

Empirical Analysis of Factors Affecting Loan Diversion of Microfinance Group Borrowers: The Case of Omo Microfinance Kucha Sub-branch, Southern Ethiopia

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Abstract

Microfinance institutions play a pivotal role in poverty reduction by providing various financial services (micro-credit, saving and other services) for the rural small-scale farmers who cannot afford to adopt new technologies and to startup new business activities from their own source; hence, sometimes called 'Rural Banks'. The major objective of the present study is to identify factors affecting loan diversion of microfinance's small-scale group borrowers in the Kucha woreda. A pre-tested structured questionnaire was used to gather information from 131 smallholder farmers from six kebeles (villages), using the multistage sampling technique. Descriptive statistics and multinomial logit model were used to analyze the data collected. Eleven independent and one dependent, variables were selected for analytical purpose. The study revealed that of the total sample households 67 (51.1 %) were not diverted the loan (used for intended purposes), while the remaining 64 (48.9%) were diverted their loan to some other unintended goal. Among these, 46 (35.1%) were diverted to non-productive investments while 18(13.7 %) were diverted the loan to more productive schemes. A multinomial logit regression model was employed to identify factors that influence the loan diversion. The results indicate that purpose of the loan, dependency ratio, supervision and perception of borrower towards repayment have statistically significant explaining power to impact the probability of loan diversion to other more productive investments relative to not diverting the loan, assuming *ceteris paribus*. In the same talk, the probability of diverting the loan to non-productive investments in reference to base category is significantly affected by sex of the borrower, group size, number of females within the group and perception toward repayment. Based on the findings, it could be recommended that giving due attention for these significant variables is a paramount important for wise utilization of limited resources and to devise an appropriate policies that can actually improve the livelihood of the mass small-scale farmers.

Keywords: Microfinance, Rural bank, Development finance, Group borrowers, Loan Diversion Multinomial Logit

1. Introduction

Poverty is the major challenge and a fundamental issue of economic development in most developing economies. According to the World Bank Report (UNDP, 2001/2002), two-third of the developing countries people live in rural areas where the extent of poverty is very severe. Development finance is among the most important inputs to break the vicious circle of poverty as it would increase employment, income, consumption, and empowerment of disadvantaged groups. Microfinance group lending subject to joint liability has gained global approbation as an important poverty reduction tool in many developing countries. It has become popular all over the world since Dr. Mohammed Yunus, a Nobel Prize-winning activist and founder of Grameen Bank, introduced the venture in Bangladesh (Johnson and Rogaly, 1997). The group lending scheme can solve the problem of rural market imperfections caused by information asymmetry problems of adverse selection and moral hazard. In the rural areas of less developed countries (LDCs), where the conventional banking system non-existent, perhaps lending to rural poor as a risky business due to collateral and other reasons, the microfinance can play a pivotal role in providing various financial services (micro-credit, saving and other services) for the poor farmers who cannot source from their own available capital so as to adopt new technologies and to startup new business activities; hence, sometimes called 'Rural Banks'.

Ethiopia is one of the poorest economies in the world, where its economic growth is highly dependent on the agricultural sector growth at large and the subsistence small-scale agriculture of the rural sector in particular. The country's 80 percent small holder farmers (average size of 1-2 Hectar) residing mostly in rural areas, produce more than 97 percent of agricultural output for the national economy (CSA, 2007). Despite the impressive GDP growth for more than a decade and macroeconomic fundamentals, around 25 million people in the country (29 per cent of the population) live below the nationally defined poverty line (MoFED 2012). Due to

the fact that the lion share rural population derives its livelihood from agriculture, poverty is by large a rural phenomenon. The prevalence of such grinding poverty is structurally linked to the low production and productivity of subsistence agriculture sector. Indeed, poverty reduction is the central development policy agenda of the Ethiopian Governments' and the rural poor is at the heart of the development endeavors. In its effort to fight against urban and rural poverty, the current Ethiopian government recognized that the development of financial markets in particular, microcredit services as one of the major poverty reduction strategies put in place and; hence, set a legal framework for establishment and operation of microfinance institutions to provide financial services to rural small-scale farmers, urban poor households and micro & small enterprises (Wolday, 2008).

Although, the government's efforts to improve the living conditions of the rural poor have instigated to bearing fruit; still the incidence and severity of poverty have intensified in the rural areas of the Kucha woreda. The rural areas of study area, like any other areas of Ethiopia, is characterized by vulnerability to poverty and food insecurity that is substantially caused by, marginal land holdings, degraded natural and livestock resources, dependent on rain fed agriculture, low level of asset accumulation due to poor saving habit, poor access to essential services, low level of production & productivity, poor communication, underdeveloped physical infrastructure, poor entrepreneurial development, and poor financial sector development. The poorly developed rural credit market of the study area is characterized by limited access, high cost of services, and absence of convenient savings facilities. Above all, borrowers' visionary outlook and their attitude towards managing the obtained limited loan in a right manner is a prerequisite for their livelihood change in particular and for the targeted growth and development of in general.

In Ethiopia, various studies have been carried out on microfinance institutions. However, most studies focus on loan repayment performance MFIs, financial sustainability and servicing. Loan diversion that might hinder loan repayment performance in stipulated time period and; hence, determine financial sustainability should not be overlooked. Diverting the loan to unintended purposes is the most important feature of rural credit market that makes it problematic. A loan may be taken for supposedly productive reasons, but may be used for unproductive investments (consumption, recreation, social ceremonies, etc) that cannot be easily transformed in to monetary repayment. Sometimes, it could also be diverted to the other more productive investment in the view of farmers. Diversion of the loan to either of the investments might be influenced by various demographic, socio-economic and institutional factors; some of which are believed to have negative impact while others have positive impact; thus, clear understanding of aforementioned factors is crucial for the lenders (to extend the service and outreach more clients) as it provides information on the incentives available for the borrower to comply with repayment schedules for financial sustainability and for the policy makers (to design appropriate credit policy that enhance welfare of the rural poor for national universalities). Moreover, knowledge of determinants of loan diversion is undoubtedly important to evaluate the microfinance's impact on the livelihood of the poor. Therefore, the present study, which is aimed at analyzing factors affecting of loan diversion of microfinance group lending, is of great policy relevance.

2. Microfinance institutions in Ethiopia

Microfinance venture is a recent business in Ethiopia. However, micro-enterprise lending program started since mid-1980s by many governmental (Development Bank of Ethiopia in collaboration with the Ministry of Trade) and non-governmental organizations by providing micro-credit to poor households for income generating activities. Formal microfinance in Ethiopia started its operation in July 1996, following proclamation No. 40/1996. Although the establishment of regulated formal microfinance institutions is a recent phenomenon in Ethiopia, unlike in other countries, MFIs are allowed to mobilize public savings (Wolday, 2008). According to Yigrem (2010), after the issuance of licensing and supervision of microfinance Proclamation, more than 30 MFIs which are owned by regional governments, NGOs, individuals, associations have been licensed by National Bank of Ethiopia including Omo microfinance, all operating by targeting the active poor.

The objective of the MFIs is basically poverty alleviation through the provision of sustainable financial services to the poor who actually do not have access to the financial support services of other formal financial institutions. Since then these MFIs have been playing the role of promoting and accessing financial services to mainly the rural area. The microfinance sector is growing in terms of number and size. The sector is currently serving more than 2.3 million clients. The total asset of the microfinance sector which was Birr 225 million at the end of 1997 has reached Birr 7,164 million (US\$ 534 million) in 2009, showing a remarkable growth of 30.84 percent. According to Wolday (2008), the MFIs provide a variety of loan products which can be broadly categorized into agricultural loans, micro-business loans, micro and small enterprise loans (micro-bank loans), employee loans, package loans (food security loans), and housing loans. Many of the loans are group loans followed by individual loans and cooperative loans. The agricultural loans in many of the MFIs are end-term loans which are paid at the end of the loan period. Omo Micro Finance Institution (OMFI) was legally registered by the National Bank of Ethiopia, officially established and started its operation at the mid of 1997, as part of the

national food security programme by the regional government. As per Wolday (2000), the shareholders of the institutions are the regional government, (owning 80% of the share); associations and local NGOs (19.5% of the share) and individuals (0.5% of the share).

3. Research Methodology

The present study explores factors affecting loan diversion of microfinance group borrowers in Kucha woreda, one of the 15 woredas of Gamo Gofa Zone, SNNP, known for its quality butter the so called 'Kucha Kibe' and ground nut production. According to the CSA 2007 census, 96.7 percent of population of the woreda is found in rural areas while only 3.3 percent dwellers reside in urban area.

3.1. Data sources and sampling techniques

Cross sectional data set (collected at a point in time) of both qualitative and quantitative data nature was collected from primary and secondary data sources. The primary data was collected from the field survey using structured and pre-tested questionnaire. A mixed (non-probability- purposive) and multistage (four stage) probability sampling techniques were carried out to select the target respondents (Kothari, 2004). Following stratified random sampling with proportionate to sample size technique was employed to select 131 sample respondents from six kebeles for the final analysis. Focus group discussions and key informants interview were conducted for triangulation purpose. The secondary data consists of relevant information were collected from different concerned offices, magazines and pertinent documents.

3.2. Method of Data Analysis

Both Descriptive statistics and Econometrics analysis methods were employed to analyze the collected data from primary and secondary sources. Descriptive statistics such as mean, standard deviation, frequency, percentage, t and chi² test statistics were used to analyze the data obtained from both primary source using structured questionnaire and secondary sources while Econometrics analysis was duly used to analyze the data from primary source. More specifically, multinomial logit model which best fits the data, was employed for the present study.

3.2.1. Theoretical Econometric Model

Multinomial logit models are a straightforward extension to the logit model when the dependent variable can take more than two categorical **choices** and the choice is made **simultaneously**. A response variable with K categories will generate K-1 equations. Each of these K-1 equations is a binary logistic regression comparing a group with the reference group. Notice that multinomial logit can only be used when the choices are actually mutually exclusive (Woldrige, 2000, 2002).

The general notation for the basic model is: $y_i = x_i' \beta + v_i$ (1)

, where, i- refers to individual/household, $x_i' \beta$ -vector of covariates & v_{it} = Composite error term

Following Green (2008), suppose the ith household is faced with j choices, we specify the utility choice j as:

$$U_{ij} = Z_{ij} \beta + \varepsilon_{ij} \quad (2)$$

If the household makes choice j in particular, then we assume that U_{ij} is the maximum among the j utilities.

So the statistical model is derived by the probability that choice j is made, which is:

$$\text{Prob}(U_{ij} > U_{ik}) \text{ for all other } K \neq j \quad (3)$$

Where, U_{ij} -is the utility to the ith household from choice j, and U_{ik} -the utility to the ith household from choice k.

The ith household's decision can be modeled as maximizing the expected utility by choosing the jth choice among J discrete choices, i.e,

$$\max_j = E(U_{ij}) = f_j(x_i) + \varepsilon_{ij}; j = 0 \dots J \quad (4)$$

In general, for an outcome variable with J categories, let the jth choice that the ith household chooses to maximize its utility could take the value 1 if the ith household choose jth choice and 0, otherwise. The probability that a household with characteristics x chooses alternative j, P_{ij} is modeled as:

$$P_{ij} = \frac{\exp(X_i' \beta_j)}{\sum_{j=0}^J \exp(X_i' \beta_j)}, \quad j = 0 \dots J \quad (5)$$

With the requirement that $\sum_{j=0}^J P_{ij} = 1$ for any i

Where: P_{ij} = probability representing the ith household's chance of falling into category j

X = Predictors of response probabilities

β_j = Covariate effects specific to jth response category with the first category as the reference.

Thus, $P_{ij} = P(\text{individual } i \text{ chooses alternative } j)$, then:

$$P_{11} = \frac{1}{1 + \exp(\beta_{12} + \beta_{22}x_i) + \exp(\beta_{13} + \beta_{23}x_i)}, j = 1$$

The first category used as a reference (6)

$$P_{i2} = \frac{\exp(\beta_{12} + \beta_{22}x_i)}{1 + \exp(\beta_{12} + \beta_{22}x_i) + \exp(\beta_{13} + \beta_{23}x_i)}, j = 2$$

(7)

$$P_{i3} = \frac{\exp(\beta_{13} + \beta_{23}x_i)}{1 + \exp(\beta_{12} + \beta_{22}x_i) + \exp(\beta_{13} + \beta_{23}x_i)}, j = 3$$

(8)

Multinomial logistic regression simultaneously estimates the K-1 equations using maximum likelihood estimation. The assumptions underlying the model assure that the sum of the probabilities of all the categories add up to 1. There is no order within the categories of Y (any of them can be the baseline for comparison). Since one alternative is the base for all other alternatives the estimated parameters per equation reflect the effect on the log-odds of alternative under consideration against the base alternative. That is:

$$\ln\left(\frac{P_{ji}}{P_{bi}}\right) = \beta_j X_{ji} + \varepsilon_{ji}$$

(9)

, where J is the number of alternatives and $j = 1, \dots, J - 1$

The sign of a coefficient reflects the direction of change in the odds ratio in response to a ceteris paribus change in the value to which the coefficient is attached (P_{ji}/P_{bi}). The odds-ratio is also called relative risk. It does not reflect the direction of change in the individual probabilities. For direct interpretation of coefficients, **marginal effect** has to be conducted.

3.2.2. Empirical Econometric Model

To identify the determinants behind rural group borrowers' decision to divert the loan on a given alternatives, the assumption is that in a given period a rational household chooses among the available mutually exclusive choice alternatives that offers the maximum utility for him/her.

The multinomial logit model stated above is customized and used to analyze the primary data collected. Eleven independent variables that might influence the categorical dependent (Loan Diversion) variable were selected for analytical purpose.

Accordingly, the variables for this study are summarized in the functional form of:

$Loandiv_i = f(\text{sexbor}, \text{age}, \text{educ}, \text{loansize}, \text{purpose}, \text{groupsz}, \text{percept}, \text{supervi}, \text{training}, \text{females}, \text{depend})$.

For the i^{th} borrower the empirical econometric model is specified as:

$$Loandiv_i = \beta_0 + \beta_1 \text{sexbor}_i + \beta_2 \text{age}_i + \beta_3 \text{educ}_i + \beta_4 \text{loansize}_i + \beta_5 \text{purpose}_i + \beta_6 \text{groupsz}_i + \beta_7 \text{depend}_i + \beta_8 \text{supervi}_i + \beta_9 \text{training}_i + \beta_{10} \text{females}_i + \beta_{11} \text{percept}_i + U_i$$

(10)

Where,

$Loandiv_i$ = Loan Diversion choice of i^{th} group borrower (categorical variable that assumes 0= if the loan is not diverted, 1= diverted to other more productive investment, and 2= diverted for non-productive investment, which are mutually exclusive).

Explanatory variables for i^{th} group borrower are:

sexbor_i = Sex of borrower; 0 = female, 1 = male

age_i = Age of borrower up to interview in years

educ_i = Educational level of borrower; 0= illiterate, 1= grade 1-6, 3= 7-8, 4= 9-12, 5= above 12

loansize_i = Loan size in Birr

purpose_i = Loan purpose; 1= purchase of livestock (draught oxen, dairy cow, cattle fattening & trading) 2= petty trade

groupsz_i = Group size in numbers

depend_i = Dependency ratio-proportion of dependants in the household (number of dependants/ total family size)

supervi_i = Institutional supervision (officers visit); 0= no supervision at all, 1= supervised only at repayment time, 2= supervised more than once

training_i = Training on loan utilization, repayment and the like; 0= not trained, 1= trained

females_i = Number of females within the group

percept_i = Perception towards loan repayment; 0 = It is a government gift so not subject to repayment, 1 = I know it should be repaid on time

$\beta_1 - \beta_{11}$ = Coefficients of respective explanatory variables, β_0 = Coefficient of constant terms U_i = Error term.

The model output will have two parts; labeled with the categories of the outcome variable the loan is not diverted.

They correspond to two equations:

$$\text{Log}(P(\text{diverted for productive})/P(\text{not diverted})) = \beta_{20} + \beta_{21} \text{sexbor}_i + \beta_{22} \text{age}_i + \beta_{23} \text{educ}_i + \beta_{24} \text{loansize}_i +$$

$$\beta_{25}\text{purpose}_i + \beta_{26}\text{groupsz}_i + \beta_{27} \text{depend}_i + \beta_{28}\text{supervi}_i + \beta_{29}\text{training}_i + \beta_{210}\text{females}_i + \beta_{211} \text{percept}_i \quad (11)$$

$$\text{Log}(P(\text{diverted for non-productive})/P(\text{not diverted})) = \beta_{30} + \beta_{31}\text{sexbor}_i + \beta_{32}\text{age}_i + \beta_{33}\text{educ}_i + \beta_{34}\text{loansize}_i + \beta_{35}\text{purpose}_i + \beta_{36}\text{groupsz}_i + \beta_{37} \text{depend}_i + \beta_{38}\text{supervi}_i + \beta_{39}\text{training}_i + \beta_{310}\text{females}_i + \beta_{311} \text{percept}_i \quad (12)$$

4. Result and Discussion

This section presents the investigative results of the study. The first section presents the descriptive statistics results of the study. The second section focuses on the discussion and interpretation of the econometric model results

4.1. Descriptive analysis

Out of the total 131 interviewed borrowers 67 (51.1 %) were not diverted the loan (used for intended purposes), while the remaining 64 (48.9%) were diverted their loan to some other unintended goal. Among these, 46 (35.1%) were diverted to non-productive investments while 18(13.7 %) were diverted the loan to more productive schemes.

The average age of sample borrowers was 39.07 years with the minimum and maximum ages of 25 and 80 years, respectively. The average age of non-diverter borrower was 40.04 years, while that of diverted to non-productive investment was 38.06 years though the mean difference is non-significant at 5% level using t-test.

The descriptive statistics results are stated in table 4.1 and 4.2. As it is indicated in table 4.1, the average loan size or amount borrowed (in birr) for those diverted was 4543.47 while for non-diverted was 4029.85. As the t-test revealed that the mean difference among two groups is significant below 1%. Thus, as loan size increase, the probability of diverting the loan is increasing, but it is not the case for those investing in productive activities and the effect is reverse.

The average group size of those diverted the loan to unproductive activities is 4.9 while that of non-diverters is 4.1 and the mean difference is significant less than 5%. This implies that the larger the group size, the larger will be the transaction costs and; hence, unmanageable.

The dependency ratio that measures the number of household members looking for household to family size is another important demographic variable that determine the probability of loan diversion. The average dependency ratio of those borrowers who did not divert their loan is 0.47 while for those diverted to non-productive investments is 0.53. The mean difference between two groups is significant below 10%. Thus, borrowers with high dependency ratio are more likely to divert their loan to no productive activities like consumption.

As it is clearly stated in table 4.2, out of 46 borrowers who diverted the loan to non-productive investments, 44 (around 96%) were male, while their female counterparts were only 2. Actually 50 male and 17 female not diverted the loan. The chi² test confirmed that the mean difference is highly significant (below 1%). This shows as female borrowers are serious in managing their loan and are trustworthy.

39 out of 131 (13 illiterate and 26 who completed up to grade 6) diverted their loan to non-productive investments while 57 were not diverted, but the mean difference due to education is non-significant as of chi² test statistic.

The purpose of loan is another important factor that affects loan diversion. Out of 131 group borrowers, 108 (82.44%) engaged in livestock production sector (to purchase draught oxen, dairy cow, cattle fattening and trading) while 23 (17.56%) took the loan for petty trading of various type. Among those engaged in livestock production, 59 diverted their loan (majority 43 or 72.9%) to non-productive investment. However, only 3 out of 23 engaged in petty trading diverted their loan to non-productive investment. Based on chi² test statistic, the mean difference among two groups is highly significant. Thus, livestock production is not worthy investment as compared to petty trading for the clients under consideration.

Frequent follow-up and supervision of officers is also important to use the loan for intended purpose. Among 131 interviewed group borrowers, 98 were not totally supervised by the officers (54 diverted the loan to unintended purposes) while 38 visited once or more than one time within due periods and only 5 diverted the loan to non-productive activities. The mean difference is significant at 10%. This shows the importance of supervision.

Training (on loan utilization, repayment and the like) before loan disbursement is an important factor for wise management of the loan. Majority of the borrowers (111 among 131) have taken training, while only 20 revealed that they have not taken the service. Out of 131, 29 diverted the loan to unproductive projects from which the lion share (17 out of 29) did not take the training. The mean difference is highly significant (less than 1%). This implies that training can reduce the likelihood of loan diversion to worthless projects.

Perceptions of group borrowers will mater the loan diversion and repayment. Most of the sampled borrowers (107 out of 131) recognize that the loan should be repaid and 28 were diverted their loan to non

productive investments while 24 assume that it is like government gift and not subject to repayment and 21 diverted the loan to unintended purposes. The mean difference between two groups is highly significant (less than 1%) significance level.

4.2. Econometrics model results and interpretations

Prior to model estimation, all possible diagnostic checking's were carried-out. Due to its very nature, misspecification errors, multicollinearity, and heteroscedasticity problems might be suspected in cross-sectional data; hence, appropriate tests were conducted for the respective problems with due attention and no more serious problems there on data set; thus the data can be estimated using maximum likelihood estimation.

As stated earlier, the model output interpretation of multinomial logit like binomial logit is not straight forward. Parameters are interpreted as the effect of a variable on the log odds. The details of the econometrics model results are clearly stated in table 4.3.

Based on table 4.3, age of the borrower, loan size borrowed, purpose of the loan, dependency ratio, supervision and perception of borrowers toward repayment are negatively affecting the probability of loan diversion to more productive projects as compared to no diversion. In contrary, educational level, group size, training and number of females within the group have positive effect. Among others, purpose of the loan, dependency ratio, supervision and perception of borrower to repayment have significant explaining power to impact the first category of loan diversion (loan diverted to other more productive investments) relative to base category (not diverted), given all of the other variables in the model are held constant.

From the table 4.3, it can be said that when a purpose of loan is for petty trade rather than livestock production, the probability of diverting the loan become decreasing, *ceteris paribus*; hence, the log of the ratio of the two probabilities, probability of (diverted to more productive=1)/probability (non-diverted= 0), will be reduced by 0.5374949. The effect of petty trade (change in purpose of loan from livestock, 0 to petty trade, 1) on the relative risk of choosing loan diversion to more productive over not diverting is $\exp(-0.5374949) = 0.58$

In similar fashion, with a unit increase in dependency ration, the log of the ratio of the two probabilities, $\Pr(\text{diverted to productive}=1)/\Pr(\text{non-diverted}= 0)$, will be reduced by 3.644614. The effect of a unit change in dependency, on the relative risk of choosing loan diversion to more productive over not diverting is $\exp(-3.644614) = 0.026$

The interpretation for supervision and perception is also the same. As the officers supervise the group borrowers frequently and the borrowers believe to repay the loan, the probability of diverting the loan to productive projects (which is unintended) become declining, *ceteris paribus*.

For the second category ($\Pr(\text{diverting to non-productive}=2)/\Pr(\text{non-diverted}= 0)$), sex of the borrower, age of the borrower, dependency ratio, loan size, group size and educational level have positive impact while purpose of the loan, training, supervision, number of females within the group and perception toward repayment are negatively influencing the probability of diverting the loan to non-productive investments. Here, sex of the borrower, group size, number of females within the group and perception toward repayment are statistically significant covariates.

Being the borrower is male, the log of the ratio of the two probabilities ($\Pr(\text{diverting to non-productive}=2)/\Pr(\text{non-diverted}= 0)$) will be increased by 3.535645 and the relative risk of choosing loan diversion to non-productive over not diverting is $\exp(3.535645) = 34.32$. Likewise, as a group size increase by one unit, the log of the ratio of the two probabilities, $\Pr(\text{diverting to non-productive}=2)/\Pr(\text{non-diverted}= 0)$ will be increased by 0.6851989 and the relative risk of choosing loan diversion to non-productive over not diverting is 1.98 ($\exp(0.6851989)$). However, as the number of females borrowers in a given group increase by one unit and the borrower recognize the loan repayment, the probability of diverting the loan to non-productive activities become declining and the log of the ratio of the two probabilities ($\Pr(\text{diverting to non-productive}=2)/\Pr(\text{non-diverted}=0)$) will be decreased by 1.290115 and 0.6790448, respectively.

In the other way, for direct interpretation of parameter estimates of multinomial logit like any other discrete choice models, marginal effects can be used. For instance, for the second category as number of females in the group increase by one unit, diverting the loan to non-productive investments (investing on consumption-social ceremonies, recreations) in reference to no diversion reduced by 29.4 percent, *ceteris paribus*. However, as group size increases by one unit, diverting the loan to non-productive projects is increased by 15.7 percent, all other variables constant (table 4.3). In general, all the econometrics model results are consistent with descriptive statistics results.

Conclusion and Recommendation

It is undeniable fact that microfinance institutions play a central role in poverty reduction by addressing the urban dwellers and rural small-scale farmers who are overlooked by conventional banking system through provision of financial services to satisfy unmet demand for the start-up capital. However, the borrowers may utilize the loan for unintended purposes that hamper financial sustainability of the institutions in one hand and

livelihood changes of the borrowers.

The study revealed that of the total sample households 64(48.9%) were diverted their loan to some other unintended goal. Among these, 46(35.1%) were diverted to non-productive investments while 18(13.7%) were diverted the loan to more productive schemes. The econometrics model results indicate that purpose of the loan, dependency ratio, supervision and perception of borrower towards repayment have significant explaining power to impact the probability of loan diversion to other more productive investments relative to not diverted, given all of the other variables in the model are held constant. In the same talk sex of the borrower, group size, number of females within the group and perception toward repayment are statistically significant covariates to influence the probability of diverting the loan to non-productive investments as compared to non-diverted loan. Based on the findings, it could be recommended that giving the due attention for these significant variables is a paramount important for wise utilization of limited resources and to devise an appropriate policies that can actually improve the livelihood of the mass small-scale farmers.

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References

- Aghion & Morduch, 2005. *The Economics of Microfinance*: Forthcoming from the MIT Press.
- Central Statistical Agency of Ethiopia (CSA), 2007. *Agriculture: Statistical Survey, 2007*; Federal Democratic Republic of Ethiopia, Addis Ababa, Ethiopia.
- Green, 2008. *Econometrics Analysis*, six Edition, New York University: Pearson Prentice Hall.
- Johnson, S. and Rogaly, 1997. *Microfinance and Poverty Reduction*: London, Oxfam.
- Kothari C.R, 2004. *Research Methodology: Methods and Techniques*, New age international limited publisher.
- MOFED (2012). *Ethiopia's Progress Towards Eradicating Poverty: An Interim Report on Poverty Analysis Study (2010/11)*, Development Planning and Research, Ministry of Finance and Economic Development, Addis Ababa Ethiopia.
- Wolday Amha, 2008. *Innovations in the Delivery of Financial Services through the Deposit Taking Microfinance Institutions (MFIs) in Ethiopia*: Paper Presented at AFRACA Workshop on Innovations in Addressing Rural Finance Challenges in Africa, Addis Ababa, Ethiopia.
- _____, 2000. *Review of microfinance industry in Ethiopia: Regulatory framework and performance*; Occasional paper 2, Association of Ethiopian Microfinance Institutions (AEMFI).
- Wooldridge J. 2002. *Econometric Analysis of Cross Section and Panel Data*: Cambridge, MIT Press.
- _____, 2000. *Introductory Econometrics: A modern Approach*, third edition.
- World Bank, 2000. *World Development Report (United Nations Development Report 2000/2001)*: Oxford University press, Washington DC.
- Yigrem Kassa, 2010. *Regulation & Supervision of Microfinance Business in Ethiopia: Achievements, Challenges & Prospects*, (presented at International Conference on Microfinance Regulation, Bangladesh, Dhaka); National Bank of Ethiopia.

Table 4.1: Descriptive statistics for continuous variables

Loan diversion		N	Mean	t	Sig.
Amount of loan borrowed	Not diverted	67	4029.85	3.05	0.003
	Diverted for non-productive investments	46	4543.48	3.21	0.002
Group size	Not diverted	67	4.42	2.89	0.005
	Diverted for non-productive investments	46	4.89	2.79	0.006
Females within the group	Not diverted	67	0.31	0.90	0.089
	Diverted for non-productive investments	46	0.22	0.89	0.379
Dependency ratio	Not diverted	67	0.47	1.73	0.086
	Diverted for non-productive investments	46	0.53	1.71	0.091

Table 4.2: Descriptive statistics for dummy variables

Variables	Loan Diversion			Total	χ^2 - value
	Not diverted	Diverted for productive activity	Diverted for non-productive activity		
Perception towards loan repayment					
<i>It is government gift so not payable</i>	3	3	18	24	33.676***
<i>I know it should be repaid on time</i>	64	15	28	107	
Total	67	18	46	131	
Supervision by loan officer from branch					
<i>Not supervised</i>	44	15	39	98	6.827*
<i>Supervised only on repayment time</i>	6	0	2	8	
<i>Supervised more than one</i>	17	3	5	25	
Total	67	18	46	131	
Sex of borrowers					
<i>Female</i>	17	0	2	19	13.263***
<i>Male</i>	50	18	44	112	
Total	67	18	46	131	
Purpose of loan					
<i>Purchase of livestock</i>	49	16	43	108	8.394***
<i>Petty trade</i>	18	2	3	23	
Total	67	18	46	131	
Training on loan utilization					
<i>Trained</i>	64	18	29	111	26.0***
<i>Not trained</i>	3	0	17	20	
Total	67	18	46	131	

*and *** indicate level of significance at less than 1 and 10 percent level of significance

Table 4.3: Econometrics model result (Coefficients and Marginal Effects)

Variables	Diverted to other more productive activity				Diverted for non-productive activity			
	Coeff.	dy/dx	Z	P>Z	Coeff.	dy/dx	Z	P>Z
sexbor	17.4604	.020732	0.01	0.990	3.535645	.4440371	2.69	0.007
age	-.0553951	-.00012	-1.51	0.132	.0137764	.0031927	0.48	0.633
educ	.3945396	.000695	1.19	0.233	.1498831	.0340139	0.50	0.618
loansize	-.0004197	-.000419	-1.04	0.297	.0000266	.0000266	-0.08	0.936
purpose	-.5374949	-.001019	-2.06	0.039	-.1054304	-.0237377	-0.54	0.586
groupsz	.2697574	.000053	0.62	0.539	.6851989	.1566073	2.04	0.041
depend	-3.644614	-.007493	-1.94	0.052	.0903498	.023315	0.06	0.954
supervi	-.7806762	-.001276	-1.80	0.073	-.434677	.0989073	-1.18	0.237
training	15.4739	.020274	0.01	0.993	-1.055631	-.2614943	-1.12	0.262
females	.9829166	.001069	1.16	0.247	-1.290115	-.2945212	1.84	0.066
percepti	-.484531	-.000495	-2.27	0.023	-.6790448	-.1550434	-3.89	0.000
_cons	-26.71774		-0.01	0.991	-3.90797		-1.30	0.194

* (base outcome) = Not Diverted

Multinomial logistic regression Number of obs = 131

LR chi2(22) = 82.22

Prob> chi2 = 0.0000

Log likelihood = -86.629508 Pseudo R2 = 0.3218