira wards (served by Mufindi community Bank, and Madibira SACCOS); third, Njombe areas, (served by the Ng'anda SACCOS and Mlevera SACCOS); and fourth, Kilolo areas (mostly served by SIDO, NMB and PRIDE).

Household socio-economic variables included in the analyses are the household structure variables (age, marital status of house head, dependents ratio, and household size) and household endowment variables (education of household

head, size of land cultivated , value of total household assets, quality of household house, and annual value of household non-crop income). The measurements of variables are the same as presented in Table 3 below.

Table 3: Description of Socio-Economic Variables Used In the Analysis and Expected Influence

Variable Name	Description, And Measurement	Expected Influence	Reason
Household size	Total number of household members	+	Reflects the consumption and production needs of household
Dependents ratio	The ratio of dependants to total household members	+ / -	Indicate household labour shortage or adequacy
Age of household head	Age of household head in years	+ / -	Age reflects experience, economic activeness and adoption of innovations
Sex of Household head	This reflects the gender of the household head.(dummy, 1= male; 0= female)	+/-	Gender reflects differences in decision process between male and female
Land owned	Size of land in hectares owned by a household	+/-	Large land sizes reflects wealth of household/ land shortage
Total household assets	The market value of all assets owned (excluding land and house)	+/-	Reflect wealth and ability to collaterize loan and acceptance by peers. Also well off household may dislike microcredit..
House quality	The type of house of household. (dummy variable. 1 =for house with metal roof, burnt/cement blocks walls, and cement floor; 0= otherwise)	+	Reflects wealth of household and ability to collaterize loan and acceptance by peers
Education of household head	The highest education of household head dummy variables (no formal education; primary school ; secondary school or above)	+	Education reflects the stock of skills and knowledge , thus ability to deal with training and paper works in MFIs
Non-farm income	The total annual market income from all non-farm sources (shop, restaurant, sale of milk, alcohol sale)	+	Income reflects ability to mitigate loan and interest repayments

Data and Model Diagnostics

Ordinary least square regression techniques require some multivariate analysis conditions to be fulfilled in order to produce consistent and unbiased estimation results. These conditions or assumptions are: freedom from outliers and influential variables, normality, homoscedasticity, linearity, and multicollinearity. Econometrics and multivariate data analysis literature suggest several procedures for testing these OLS assumptions (Hair *at el.*, 2006; Woodridge, 2000; Ndunguru, 2007; Jacques , 2007; Gujarati, 2006; Pindyck and Rubinfeld, 1991).

Outliers and Leverage Variables

Variables were tested for outliers by use of studentized residual. Observations whose studentized residual had absolute values greater than 2.5 were removed from the analysis as this could have exaggerated the relationships (Woodridge, 2000). Four observations indicated studentized residuals greater than 2.5 and were therefore removed from the analysis. This procedure reduced the sample size from 210 to 206 households. Leverage values (independent variables with influential observations) were detected by use of cook's Distance (D). The higher the Cook's D the more influential

the point is. The conventional cut-off point for leverage values is when the Cook's D is greater than 4/n. When this procedure was applied, three more observations had Cook's D greater than 4/n, (Where n=206), and hence were removed from the sample. The remaining sample after these two procedures was 203 farm households.

Normality, Heteroscadasticity, and Multicollinearity

Normality of residuals is generally required for valid hypothesis testing. That is the normality assumption assures that the p-values for t-tests and F-test will be valid. Some literatures suggest that normality is required on predictor variables in order to obtain unbiased estimates of the regression coefficients. Some literatures, however, suggest that OLS regression merely requires that the residuals (errors) be identically and independently distributed. Thus there is no assumption or requirement that the predictor variables be normally distributed. If this were the case then it would have not been possible to use dummy coded variables in regression models (Woodridge, 2000).

Normality of the dependent variable, independent metric variables, and the residuals was tested by way of visual plots and the Shapiro-Wilk test (swilk). The dependent variable and some of the independent variables were found not normally distributed and were transformed into logarithmic forms (natural log). However, some variables such as age, household size, dependants ratios were generally normally distributed. Heteroscadasticity was tested using Bresch-pagan test. The model had no severe heteroscadasticity, however it was adjusted through White's heteroscadesticity robust adjustment available with STATA package. Linearity was automatically attained after normality was achieved.

Multicollinearity is a post-estimation test. The fitted OLS demand equation was tested for multicollinearity using variance inflation factor (VIF). The maximum variance inflation factor among regressed variables was found to be less than 3.0. This was within the tolerable range of 10.0 (Woodridge, 2000; Hair *et al.*, 2006). Thus there was no multicolinearity threat in the model.

RESULTS AND DISCUSSIONS

Descriptive Results

Table 4 presents the descriptive analysis of the credit demand of farm households according to their locations. The Table shows that the overall average credit demand for household was TAS 584 699. The minimum demand was TAS 30 000 and the maximum was TAS 6 000 000 (six million). Household members in Njombe areas had the highest mean loan demand at TAS 829 387, followed by Madibira households with average loan at TAS 602 758. Kilolo households indicated the lowest loan of all the surveyed areas at TAS 282 812. These results suggest that on average household loan demand amount differ from one location to another. This could be due differences in to the underlying location factors such as infrastructure development, economic endowments and other unobservable factors.

Table 1: Descriptive Statistics of Sampled Mfis Members' Loan Demand by Location

Location	Mean (In TAS)	Standard Deviation	Minimum (In TAS)	Maximum (In TAS)
Mufindi	534 298	786 280	30 000	4 500 000
Madibira	602 758	503 710	45 000	2 800 000
Njombe	829 387	1 194 151	40 000	6 000 000
Kilolo	282 812	231 965	50 000	1 100 000
Whole sample	584 699	800 673	30 000	6 000 000

(1 US$ = 1,700 TAS- Tanzanian Shillings)

Descriptive analysis also shows that demand for credit depends on the type of MFIs for which farm households have membership. As shown in Table 5 on average bank borrowers had the highest average loan demand (TAS 686 388), followed by SACCOS borrowers (TAS 673 330). Farm household who borrowed from government MFIs had the lowest average loan size (TAS 322 727). These results suggest that MFIs characteristics and/or lending conditions affect credit demand of farm households. Lending factors such as group lending or individual lending mechanism, collateral requirements and capital capacity can be attributed to the observed variations in demand among rural farm households.

Table 2: Descriptive Statistics of Loan Demand of Sampled Members by Type of

Mfis Membership (N= 203, Figures in Tanzanian Shillings, TAS)

Type Of MFI	Mean (TAS)	Standard Deviation	Minimum (TAS)	Maximum (TAS)
Bank (MuCoBa)	686 388	782 276	30 000	4 500 000
SACCOS	673 330	904 410	40 000	6 000 000
NGO	374 000	286 351	60 000	1 100 000
GOVNMENT	322 727	363 752	50 000	1 500 000
Whole sample	584 699	800 673	30 000	6 000 000

(1 US$ = 1,700 TAS- Tanzanian Shillings)

Descriptive results also show that there is a significant relationship between demand and duration of the loans. Table 6 indicates that longer loan period induces farm households to borrow more. On average households who were allowed to make repayments over a period exceeding six months had the highest average loan size than those who made their repayments within three or six months. The results showed that about 42% of farm household had loan duration of between 10 months to 12 months. Only 7% of borrowers had loan duration of equal or less than three months. These results suggest that with longer loan repayment time periods, preferably more than nine months farm households borrowers can increase their demand significantly. This could be due to the fact that farm households need reasonable time to invest loans in farm activities before making repayments. Longer time period were more important for households who depend solely on cereal crops such as maize, rice, potatoes which require longer periods of time of at least six months before receiving cash flows. For horticultural crops such as tomatoes, onions, and vegetables at least three months was appropriate. Qualitative inquiry also revealed that some microfinance institutions had weekly compulsory loan repayments. Farm household members generally complained on this practice because household who had no alternative sources of income other than crop income faced difficulties in coping with such loan repayment procedures.

Table 3: Descriptive Statistics of Loan Demand of Sampled Mfis Members by

Loan Duration (N= 203, Figures in Tanzanian Shillings, TAS)

Loan Duration (Months)	%.	Mean (Tas)	S.D.	Min	Max
< 3	7.4	291 333	232 590	40 000	1 000 000
4- 6	40	384 383	339 133	30 000	2 000 000
7-9	10	716 500	716 146	100 000	2 800 000
10-12	42.1	768 755	1 073455	30 000	6 000 000
>12	0.5	1900 000	N/A	1 900 000	1 900 000

N/A= Not applicable (1 US$ = 1,700 TAS- Tanzanian Shillings)

Descriptive results also show that demand for loans vary significantly across members of MFIs. Table 7 shows

that about 73% of the household borrowers had loan size equal or below TAS 500 000. Around 15% of microfinance members had loan size between TAS 500 000 and TAS 1 000 000 while about 12% of household members had loan size above one million. These results suggest that very few farm households can afford to purchase farm machinery (farm machinery had costs equal or greater than Tshs 3,500,000) while majority of the borrowers had loan sizes just enough to finance farm variable inputs and other petty non-farm businesses or consumption expenditures.

Table 7: Frequency Distribution of Credit Demand of the Sampled Mfis Members

Loan Amount (TAS)	Frequency	%	Cumulative %
1-100 000	33	16	16
100 001-200 000	45	22	38
200 001- 300 000	34	16.7	54.7
300 001- 400 000	28	13.7	68.4
400 001- 500 000	11	5.4	73.8
500 001- 600 000	10	5	78.8
600 001- 700 000	8	3.9	82.7
700 001- 800 000	6	3	85.7
800 001-1 000 000	3	1.5	87.2
1 000 001 +	25	12.8	100
Total	**203**	**100**	**100**

(1 US$ = 1,700 TAS- Tanzanian Shillings)

Regarding household expenditures of procured loans, Table 8 shows that 70% of microfinance participants used part of their loans in agricultural activities mainly for purchasing farm inputs such as fertilizers, pesticides, and hiring labourers. Results also showed that 24% of farm household borrowers used their loan for consumption purposes including education of their children (secondary school), health expenses, and other social needs. About 31% used part of their loans for starting or furthering their non-farm businesses. Non-farm businesses included restaurants, local and modern beer bars, small shops, crops trade, used cloth business (*Mitumba*), and others. The table further shows that about 8% of the microfinance borrowers used their loans to purchase power tillers (special type of low cost small tractors at a price of equal or greater than Tshs 3,500,000). Farm household who used their loan to purchase farm machinery were located in Madibila ward. Madibila areas are prominently served by Mufindi Community Bank and Madibila SACCOS. The average borrowing for this group of borrowers was above one million. Most of farm household in Madibila area benefit from an agricultural irrigation scheme located in the Usangu basin. Farmers using the irrigation scheme cultivate rice for both consumption and commercial purposes.

Table 4: Descriptive Statistics of Uses of Loan by Sampled farm Households Mfis Members

Type of Loan Use	No. of Observation	%. (N= 203)
Businesses (non-farm)	63	31
Farm variable inputs	142	70
Farm machinery	16	8
Consumptions	48	24

Econometric Results

Two OLS regressions equations were run in order to identify the significant variables affecting demand for credit. Results from the two equations are presented in Table 9 and Table 10 respectively.

Table 9: OLS Coefficients Estimates of the Determinants of Credit Demand of Sampled farm Households Members (Equation 1)

S/No	Dependent Variable Is Log Of Household Credit Amount	N= 203		
	Independent Variables	**Coefficient**	**Std. Err.**	**T- Value**
	Education of Household Head D3- Dummy variable =1 for secondary school	0.307	0.307	1.96 (0.051)**
	Mufindi location Dummy variable (=1,and 0= otherwise	0.269	0.168	1.60 (0.112)
	Madibira location dummy=1, and 0= otherwise	0.585	0.137	4.25(0.000)***
	Njombe location Dummy variable =1; and 0= otherwise	0.552	0.179	3.08 (0.002)***
	Quality of house of household dummy variable =1 for collateral acceptable house, and 0= otherwise	0.320	0.146	2.19(0.030)**
	Duration of loan in Months	0.054	0.016	3.39(0.000)***
	Log of household total assets	0.276	0.077	3.56 (0.000)**
	Log of household total land cultivated	0.224	0.096	2.33(0.021)**
	Constant.	7.656	0.994	7.70***
	Adjusted R^2			0.4004
	F- Values			13.49 (0.000)

Numbers in brackets are P-values. Significant at 1% (***), 5% (**), and 10% (*) respectively.

Table 9 shows that the location dummy variables were significant determinants of the amount borrowed by the households. The dummy variables for Madibila, and Njombe were statistically significant at 1% level, while the coefficient for Mufindi dummy variable was not statistically significant (reference location was Kilolo). The implication is that the amount borrowed by microfinance members is affected by the location of the household. Microfinance members who were located in Madibila, or Njombe borrowed more than those located in Kilolo by 58%, and 55% respectively compared to Kilolo microfinance members. Microfinance members located in Madibila exhibited the highest amount borrowed and propensity to borrow, followed by Njombe, and Mufindi. Kilolo indicated the lowest of all the locations surveyed. The differences in demand across the surveyed locations can be attributed to differences in entrepreneurship developents, resources endowment and infrastructure development.

In Njombe areas the high production of marketable potatoes as the main cash crop facilitated by good transport networks motivate farm household members to borrow more to invest in farming and related farm activities (*e.g.* farm implement shops, crop trade) compared to Kilolo or Mufindi highland areas which are located in poorly developed infrastructure. The location effect on household demand for credit was also reported by Pitt and Khandker (1998) in Bangladesh. Zeller *et al.* (1997) also indicated that the relative differences on poverty level across regions were the cause for variations in borrowing behaviour of households.

Econometric results also show that the nature and characteristics of rural credit programmes determine the demand for credit. As indicated in Table 10, the coefficient for bank membership dummy variable was statistically

significant at zero percent level (p= 0.000). This result suggest that farm households who borrowed from microfinance banks (MuCoBa and NMB) demanded more credit than households who were members of government microfinance institutions by almost 59% (Government MFI was used as reference dummy variable in the analysis). Qualitative analysis supported this result by showing that some borrowers of microfinance banks (MuCoBa in particular) borrowed large amount of funds to the extent that they were able to purchase modern farm equipments such as power tillers (Hand operated Tractors). The observed findings can be attributed to the relative big operating capital capacity of microfinance banks compared to government MFIs. Furthermore MFI banks adopt the individual lending methodology which provide opportunity for individual borrowers with assets to collateralize and who are relatively non- or less poor to borrow large loans.

Table 10: OLS Coefficients Estimates of the Determinants of Credit Demand of

Sampled farm Households Members

S/No	Dependent Variable Is Log Of Household Current Credit Amount : N= 203			
	Independent Variables	**Coefficient**	**Std. Err**	**T-Values**
1	Education of Household Head D3 (Dummy variable =1 for secondary school)	0.251	0.153	1.64 (0.102)*
2	Quality of house of household dummy variable =1 for collateral acceptable house, and 0= otherwise	0.416	0.136	3.06*** (0.003)
3	Duration of loan in Months	0.032	0.015	2.47 (0.014)***
4	Log of household total assets	0.317	0.073	4.29(0.000)***
5	Log of household total land cultivated	0.184	0.095	1.47(0.122)
6	Household type of MFIs membership Dummy=1 for Bank , 0= otherwise	0.591	0.073	3.85 (0.000)***
7	Household type MFI membership Dummy=1 for SACCOS , 0= otherwise	0.463	0.155	2.99(0.003)***
8	Household type of MFIs membership Dummy=1 for NGO , 0= otherwise	0.405	0.180	2.25(0.026)**
	Constant.	7.169	0.969	7.39***

(equation 2) R2 = 0.4076; Numbers in brackets are P-values; Significant at 1% (***), 5% (**); and 10% (*)

Respectively

The coefficient for SACCOS dummy variable was also statistically significant at 1% level (p= 0.003). SACCO's members were found to borrow more by around 46% than the governmental programs members. The coefficient for the members of microfinance NGO was statistically significant at the level 5% (p= 0.026). Field interviews also indicated that microfinance NGOs and government programmes used mainly the group lending methodology which does not require collateral. Instead group peers pressure was used to enforce repayments of loans. Normally the amount issued by group based MFIs are not expect to be large as the case with individual lending mechanism applicable with MFIs banks or SACCOS. This is because the only grantee is the group cohesion and therefore loan security is generally low to warrant large loans from lenders who mostly avoid excessive risks.

In addition field interview indicated that MFIs such as FINCA, and SIDO exclusively focus on desperate poor, especially women who have micro-businesses. The credit demands for such clients are generally and relatively small. The present study results find support from finding by Diagner and Zeller (2001) in Malawi who observed that the average loan

sizes issued to farm households significantly varied across micro-credit programmes. Microfinance banks exhibited the largest loan sizes than microfinance NGOs or government supported programmes.

The time duration over which loan repayment are required to be made positively affected demand for credit at a statistical significance of 1% level (p= 0.003) in all two regression equations. This result signifies the importance of reasonable loan duration. Initial cash flows from investments in both farm and non-farm activities do not follow immediate after receiving the loans. Thus longer loan periods accompanied with initial grace periods enables farm household to match the incubation periods of agricultural activities with loan repayments. Additionally longer loan durations allows farm households to get better prices for their produces which lags a couple of months after harvesting.

Econometric results also show that household housing quality, total household asset, and education of household head were statistically in all the two OLS equations. The dummy variable for collateral acceptable house has a positive and significant effect on the demand for credit among farm households. Household members with acceptable houses are predicted to borrow up to 41% more than members with unacceptable houses. The variable for the total household assets was statistically significant and positive in both equations at the level of 1% (p= 0.000). Intuitively less (or non-poor) poor households with some assets reflect their high creditworthiness and income generating ability and have additional entrepreneurial ability and risk taking behaviour.

The results from this study are consistent with those by Akram *et al*. (2008) who observed that total borrowing per household was positively and significantly dependent upon both initial total assets and transitory liquid assets of members.The coefficient for household size of land cultivated variable was positive and significant at the level of 5% in the first equation and marginally significant in the second equation (p= 0.112). The results suggest that farm size do not determine demand for credit. Farm households with large farm holdings would have demanded more credit in order to mitigate working capital (labour, and farm variable inputs) requirements. These results indicate that credit demand of farm households was marginally driven by the size of land cultivated. Results by Akram *et al*. (2008) however contradict these results. They found that land has a positive and significant effect on borrowing in Pakistan context (land is used as collateral in most cases by MFIs in Pakistan).

The dummy variable for education of household head in the category of secondary school or above was statistically significant at the level of 5% and 10% in the first and second equations respectively. Households whose heads had secondary school education or above had more borrowings than households with primary school or no formal education. This was due to complementarities of human capital (skills and knowledge) and physical capital in the production process. Education increases productivity and thus ability to handle relatively large farm and non-farm investments. In addition the bargain power for credit increases with education. Similar results were observed by Cheng (2006), and Akram *et al.* (2008)

CONCLUSIONS AND RECOMMENDATIONS

This study assessed the factors determining the variations in demand for credit from rural finance programme by households in rural areas of Iringa region of Tanzania. The study was a survey of 210 rural households who are members in various rural finance programmes. Results show that MFIs specific characteristics determine credit demand. Demand for loan vary across MFIs surveyed. Households who were members of MFIs banks (Mufindi Community banks and NMB

Bank) demonstrated high level of loan demand, followed by SACCOS members. Members of government credit schemes and NGO microfinance institutions had the lowest level of credit demand. While most MFIs have social objectives of reaching the poorest of the poor, arguably there is need for government to provide financial support to MFIs especially SACCOS in order to increase the capital base and thus high ability to provide large amount of loans to clients.

The study results also show that location characteristics are key determinants of demand for credit from Rural Finance Programmes. The four locations surveyed indicated significant variations in the amount of credit demanded. Location specific characteristics indeed influence on average the amount of credit a household demands. Madibila and Njombe indicated the highest level of demand compared to Kilolo and Mufindi locations. Weather conditions, infrastructure development, resources endowment and government agricultural interventions are responsible for the exhibited variations in demand for credit among farm households in the surveyed locations. Policy interventions should not only be directed toward improving access to microfinance programs, but also should address infrastructure challenge facing rural areas. Government endeavours should address infrastructure development issues (roads, electricity e.tc.), agricultural development programmes such irrigations schemes, and marketing boards. Infrastructure developments in rural areas in turn will stimulate demand for credit.

Household economic factors such as size of land cultivated, household quality and total household assets positively determine demand for credit. Land cultivated is indeed an indication of investment opportunity taken up by rural households. Household who cultivate large size of lands can be assumed to have their high entrepreneurial ability and risk taking behaviour. The policy implication is that government interventions should be directed toward rural entrepreneurship development, education, and risk taking behaviour campaigns. Arguably government policies can be geared toward encouraging and motivating rural household to have saving tendencies, and use savings to construct quality houses. Deliberate policy can address issue of quality houses through reductions of taxes on construction material and provision of subsidy to rural household who desire to construct modern houses and thus making rural households creditworthy.

Rural-non-farm businesses spending formed a greater proportion of all loans expenditure compared to agriculture or consumption spendings. Agricultural loans are mostly used to finance recurrent agricultural expenditures such as fertilizers, pesticides, hiring of land, and labourers. Very few farm households use loans to purchase long term farm equipments, such as tractors or power tillers or in new technologies. Demand for credit is also derived by need to finance children education expenses and other social needs. The implication is that most of the credits are directed towards productive activities leading to low impact on productivity and income growth. Thus government policy interventions should be geared towards improving social services such as education, and health in order to reduce leakages of microfinance funds, and this may lead to credit funds being directed toward productive activities. Additionally policy intervention should address capital capacity of microfinance institutions to enable them issue large loans necessary to finance long term agricultural equipments such as tractors, and other modern technologies which can bring revolution in the rural household agriculture rather than the micro-loans issued currently to finance normal inputs.

RSEFRENCES

1. Ahmed, S. (2009). Microfinance Institutions in Bangladesh: Achievement and Challenges. Managerial Finance, 35 (12): 999-1010.

2. Akram, W. ; Hussain, Z; Sial, M.H; and Hussain, I. (2008). Agricultural Credit Constraints and Borrowing Behaviour of Farmers in Rural Punjab. European Journal of Scientific Research 23 (2): 294-304.

3. BoT–Bank of Tanzania. (2009). Microfinance sector in Tanzania. [http://www.bot.org-tz/microfinancetanzania]. Sit accessed on 10/04/2012.

4. BoT–Bank of Tanzania. (2014). Microfinance sector in Tanzania. [http://www.bot.org-tz/microfinancetanzania]. Sit accessed on 13/06/2014.

5. CGAP (2007) MFI Capital Structure Decision Making: A call for Greater Awareness [http://www.cgap.org/docs/donorguidelines]. Site visited on 4/4/2008.

6. Cheng, E. (2006). The Demand for Micro-credit As a Determinant for Microfinance Outreach- Evidence from China. In: Proceedings of the ACESA Conference . 13-14 July 2006, Victoria University, Melbone, Australia. 1-25pp.

7. Cheston, S and Kuhn, L.(2002). Empowering women through Micro finance: UNICEM: 64pp.

8. Chijoriga, M.M.; Mori, N; and Olomi, D.R. (2009). Microfinance. In: African Entrepreneurship and Small Business Development, Context and Process, Oteman Ltd, Dar es Salaam, Tanzania: pp. 132-145.

9. Coleman, E. B. (1999). The Impact of group lending in Northeast Thailand. Journal of Development Economics 60: 105-141.

10. Coleman, E. B. (2006). 'Microfinance in Northern Thailand': Who Benefits and How much'. World Development 34 (9): 1612-1638.

11. Copestake, J.,Sonia, B. and Johnson, S. (2001). Assessing the impact of micro-credit: A Zambian case study. Journal of Development Studies, 37: 81-100.

12. De Janvry, A. and Sadoulet, E. (2001). Income among Rural households in Mexico: The role of off-farm activities. World Development 29 (3): 467-480.

13. Diagne, A. and Zeller, M. (2001). Access to credit and its impact on Welfare in Malawi. International Food Policy Research Institute, Research Report 116: 153pp.

14. Evans, T.G.J.; Alayne, M. A. ; Rafi. M; and Norris, H. A. (1999). Demystifying Nonparticipation on microcredit: A Population Based Analysis. World Development, 27(2): 419-430.

15. Gujarati, D.N. (2006). Essentials of econometrics, 3rd edition, McGraw-Hill, Inc. New York, New Delhi: 531pp.

16. Hair, J. F.; Black, W.C; Babin, B. J. and Anderson, R. E.(2006). Multivariate Data Analysis 6th Edition Pearson Education Inc. USA: 898pp.

17. Harper, M. (2005). Farm Credit and Microfinance – Is there a Critical Mismatch. Small Enterprise Development, 16(3): 1-11.

18. Hartarska, V. ; and Nadolnyak, D. (2008). An Impact Analysis of Microfinance in Bosnia and Herzegovina. World Development 36 (12): 2605-2619.

19. Hulme, D. (2000). Impact Assessment Methodology for Microfinance: Theory, Experience and Better Practice. World Development. 28: 79-98.

20. IRSEP, (2007). Iringa Region Socio-Economic Profile. National Bureau of Statistics and Iringa Regional Commissioner's Office. Ministry of Planning and Economy and Empowerment- Tanzania: 274 pp.

21. Johnson, D; and Morduch, J. (2007). Microcredit vs. Micro saving: Evidence from Indonesia.

[http//www.siteresources.worldbank.org/INTFR/resource/microcredit-versusmicrosaving-evidencefromindonesia/pdf]. Site visited on 7/3/2011.

22. Lipsey, R. and Christal, A.K. (2004). Principles of Economics, 10th Edition, Oxford University, New York: 699pp.

23. Littlefield, E. ; Morduch, J.; and Hashemi, S. (2003). .Is Microfinance an Effective Strategy to Reach the Millennium Development Goals? CGAP Focus notes [http://www.cgap.org/p/site/c/template.rc/1.9.2568]. Site visited on 10/2/2010.

24. Makombe, I.A.M; Temba, E.I; and Kihombo, A.R.M. (1999). Credit Schemes and Women's Empowerment for Poverty Alleviation: the Case of Tanga Region Tanzania. Research Report No. 99.1 REPOA, 77pp.

25. Meyer, R. (2002). The demand for flexible microfinance products: Lessons from Bangladesh. Journal of International Development 14(3): 351-368.

26. Mosley, P. and Hulme, D. (1998). Micro-enterprise Finance: Is there a conflict between growth and poverty alleviation? World Development 26(5): 783-790.

27. Mohamed, K. (2003). Access to Formal and Quasi-Formal Credit by Smallholder Farmers and Artisanal Fisherman: A case of Zanzibar. Research Report No. 03.6, Mkuki na Nyota Publishers. Dar es Salaam- Tanzania. 43pp

28. Morduch , J. (2000). Microfinance Schism. World Development, 28: 617-629.

29. Morduch, J. (2005). Smart Subsidies for Sustainable Microfinance. Microfinance News Letter, Asian Development Bank, 6(4): 10-17.

30. Morduch, J. (2009). Borrowing to save: Perspective from portfolio of the poor [http://www.financialaccess.org-newyorkuniversity.borrowingtosave/pdf] Site visited on 07/03/2011.

31. Mufindi Community Bank, (2008). Annual Report. Mufindi, Tanzania. 10pp

32. Ndunguru, P.C. (2007). Econometrics: A science for Non-experimental Data Analysis.1st edition. Research Information and Publication Department, Mzumbe University, Tanzania: 238pp.

33. Pindyck, R.S. and Rubinfeld, D.L. (1991). Econometrics Models and Economic Forecasts. McGraw Hill, Inc. New York. 596pp.

34. Pitt, M. and Khandker, S.R. (1998). The Impact of Group-Based Credit Programs on Poor Households in Bangladesh: Does the Gender of Participants Matter? Journal of Political Economy 106, (5, October) : 958-996

35. Reardon, T.; Crawford, E. and Kelly, V. (1994). Links between Non-farm Income and Farm Investment in African Households: Adding the Capital Market Perspective. Journal of Agricultural Economics 76 (5) Proceedings Issue: 1172-1176.

36. Robinson, M. S. (2001). The Microfinance Revolution: 'Sustainable Finance for the poor' World Bank, Washington DC, and Open Society Institute, NY. 17pp.

37. Samwelson, P.A. and Nordhaus, D.W. (2006). Economics, 18th edition, McGrow- Hill Publishing, Co., New Delhi: 776pp.

38. Schreiner, M. (2001). Seven aspect of loan size. Journal of microfinance, .3, (2):27-48.

39. Shahidur, R. ; Sharma, M. and Zeller, M. (2004).Micro-Lending for Small Farmers in Bangladesh: Does It Affect Farm Households' Land Allocation Decision? Journal of Developing Areas. 37 (2):13-29.

40. Shailesh, K. (2008). Does Consumption Expenditure Determine Credit Demand in Rutal North India? Implication for Microfinance. The CURRENT, Public Policy Journal of the Cornell Institute for Public Affairs, 12 (1) Fall: 1-17.

41. Taylor, J. E. and Adelman, I. (2003) Agricultural household models: Genesis, evolution and extensions. Review of economics of households 1(1):1-20.

42. Tchouassi, G. (2011). Microfinance, Inequality, and Vulnerability: Empirical analysis from Central Africa Countries. Journal of Development and Agricultural Economics, 3(4): 150-156.

43. Temu, A. (1994). A Study on Rural Financial Markets in Tanzania. PhD Thesis, University of London. 340pp.

44. Umara, N; Imran, R; Zahear, A; and Saif, M.I. (2011). Impact of Microfinance on Poverty: A case of Pakistan. World Applied Science Journal 12(6): 877-883

45. URT, (2001). Microfinance policy. Ministry of Finance, Government Printers, Dar es salaam Tanzania: 27pp

46. URT, (2006). Bank of Tanzania Act, Ministry Of Finance. Government Printers, Dar es Salaam Tanzania. pp

47. URT, (2009). The Tanzania National Business Council (Kilimo Kwanza). Agriculture Working Group of the Tanzania Business Council. 6th Meeting. Dodoma Tanzania. 43pp.

48. Von Pischke, J. D. and Adams D.W. (1980)' Fungibility and the design evaluation of agricultural credit projects', American Journal of Agricultural Economics 62 (4): 719-726.

49. Wangwe, S. (2004). Innovation in Rural Finance in Tanzania. In: Proceedings of the Third Annual Conference on microfinance (Edited by M/S Moorine Lwakatare),15-17 March; Arusha Tanzania. 18pp, [http:/www.esrf.or.tz/innovationinruralMFIinTz.pdf].Site visited on 7/3/2011.

50. Wooldridge, M. J. (2000). Introductory Econometrics: A modern Approach. 2nd edition. MacMillan, New York. 819 pp.

51. World Bank (2003), "Rural financial services: implementing the bank's strategy to reach the rural poor", Rural Private Sector, Markets, Finance and Infrastructure Thematic Group, The World Bank, Washington, DC. 30pp.

52. Yunus, M. (2006). What is Micro credit? [http://www.grameen-info.org/bank/whatisMicrocredit.html] 5pp. Site visited on 15/5/2010

53. Zaman, H. (1998b). Who benefits and to what extent? An evaluation of BRAC's micro-credit program' University of Sussex, D.Phil. Thesis, Sussex. 291pp.

54. Zeller, M.; Diagne, A and Mataya, C. (1997). Market access by smallholder farmers in Malawi: Implications for technology adoption, agricultural productivity and crop income. Agricultural Economics 19 (1-2): 219-229.