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Determinants of Household Demand for Credit Use in Myanmar

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Abstract

This study was designed to identify households' socio-economic factors influencing the demand for credit use in Myanmar. To avoid the censoring bias that Ordinary Least Squares (OLS) could generate, a Tobit Model was adopted on a total sample size of 431 respondents from 6 different townships. The empirical results show that gender of household head, educational level, occupation, land holding size, marital status and per capita expenditure are important factors and significantly influencing on the demand for credit use. However, non-significant of the location dummies in the result show that the demand for credit by the households across the areas sampled is not different from each other or follow similar pattern. Based on the results, farming, as occupation is a major driver of demand for credit highlights the need for farmers to have access to timely credit in food production in study. Moreover, female headed households demand for more credit than male underscores policy relevance of improving female access to credit to meet timely demand and the finding also stress the role of human capital (education) in demand for credit.

Key words: Demand, credit use, Tobit regression, censored regression, Myanmar

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Introduction

Myanmar is the second largest country in Southeast Asia in size. It has an estimated population of 62 million. More than two-thirds of the population live in rural areas, where agriculture is the main source of earning income (IMF, 2012). Poverty remains one of the major challenges as majority of the poor in the country live in the rural areas. As at 2011, the per capita income in the country is about US$ 832, while food poverty level is about 5% (UNDP, 2012). Poverty is twice as high in rural areas, compared to urban areas with wide regional inequalities in human development and Millennium Development Goals (MDGs) indicators.

As noted by Imai et al., (2010), most parts of the developing world would still have remained characterized by huge demand for microfinance services, if not for the exceptional growth of microfinance sector during the last three decades in serving around 40 million clients worldwide. The demand for credit is high in Myanmar as well. However, few institutions provide microcredit, and unmet demand is estimated by industry experts at close to US$ 1 billion (UNCDF, 2012). As noted by Lhing et al., (2013), the formal financial institutions in Myanmar are under the control of the central bank and borrowers need to have assets or properties to access loan from the bank. This however, left most poor households in the country to depend on microfinance institutions or private lenders to secure needed credit to enhance their welfare. In many developing countries, credit has been used as an essential instrument for promoting not only the development of agriculture especially to the small scale farming sector but also for poverty reduction in rural areas. But accessibility to credit depends on a number of factors, which include: the type of production, consumption, the extent of market integration and education among others are important for household livelihood.

According to Qbai (1983), in many developing countries, official credit programs have become important components of development expenditure. Increasing access to financial services holds the promise to help the poor to reduce poverty and improve development outcomes. Bauchet et al., (2011) also mentioned that credit can enable the poor to smooth consumption especially in the case of adverse shock, can start or expand a business, can also cope with risk and increase or diversify household income. Anyiro and Oriaku (2011) also confirmed that access to credit can help the rural poor economy in several ways.

However, despite the importance of credit in assisting the poor to improve their welfare, poor people are still excluded from formal financial system in developed countries with partial exclusion and in developing countries with full or nearly full exclusion as noted by Brau and Woller (2004). Moreover, a search in the literature shows that Anyanwu (2004) identified collateral, credit rationing, preferences for high income participants and large loans, bureaucratic and lengthy procedure of providing loan in the formal sector to keep poor people outside the boundary of the formal sector financial institutions in developing countries. As mentioned above, so far, there are still few researches on the topic for determinants of households demand for credit use not only in Myanmar, but even in developing countries. Most of the studies, especially those of Mohamed (2003), Guiso et al., (2004), Okurut (2004), Mpuga (2008), Ajani and Tijani (2009) addressed the issue of access without referring to effective demand. Hence, the objective of this study is to identify household's socio-economic factors influencing the demand for credit use in Myanmar.

The rest of the paper is organized as follows. Section 2 describes the study area, sampling technique and description of the data. Section 3 provides on analytical and empirical models while section 4 focuses on the results and discussions. The conclusions and implication from the findings are presented in section 5.

Study Area, Sampling Technique, and Description of the data

Study area and sampling technique

The study was carried out in Chin state, Delta-zone region, and Dry-zone region of Myanmar. Geographically, Chin state lies between North Latitude 21 ° 0' and 24° 15' and East Longitude between 93 ° 15' and 94°0', while Delta-zone, lies in the southern end of the central plains of Myanmar. For Dry-zone, it is located in Central Myanmar. These areas were selected because poverty remains considerably higher there than the rests of the country. For the sampling framework, two townships known for the presence and activities of International Non-Governmental Organizations (INGOs)'s microfinance program were purposely selected from each of the following regions Chin state, Delta-zone, and Dry-zone, thus making a total of 6 townships selected for the study. These towns are Falam, Hakha, Bogalay, Gyune, Mandalay, and Yangon.

Thereafter, a well structured questionnaire was administered to a randomly selected 72 respondents in each of the selected 6 townships from September to October 2012, thus making a total of 144 respondents per Organization. The questionnaire covered information on the household expenditure per month, household demographic and socioeconomic characteristics, such as age, household size, gender, assets such as number of VCD, Bicycle, motorcycle, television, land holding size, number of crops planted, etc. Unfortunately, not all the questionnaires were retrieved from or fully completed by the respondents for further processing. A total of 71 questionnaires were retrieved from Falam. Likewise, 67 respondents from Hakha, 77 respondents from Bogalay, 75 respondents from Gyune, 73 respondents from Mandalay, and 68 respondents from Yangon were retrieved for further analysis. The overall households available for the empirical analysis comprised of 431households in the study. Table 1 presents the definition of the independent variables and their measurement for the study. As revealed in the table, there are three concepts to analyze this research: demographic characteristics in which we used gender, educational level, household size, age of the respondent and marital status. For gender and marital status, were coded as a dummy variable if the household head is male/married 1 and 0 is for otherwise. For the variables, education, household size and age of the respondent, we used continuous variables. The second concept, which we analyzed, is economic factors of the respondents such as land holding size, occupation and per capita expenditure. Dummy variable was used for occupation of respondent. If the respondent is into farming activity, 1 is allocated and 0 if otherwise. We used continuous variable for land holding size and per capita expenditure as was mentioned in the table acres/ kyats per month. The mean per capita expenditure was computed as the net expenditure on food, clothing and other social activities. Location factor was considered for the third concept in the analysis. The location variable was coded with dummy variable for all locations. If the respondent lives in an area in focus 1 is allocated and 0 if otherwise. To avoid dummy variable trap, we only used five locations in the analysis. The results perhaps can be attributed to support services inform of microcredit provided by the INGOs which could be used to improve the future of their organization.

Descriptions of the Data

Table 1: Definition of independent variables and their measurement

Concept	Indicator	Variable	Expected signs
Demographic characteristics	Gender is a dummy variable takes a value of 1 if the household head is male and 0 otherwise	Gender	+/-
	The educational level of the household head by the total number of years the household head spent in receiving formal education.	Educational level	+
	Number of peoples in the household	Household size	+
	Age of the household head in years	Age	+/-
	A dummy variable 1 if the household head is married and 0 otherwise.	Marital status	+/-
Economics factors	Cultivated land area in acres	Land holding size	+
	A dummy variable1 if the household head is farmer and 0 otherwise	Occupation	+
	Amount of money spent for total expenditure by person in the h ousehold with continuous variable	Per_capita_ex pend-iture	+/-
Location factors	A dummy variable 1 if the respondent live in this area and 0 otherwise	Falam	+/-
	A dummy variable 1 if the respondent live in this area and 0 otherwise	Hakha	+/-
	A dummy variable 1 if the respondent live in this area and 0 otherwise	Mawlamyaing Gyune	+/-
	A dummy variable 1 if the respondent live in this area and 0 otherwise	Bogalay	+/-
	A dummy variable 1 if the respondent live in this area and 0 otherwise	Mandalay	+/-
	A dummy variable 1 if the respondent live in this area and 0 otherwise	Yangon	+/-

Analytical and Empirical Models

Analytical Model

Feder et al., (1985) mentioned that the determination of household factors influencing the demand for credit use using Probit and Tobit is appropriate but not with Ordinary Least Square (OLS) regression as the estimates of the latter may be biased. Moreover, to avoid the censoring bias that OLS could generate, a Tobit censored at zero was used because the level of credit amount in the analysis was not smaller than zero and some respondents reported zero application. Holloway et al., (2004) pointed out that even when a Tobit procedure is used, incorrectly assuming that the true point of censoring in the sample is zero also imparts a bias to the parameter estimates. In addition, the use of a Probit model is not suitable for the determination of households demand for the credit use even though it is adapted for dichotomous dependent variables. The

intensity of demand for credit use in this study is a continuous dependent variable.

Tobit model can be used based on the assumption that there is no selection bias. It also provides both the influence of exogenous factors on the probability of households demand on the credit use and the intensity of the credit demand to estimating the marginal effects of the factors (Chukwuji and Ogisi, 2006). In this study, the Tobit model was used to analyze the socio-economic, demographic and location factors which are influencing the intensity of the households demand on the credit usage. The credit usage is defined as the amount of credit obtained by the respondents.

The stochastic model underlying Tobit according to Tobin (1958), is expressed by the following relationship:

$$Y_i = \begin{cases} X_i \beta + \mu_i, & \text{if } X_i \beta + \mu_i > 0 \\ 0 & \text{if } X_i \beta + \mu_i \leq 0 \end{cases}$$

$i = 1,2,3, \ldots,N$

Where N is the number of observations, Y_i is the dependent variable (amount of credit obtained), X_i is a vector of independent variables, β is a vector of unknown coefficients, and μ_i is an independently distributed error term assumed to be normal with zero mean and constant variance σ^2. Thus the model assumes that there is an underlying, stochastic index equal to ($X_i \beta + \mu_i$) which is observed only when it is positive, and hence qualifies as an observed, latent variable.

3.2. Empirical Model

The empirical specification of the Tobit model for study is presented below

$$\log Y_i = \beta_0 + \sum_{k=1}^{K} \beta_k X_{ik} + \varepsilon_i$$

where, Y_i represents total amount of credit obtained, X_{ik} is vector of explanatory variables hypothesized to explain the demand for total amount of credit in the study, β_0 and β_k are parameters to be estimated, while ε_i is the error term for the regression.

Meanwhile, using previous studies as a guide, the study considers the following X_{ik} variables in the empirical analysis; Gender (dummy variable; 1=male, 0=female), Level of education (years), Occupation (dummy; 1=farming, 0=otherwise), Household size (numbers), Age (years), Land holding size (acres), Marital status (dummy; 1=married, 0=otherwise), Per capita expenditure (kyats/month), Falam (dummy; 1=live in the area, 0=otherwise), Hakha (dummy; 1=live in the area, 0=otherwise), Mawlamyaing Gyune (dummy; 1=live in the area, 0=otherwise), Bogalay (dummy; 1=live in the area, 0=otherwise), and Mandalay (dummy; 1=live in the area, 0=otherwise).

Results and Discussions

Descriptive statistics on socioeconomic characteristics of sample households

Before examining all variables in the model, we first analyzed whether there is multicolinearity problem between each independent variable or not. The finding from the correlation matrix chart in Table 2 shows that almost all of the variables are appropriate to analyze in the model. Since the correlation between occupation and per capita expenditure is slightly high (0.5491), suggest that one these two variables is consider for subsequent analysis.

Table 2: The correlation matrix chart between using each independent variable

	amount	gen:	edu:	HHS	Age	MS	Occup:	LHS:	PCE	Fal:	Hak:	Gyun:	Boga:	Mand:
amount	1													
gen:	-0.1094	1												
edu:	0.1749	-0.0411	1											
HHS	0.0567	-0.0107	0.0692	1										
Age	0.0143	0.2088	-0.3741	0.0382	1									
MS	0.0792	0.0715	-0.1165	0.0810	0.1839	1								
Occup:	-0.3142	0.3133	-0.2399	-0.0218	0.1426	0.0980	1							
LHS:	-0.1267	0.2197	-0.0900	-0.0479	0.0549	0.0616	0.4889	1						
PCE	0.4210	-0.2399	0.3529	-0.3151	-0.1306	-0.0815	-0.5491	-0.2680	1					
Fal:	-0.1252	0.0051	0.2553	0.1548	0.0065	0.0285	0.1715	-0.1582	-0.1175	1				
Hak:	-0.0893	-0.0211	-0.1772	-0.0295	0.0011	0.0941	0.0624	-0.1377	-0.1367	-0.1905	1			
Gyun:	-0.2146	0.2137	-0.1844	-0.1714	-0.0199	-0.0342	0.3129	0.3004	-0.3404	-0.2038	-0.1969	1		
Boga:	-0.1028	0.2361	-0.1938	0.0173	0.1336	0.0774	0.4180	0.4360	-0.2256	-0.2071	-0.2001	-0.2141	1	
Mand:	0.4463	-0.1679	0.1439	0.0400	-0.1108	-0.0938	-0.5038	-0.2070	0.4570	-0.2005	-0.1937	-0.2073	-0.2106	1

The definition and descriptive statistics of variables used in the Tobit model are presented in Table 3. The average amount of the credit received by the respondent in this study is 166844.5 kyats. The average age of respondents is 44 years old with majority married with middle educational level. About 55% of the respondents are earning their income from farming activity. The per capita expenditure, the average amount for all respondents is 19299.72 kyats per month. An examination of the results showed that households demand for credit usage was common among the active age group and middle educational level group.

Table 3: The descriptive statistics result of the variables used in the analysis

Variables	Definition	Unit	Mean	S.D	Min:	Max:
Amount	Amount of credit	Kyats	166844.5	197341.1	0	1000000
Gen:	Gender	Dummy	0.4872	0.5004	0	1
Edu:	Educational level	Years	6.3411	3.5754	0	15
HHS	Household sizes	Numbers	4.7564	1.6701	1	11
Age	Age of household head	Years	44.1346	12.0586	18	76
MS:	Marital status of household head	Dummy	0.8654	0.3417	0	1
Occup:	Occupation of household head	Dummy	0.5545	0.4976	0	1
LHS	Land holding size	Acres	3.0104	4.8990	0	45
PCE	Per_capita_expenditure	Kyats/month	19299.72	11216.12	4000	75000
Fal:	Falam	Dummy	0.1647	0.3714	0	1
Hak:	Hakha	Dummy	0.1555	0.3628	0	1
Gyun:	Mawlamyaing Gyune	Dummy	0.1740	0.3796	0	1
Boga:	Bogalay	Dummy	0.1787	0.3835	0	1
Mand:	Mandalay	Dummy	0.1694	0.3755	0	1

Note: Survey conducted by self (2012)
Number of observations = 431
USD ($) 1 = 850 Kyats (2012)
1 ha = 2.471 acres

Determinants of the households demand on credit use

As presented in section 3.1, the Tobit model was used to investigate the factors that determine households demand for credit use. The results of the Tobit model are summarized and presented in Table 4. The overall performance of the model is fit at 1% significant level and adequate as can be shown from the Wald test statistics (X^2). This implies that the independent variables are important explanatory factors to understand the variation in credit demand.

There exists a positive and significant relationship between demand for credit use and educational level of the respondent. It was interesting to note that in this study the educational level had positive and significantly impacted on the loan demanding behavior of households. Similar to our result, Magri (2002) mentioned that educated individuals have the potential to expand income and thereby own assets necessary for collateral, better able to appreciate the need of credit and have less entry costs as they face fewer difficulties in collecting and evaluating the information needed to apply for a loan.

Marital status also affected demand for credit positively and significantly. Married respondents are more likely to demand for credit use since they establish and maintain family and hence their consumption level and demand for credit level is expected to increase as family size increases. Contrary to our results however, Habtu (2012) found that married people were less likely to have a demand for credit.

Result for the land holding size was also found to have positive and significant effect

on the total credit. Those with large land holding size are more likely to demand for more credit. This may be because big land holding size needs to grow different kinds of crops and large investment for inputs to get higher yield on production. We find that our result conforms to the finding of Adebosin et al., (2013), where the authors considered the farmers' demand for credit on the land variable which provides collateral for low income households. This result is also in line with the finding of Atieno (1997), where he found out that the higher the farming size, the higher the amount of loan that a farmer is likely to apply for.

The positive and significant variable for occupation is consistent with the expectation. This implies that the respondent with farming activity is more likely to demand more credit.

With respect to the result of per capita expenditure, it was 10% significant and positively influenced dependent variable. It suggested that increased respondent's monthly expenditure causes a higher demand for credit.

However, the gender of the respondent has negative coefficient and it is significant at 5% level. This indicates that the female headed households are more likely to demand for credit. This finding was contrary to that of Balogun (2011). The author pointed that the male respondent who are joining in NGO/Cooperative had more demand for microcredit. Household size and age of respondent have positive but insignificant coefficients. These suggest that family size and age of respondents do not significantly affect demand for credit. Location which explains the demand for credit by the households across the areas sampled is not different from one area to the other. In other words, it follows similar pattern.

Table 4: Tobit Regression results for determinants of the demand on credit usage

Variables	Coefficients	Std.Err	t	P > z	95% C. I.	
Gen:	-2.8658	0.7857	-3.65	0.000	-4.4103	-1.3213
Edu:	1.3235	0.6341	2.09	0.037	0.7702	2.5699
HHS	0.9828	1.0886	0.90	0.367	-1.1570	3.1227
Age	0.4112	1.3987	0.29	0.769	-2.3381	3.1605
MS:	2.9404	1.0689	2.75	0.006	0.8394	5.0415
Occup:	3.1614	1.3241	2.39	0.017	0.5587	5.7641
LHS	1.6534	0.6786	2.44	0.015	0.3196	2.9872
PCE	1.7189	0.9856	1.74	0.082	-0.2185	3.6563
Fal:	-1.6817	1.6670	-1.01	0.314	-4.9583	1.5949
Hak:	-0.5740	1.6454	-0.35	0.727	-3.8084	2.6604
Gyun:	-1.3921	2.1128	-0.66	0.510	-5.5451	2.7608
Boga:	-2.7672	2.1086	-1.31	0.190	-6.9120	1.3777
Mand:	1.1482	1.2231	0.94	0.348	-1.2560	3.5523
Constant	-17.42692	11.8339	-1.47	0.142	-40.6883	5.8344

Note: $X^2 = 53.45$, Prob> chi = 0.0000, Log likelihood = -1162.5246, Pseudo $R^2 = 0.0225$

Number of observations = **431**

Observation summary: **120** left-censored observations at amount credit<=0

309 uncensored observations

2 right-censored observations at amount credit>=13.81551

Conclusions and Implications

The paper identifies household socio-economic factors influencing the demand for credit use in Myanmar by using a Tobit Regression Model. The study used a total of 431 households from six different townships. The major findings of this research reveal that married female headed household with higher educational level, farming occupation, large land holding size and higher per capita expenditure demand highly for credit. However, insignificant variables for some demographic factors such as age of the respondent and household size showed that age or family size do not matter. Similarly, results from the study areas imply that the demand for credit by the households across the areas sampled is not different from each other or follow similar pattern. Based on our findings, there are some recommendation and implication for this research. Farming as occupation is a major driver of demand for credit which highlights the need for farmers to have access to timely credit in food production. From the gender point of view, female headed households demand for more credit than male, thus underscoring policy relevance of improving female access to credit to meet their timely demands. Our findings also would like to encourage the role of human capital, especially for education in the study areas on demand for credit.

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