Chapter 4

Determinants of Consumption and Investment Loan of Village and Urban Community Funds in Thailand

The highlights of this chapter intend to investigate the intensity of participation in detail. Accessibility to credit of the poor is a major focus of the microcredit scheme. The purpose of loan is very important as well. For a consumption loan, the borrower can consume the goods and services they need without having to rush to make a full payment amount. The investment loan is used to finance and expand a small business that includes farming operation and non-farm businesses. Understanding each type of clients can improve the proper administration of the program. The purpose of this chapter is to investigate key factors that determine consumption loan and investment loan of MVC program in Thailand. According to our knowledge, this is the first attempt to evaluate the MVC with consideration on the simultaneous household decision to participate with regards to the different type of loans.

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ABSTRACT

This study investigates factors affecting the loan sizes for consumption and investment loans from microcredit for village and communities (MVC) in Thailand. The data are from Thailand's Socioeconomic Survey in 2009. The study used the univariate and bivariate Tobit models to deal with the relationship between joint decisions of borrower and arrived in its findings that a bivariate Tobit model is more appropriate than a univariate Tobit model. The results showed that the poor households tend to get a loan for consumption loan, while non-poor households tend to get credit for investment. The head of household who is a married woman and worked as an employee, with a high dependency ratio, low income, large number of mobile phones, had experience difficulty in getting emergency loan tend to get larger loan sizes for consumption. In contrast to the head of household that worked as an employer or own a business, residing at a rural household with home business, having more vehicles, and gaining access to other sources of credit, they tend to get larger loan sizes for investment.

Keywords: microcredit, village funds, loan size, poverty, Tobit model

JEL classification: G21, I38, C34

4.1 Introduction

Microcredit provides a small amount of loan for investment and consumption to people who cannot have access to formal financial services; especially for poor women. Microcredit has been supported for over 30 years in Thailand. Most of the programs have been developed from community-based credits

(Worakul, 2006), such as saving groups for production program supported by the government, and a credit union supported by non-governmental organization (NGO). In 2001, microcredit for village and community (MVC) program was introduced as a part of the government's poverty alleviation policy. It is the largest government's microcredit program in Thailand and one of the biggest microcredit scheme in the world. The Thai government allocated one million baht per village as a fund for community. The official objectives of MVC are the following: First, the fund is a revolving fund for investment and welfare improvement. Second, it will be used as an emergency fund. Finally, it aims to develop the rural economy.

According to the data from Thailand's Socioeconomic Survey, 40.9 percent of total borrower used the loan for farm business investment such as purchasing agricultural equipment, input, animals, and land. About 16.8 percent used loans for non-farm business investment such as buying equipment, input, and business construction. Most of borrowers (42.3 percent) used loan for household consumption and other purposes such as procuring consumer durable goods, improved dwelling, education, health, special occasion/ ceremony, and repaying debt from other sources (Table 4.1).

Table 4.1: Number of MVC's Borrowers by Purposes of Loans

Purposes of loans	Number of borrowers	Percent
Farm business	4,324	40.9
Non-farm business	1,773	16.8
Consumption and others	4,465	42.3
Total	10,562	100.0

Source: Thailand's Socioeconomic Survey 2009

Previous studies have shown the importance of having access to credit on poor households that is mainly based on two aspects. First, microcredit can raise household consumption (Berhane & Gardebroek, 2011; Montgomery & Weiss, 2011; Rahman, 2010). Second, it can be used for investing in income-generating activities and expanding small enterprise (Sievers & Vandenberg, 2007; Sigalla & Carney,

2012). However, some studies have shown that the borrower who are mostly poor often encounter a tremendous amount of difficulty to repay microcredit. For example, poverty reduced the rate of repayment by 0.17 per cent in Nigeria (Oke, Adeyemo, & Agbonlahor, 2007). It is possible that the poor participated for loan consumption but lacked the necessary resources to make the repayment to the loan. While for people who borrow to invest, they benefit from the investment and are able to make repayment of principal and interest on time. According to our knowledge, this is the first attempt to estimate the MVC in Thailand considering the simultaneous household decision to make a participation in MVC with regards to the different type of loans.

This study investigates key factors that determine loan sizes of microcredit for village and urban community funds in detail, which include consumption and investment loans. The difference in household characteristics may lead to the difference in participating and its loan sizes. In addition, our hypothesis is that "*poor households tend to get consumption loan, while non-poor households tend to get investment loan*". In econometric modeling, this study assume independent of borrower's joint decision between consumption loan and investment loan for univariate Tobit model. For bivariate Tobit model, it is assumed that the joint decision of borrower or household can choose to borrow for consumption and investment purposes at the same time.

4.2 Literature Review

Previous studies about determinants of participation in microcredit and other financial services are divided into two approaches. First, the study aims to answer the question; what specific factors affect probability of participation? Logit and Probit models have been used frequently in this case (Coleman, 2006; Khandker, 2005; Li, Gan, & Hu, 2011). Second, the study aims to investigate intensity of participation or determinants of loan sizes/debts. Most of the studies used the Tobit model and Heckman selection model which is concerned with selection bias problem (Coleman, 1999; Ekici & Dunn, 2010; Fongthong, 2012; Kedir, 2003). Our study addresses on the second approach which intends to investigate the intensity of participation in MVC in Thailand. However, Univariate and bivariate Tobit models

are applied in this study to deal with independent and simultaneous decision of participation in consumption and investment loans.

The factors that determine the size of the loan or debt have been studied in several countries. Crook (2001) investigated factors explaining the amount of debt in the USA. The results found that high income households with who own a home and have larger family size demand more debt. Kedir (2003) analyzed credit markets in urban Ethiopia and found that the current value of household assets, value of collateral, outstanding debt, and household head characteristics are significant factors that determined loan sizes. Khandker (2005) examined a group-based microfinance program in Bangladesh. Some evidence showed that the landless poor households need more loans than the rich. Moreover, education had a negative affect on the loan sizes. Oboh and Kushwaha (2009) found that annual income, distance between home and source of loan, farm size and volume of previous loan determined loan sizes for Nigeria's farmer. Acquah and Addo (2012) identified socio-economic factors that determine loan sizes for rice farmer in Ghana. They found that more experience on farming tend to get larger loan sizes.

In Thailand, empirical study by Coleman (1999) indicated that household characteristics such as age, gender, education, land owner and social capital of households e.g. credit worthiness, social tie in the village were influential to the loan sizes of group lending in Northeast Thailand. The choice of variables representing household characteristics is based on the existing literature dealing with microcredit and its loan sizes. The most common variables used in these studies were household head characteristics such as age, gender, education, marital status and occupation, demographics, income and assets, and other related variables. However, we also added a poverty index variable which has an influence on MVC participation at the consumption and investment loans.

4.3 Research Methodology

This study applied the poverty index as a testing variable to check the accessibility of the poor to get the consumption and investment loans. The poverty index indicates whether or not a borrower is poor. It defines the person as poor when the average monthly consumption expenditure per capita is below the poverty line.

For the controlled variables, the models include household head characteristics, demographics, income and assets, and other variables such as rural household, accessibility to other sources of credit, difficulty to get emergency loan, and number of borrowers in a household.

4.3.1 The Models

To model the determinants of consumption and investment loan sizes, this study applies both univariate and bivariate Tobit models. Univariate model assume the participation of a household for the two types of loan that are independent. The bivariate model proposes that the same household participate in MVC for both consumption and investment loans. This is a plausible assumption because the same household can choose to borrow for consumption and investment at the same time or they can use more than one person in a household to borrow in different type of loans. The details of each model are presented in the next section.

(a) Univariate Tobit Model

Tobit model has been introduced by James Tobin since 1958. The observations can be classified into two groups according to their values of dependent variables, zero for non-borrowers and positive value for borrowers. In this case, ordinary least squares (OLS) estimation is biased and inconsistent (Maddala, 1983). Tobit model corrects such problem, however, its consistent estimation relies on both normality and homoskedasticity assumptions (Cameron and Trivedi, 2009a; Maddala, 1983).

Univariate Tobit model assumes the participating of a household for the two types of loan are independent. A household chooses to borrow for consumption when its utility of borrowing exceeds the utility of not borrowing: this is the same as borrowing for investment purposes. The utility of borrowing in each type of loan, y_i^*, is a latent variable and depends on observed household characteristics, X_i, and unobserved characteristics, ε_i. Assume that a household chooses to borrow if y_i^* exceeds a certain threshold level, θ, it equal to zero in this study. The error term, ε_i, is assumed to be normal distributed with zero mean and constant variance, σ^2. Tobit model is described by Maddala (1983) as follows:

$$y_i^* = X_i\beta + \varepsilon_i$$
$$y_i = y_i^* \quad if \quad y_i^* > \theta \tag{4.1}$$
$$y_i = 0 \quad if \quad y_i^* \le \theta$$

where the dependent variable, y_i, is the loan size which is positive and equals to y_i^* for borrowers. It is zero for non-borrowers. The variables X_i are household characteristics including testing variables (being poor) and controlled variables. The parameters β will be estimated by maximum likelihood using tobit command in STATA program.

However, loan sizes are often better modeled as log-normal similar to expenditure data. In this case, the model with normal data (level of loan sizes) and a zero threshold may show inconsistent estimation. Following Cameron and Trivedi (2009b), we apply Tobit model for lognormal data (natural logarithm of loan sizes) and a nonzero threshold to correct such problems. Tobit model with lognormality specifying as follows (Cameron and Trivedi, 2009b):

$$y_i^* = \exp(X_i\beta + \varepsilon_i)$$
$$y_i = y_i^* \quad if \quad \ln y_i^* > \gamma \tag{4.2}$$
$$y_i = 0 \quad if \quad \ln y_i^* \le \gamma$$

where the dependent variable is ln(loan size) rather than loan size, and the threshold equals the minimum uncensored value of ln(loan size). The parameters β will be estimated by maximum likelihood.

(b) Bivariate Tobit Model

Amemiya (1974) extended the univariate Tobit model to multivariate and simultaneous equation models where the dependent variables are truncated normal (non-negative). It can be applied to a simultaneous equation model with the truncated dependent variables that is joint determined, such examples are the determinants of agricultural land market in Bangladesh (Rahman, 2010) and demand for labor between domestic and foreign workers in Korean (Kwon and Chun, 2011).

The model consists of two equations, the consumption loan sizes equation and investment loan sizes equation. Assume that the same household can

choose to borrow for consumption and investment at the same time. As discussed in Tobit model, a household decide to borrow when it's utility of borrowing is more than the utility of not borrowing. Utilities of borrowing for consumption, y_{1i}^{*} , and investment, y_{2i}^{*} , are unobserved or latent variable. It depends on household characteristics, X_i. The error terms, ε_{1i} and ε_{2i} , collect unobserved characteristics which affect the utility of borrowing. The model is defined as follows (Amemiya, 1974):

Loan sizes for consumption loan equation:

$$y_{1i}^{*} = X_{1i}\beta + \varepsilon_{1i}$$

$$y_{1i} = y_{1i}^{*} \quad if \quad y_{1i}^{*} > \theta \qquad (4.3)$$

$$y_{1i} = 0 \quad if \quad y_{1i}^{*} \le \theta$$

Loan sizes for investment loan equation:

$$y_{2i}^{*} = X_{2i}\beta + \varepsilon_{2i}$$

$$y_{2i} = y_{2i}^{*} \quad if \quad y_{2i}^{*} > \theta \qquad (4.4)$$

$$y_{2i} = 0 \quad if \quad y_{2i}^{*} \le \theta$$

The bivariate Tobit model assumes that the joint density function of ε_{1i} and ε_{2i} behave as a bivariate normal distribution with zero mean, constant variances and a constant correlation between error terms: $\varepsilon_{1i}, \varepsilon_{2i} \sim N(0,0,\sigma_1^2,\sigma_2^2,\rho)$. The covariance of ε_{1i} and ε_{2i} is $\sigma_{12} = \rho\sigma_1\sigma_2$ and depends on the value of ρ. If $\rho = 0$, the participating of a household for the two types of loan are independent. The parameters β will be estimated by maximum likelihood using mvtobit command in STATA program.

4.3.2 Data Collection

The study is based on Thailand's Socioeconomic Survey in 2009 conducted by National Statistical Office. The survey interviewed 43,844 households throughout the country. The data were collected every month throughout the year. The survey included information on household income and expenditure in details. A

special part of the participation in the MVC program has been included in the survey since 2009. However, questions regarding the MVC are information obtained from 2008.

After dropping observations with missing data, the sample consists of 41,296 households. Table 4.2 shows households' participation in MVC in 2008. Borrower of MVC program covers 9,827 households or 23.8 percent of total sample. The ratios of households' participating in MVC included 10 percent for consumption loan, 13.64 percent for investment loan, and 0.16 percent borrowed both of them. The average loan sizes of consumption loan and investment loan were THB 6,630 and THB 10,140, respectively. The survey found that 2,079 poor households participated in the MVC.

Table 4.2: Households' Participation in MVC in 2008

Variables	**Poor**	**Non-poor**	**Total**
Percent of households participating in MVC			
Non borrowing households	62.48	76.93	76.20
Consumption loan only	18.95	9.53	10.00
Investment loan only	18.37	13.38	13.64
Both consumption and investment loan	0.19	0.16	0.16
Average loan size of borrowing households			
Consumption loan (THB 1,000)	6.75	6.62	6.63
Investment loan (THB 1,000)	7.84	10.33	10.14
Number of observations (households)	***2,079***	***39,217***	***41,296***

Source: Thailand's Socioeconomic Survey 2009

4.3.3 Data Description

The dependent variables are the loan size for consumption and investment which was borrowed from MVC in 2008. The explanatory variables are household head characteristics, demographics, income and assets and other variables. Headcount index which shows being poor of household is considered as a testing variable. The household characteristics are summarized in Table 4.3.

Table 4.3: Descriptive Statistics of Variables

Variables	Non-borrower		Borrower		Total	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Testing variables:						
Being poor (yes=1)	0.041	0.199	0.079	0.270	0.050	0.219
Household head characteristics:						
Age	50.601	15.099	52.302	11.674	51.006	14.376
Women (yes=1)	0.353	0.478	0.293	0.455	0.339	0.473
Education (years)	8.157	4.777	5.836	3.199	7.605	4.561
Married (yes=1)	0.667	0.471	0.800	0.400	0.698	0.459
Occupations						
Employer (yes=1)	0.063	0.243	0.072	0.258	0.065	0.247
Employee (yes=1)	0.379	0.485	0.223	0.416	0.342	0.474
Own business (yes=1)	0.338	0.473	0.580	0.494	0.396	0.489
Unemployed (yes=1)	0.220	0.414	0.125	0.331	0.197	0.398
Demographics:						
Household size (persons)	3.020	1.601	3.687	1.566	3.179	1.618
Dependency ratio	0.364	0.356	0.365	0.291	0.364	0.341
Income and assets:						
Monthly income (THB 1,000)	24.823	42.442	17.358	22.622	23.046	38.788
Land tenure (yes=1)	0.696	0.460	0.935	0.246	0.753	0.432
Home business (yes=1)	0.216	0.411	0.233	0.423	0.220	0.414
Number of cars	0.485	0.731	0.362	0.601	0.456	0.704
Number of motorcycles	1.080	0.878	1.404	0.835	1.157	0.879
Number of mobile phones	1.735	1.182	1.740	1.053	1.736	1.153
Other variables:						
Rural household (yes=1)	0.301	0.459	0.614	0.487	0.376	0.484
Accessibility to other sources of credit (yes=1)	0.447	0.497	0.670	0.470	0.500	0.500
Difficulty to get emergency loan (yes=1)	0.168	0.374	0.205	0.404	0.177	0.382
Number of borrowers	0.000	0.000	1.034	0.185	0.246	0.450
Total observations	***31,469***		***9,827***		***41,296***	

4.4 Results

The univariate Tobit model separates into two models which contains difference dependent variables; loan sizes (normal data) and natural logarithm of loan sizes (lognormal data). The fit measures of the model (Akaike information criterion, AIC, and Pseudo R-squared) show that lognormal data seems to be relatively better than normal data.

The results from univariate Tobit model (Table 4.4) indicate that the coefficients of testing variables are significantly positive for consumption loan and significantly negative for investment loan. It implies that poor households participate more in consumption loan because they seem to get a larger loan size. In contrast, the poor acquire smaller loan sizes than non-poor for investment loan.

Moreover, results from Table 4.4 indicate that household characteristics affect loan sizes. Most of them show opposite directions for consumption loan versus investment loan. However, households who own land and higher number of borrowers are more likely to get larger loan sizes for both consumption loan and investment loan.

Households with married-female heads and larger dependency ratio are more likely to get larger consumption's loan sizes. Households with difficulty in getting a hold of emergency loan also received larger loan sizes for consumption. Head of households who work as employee tend to borrow more for consumption when compared with the unemployed which are the base case in the model. Households with less income but high number of mobile phone also borrow more for consumption.

Table 4.4: Univariate Tobit Analysis for Determinants of Consumption and Investment Loan Sizes

	Model 1		**Model 2**	
Dependent variable: loan sizes from MVC in 2008	**Consumption**	**Investment**	**ln_ consumption**	**ln_ investment**
Testing variables:				
Being poor	1.1832	-2.1034***	0.2530**	-0.2588***
	(0.741)	(0.693)	(0.111)	(0.095)
Household head characteristics:				
Age	0.0011	0.0133	-0.0004	0.0009
	(0.020)	(0.019)	(0.003)	(0.002)
Women	2.9174***	-1.4238***	0.4467***	-0.2318***
	(0.483)	(0.453)	(0.070)	(0.060)
Education (years)	0.0352	-0.0782	-0.0063	-0.0197**
	(0.071)	(0.062)	(0.010)	(0.008)
Married	1.0573*	0.5604	0.1366*	0.0703
	(0.541)	(0.528)	(0.079)	(0.069)

Table 4.4 (Continued)

Dependent variable: loan sizes from MVC in 2008	**Model 1**		**Model 2**	
	Consumption	**Investment**	**ln_ consumption**	**ln_ investment**
Occupations				
Employer	-14.3506***	10.7060***	-2.2165***	1.4607***
	(1.316)	(0.821)	(0.195)	(0.107)
Employee	2.6946***	-1.3854*	0.4296***	-0.1858*
	(0.647)	(0.821)	(0.095)	(0.108)
Own business	-6.5259***	7.7062***	-0.9647***	1.0963***
	(0.622)	(0.691)	(0.091)	(0.091)
Demographics:				
Household size (persons)	0.1454	-0.1796	0.0192	-0.0314*
	(0.163)	(0.140)	(0.024)	(0.019)
Dependency ratio	2.4699***	-1.9984***	0.3464***	-0.2629***
	(0.703)	(0.647)	(0.104)	(0.085)
Income and assets:				
Monthly income (THB 1,000)	-0.0895***	0.0076**	-0.0147***	0.0007
	(0.021)	(0.004)	(0.003)	(0.000)
Land tenure	3.0858***	1.7529***	0.5522***	0.3045***
	(0.647)	(0.675)	(0.096)	(0.086)
Home business	-4.0823***	3.6371***	-0.6429***	0.4705***
	(0.581)	(0.386)	(0.086)	(0.050)
Number of cars	-2.1322***	1.4311***	-0.3616***	0.1410***
	(0.488)	(0.294)	(0.071)	(0.038)
Number of motorcycles	-0.9645***	1.2006***	-0.1450***	0.1709***
	(0.289)	(0.226)	(0.043)	(0.030)
Number of mobile phones	0.9685***	-0.7262***	0.1286***	-0.1109***
	(0.243)	(0.216)	(0.036)	(0.028)
Other variables:				
Rural household	-0.5448	2.3020***	-0.0809	0.3307***
	(0.416)	(0.366)	(0.062)	(0.048)
Accessibility to other sources of credit	-0.1180	2.4465***	-0.0123	0.3732***
	(0.426)	(0.375)	(0.063)	(0.050)
Difficulty to get emergency loan	1.8573***	-1.7541***	0.3059***	-0.2600***
	(0.455)	(0.459)	(0.068)	(0.060)
Number of borrowers	42.9288***	42.0801***	6.4206***	5.6357***
	(0.678)	(0.603)	(0.075)	(0.063)
Constant	-47.7964***	-49.8099***	-6.9283***	-6.3943***
	(1.821)	(1.749)	(0.254)	(0.223)
Sigma1	17.8199		2.678	
	(0.263)		(0.026)	
Sigma2		16.5019		2.200
		(0.221)		(0.021)

Table 4.4 (Continued)

Dependent variable: loan sizes from MVC in 2008	**Model 1**		**Model 2**	
	Consumption	**Investment**	**ln_ consumption**	**ln_ investment**
AIC	43978.53	55683.62	28455.51	33360.87
Pseudo R-squared	0.2423	0.2703	0.3347	0.3903
Log pseudo likelihood	-21,967.26	-27,819.81	-14,205.76	-16,658.43
F(20, 41276)	262.67***	333.67***	581.69***	681.81***
Total observations	41,296	41,296	41,296	41,296
Left-censored observations	37,100	35,600	37,100	35,600
uncensored observations	4,196	5,696	4,196	5,696

Notes: Numbers in parenthesis indicate *robust standard error*. ***, ** and * represent level of significance at 99%, 95% and 90%.

Rural households who have home business and higher number of vehicles (car and motorcycle) are more likely to get larger loan sizes for investment. The signs on household head occupations indicate that employer and owning a business borrow more for investment when compared with the unemployed which are the base case in the model. In addition, households with accessibility to other sources of credit also get larger investment's loan sizes. Surprisingly, education has a significantly negative sign on investment loan indicating that household head with high level education tend to borrow less for investment.

Table 4.5 presents the results from bivariate Tobit model. The Wald test is statistically significant at 99%. It implies that a bivariate Tobit model is appropriate to determine households' decision to participate in consumption loan and investment loan simultaneously.

Table 4.5: Bivariate Tobit Analysis for Determinants of Consumption and Investment Loan Sizes

Dependent variable: loan sizes from MVC in 2008	**Consumption Loan**	**Investment Loan**
Testing variables:		
Being poor	1.1515*	-1.5752***
	(0.612)	(0.567)
Household head characteristics:		
Age	-0.0056	-0.0088
	(0.016)	(0.015)
Women	2.3116***	-0.9443***
	(0.384)	(0.354)

Table 4.5 (Continued)

Dependent variable: loan sizes from MVC in 2008	**Consumption Loan**	**Investment Loan**
Education (years)	-0.0355	-0.1302***
	(0.058)	(0.049)
Married	1.1228***	0.4277
	(0.429)	(0.404)
Occupations		
Employer	-9.4526***	7.7857***
	(1.225)	(0.669)
Employee	2.4613***	-1.1105
	(0.524)	(0.625)
Own business	-4.0846***	5.4952***
	(0.505)	(0.535)
Demographics:		
Household size (persons)	0.1552	-0.2601**
	(0.139)	(0.118)
Dependency ratio	1.9590***	-1.0639**
	(0.545)	(0.495)
Income and assets:		
Monthly income (THB 1,000)	-0.0929***	0.0028
	(0.020)	(0.004)
Land tenure	3.8231***	2.1203***
	(0.522)	(0.507)
Home business	-2.5737***	2.5326***
	(0.488)	(0.330)
Number of cars	-1.2958***	0.8838***
	(0.406)	(0.250)
Number of motorcycles	-0.5277**	0.8281***
	(0.235)	(0.185)
Number of mobile phones	0.7127***	-0.4417**
	(0.205)	(0.177)
Other variables:		
Rural household	-0.0544	2.0874***
	(0.346)	(0.304)
Accessibility to other sources of credit	0.3870	2.1985***
	(0.356)	(0.307)
Difficulty to get emergency loan	1.3780***	-1.2305***
	(0.378)	(0.375)
Number of borrowers	29.5158***	31.6478***
	(0.494)	(0.453)
Constant	-36.9633***	-35.9691***
	(1.446)	(1.338)
Sigma1	15.8381***	
	(0.272)	

Table 4.5 (Continued)

Dependent variable: loan sizes from MVC in 2008	**Consumption Loan**	**Investment Loan**
Sigma2		14.664***
		(0.224)
rho12	-0.760***	
	(0.007)	
Log pseudo likelihood	-46,937.59	
Wald chi2(40)	9,006.04***	
Likelihood ratio test of rho12	5698.97***	
Total observations	41,296	

Notes: Numbers in parenthesis indicate *robust standard error*.
***, ** and * represent level of significance at 99%, 95% and 90%.

The coefficients of all variables do not present much of a difference from the univariate Tobit model for lognormal data, except with the employee. The results of testing the variable confirm that the poor significantly gets a larger loan sizes for consumption than the non-poor. In contrast, the non-poor significantly obtain a larger loan sizes for investment, as expected in our hypothesis.

The opposite directions of consumption loan and investment loan also holds true for this model. The likelihood of loan size for consumption is larger for head of household who is a married woman and worked as an employee, has a household with high dependency ratio, a low income, having a large number of mobile phones, and had experienced difficulty in acquiring emergency loan. Whereas the likelihood of loan size for investment is higher for head of household who worked as an employer or own a business, residing in a rural household with home business, possessing more vehicles (cars and motorcycles), and having access to other sources of credit.

4.5 Discussion and Conclusion

Empirical evidences have shown that MVC reached the poor in the case of consumption loan. Poor households participate more in consumption loan and less in investment loan, as anticipated. Results from both the univariate and bivariate Tobit models confirmed that the poor gets larger loan sizes for consumption than the non-poor and smaller for investment. With the theoretical superiority of bivariate model over univariate, it implies that the borrower decides to participate in consumption loan and investment loan simultaneously.

The results from both univariate and bivariate models indicate that household characteristics affect loan sizes. However, these work in opposite directions for consumption loan versus investment loan, except for the land tenure and number of borrowers in household which is significantly positive for both type of loans.

The head of household who is a married woman with high dependency ratio is more likely to get a larger amount of loan for consumption and smaller for investment. The reason may be explained by allocating some money to take care of the children, elder people, and disable members as their responsibility. So they would need loans for consumption more than investment.

Occupation of household head is also a determinant of loan sizes. The head of household who worked as an employee tend to get larger loan sizes for consumption, while those who worked as an employer or own a business tend to get larger loan sizes for investment. This shows that MVC can be used as a revolving fund for investment, job creation, income generation, and welfare improvement. Furthermore, household with more vehicles and who use their home for business purpose is more likely to get larger amount of loans to invest.

Interestingly, households with higher income get smaller loan sizes for consumption. In addition, household heads with more education get smaller loan sizes for investment. Households with more capitals tend to borrow less. This may imply that MVC program does not target the rich.

Rural households who can access to other sources of credit tend to get larger loan sizes only for investment purpose. Whereas households that have encountered difficulties in getting an emergency loan in the past, tend to get larger loan sizes for consumption and smaller loans for investment. The loan can be used as an emergency fund for following the objective of an MVC program.

Future research is needed to improve the econometric modeling. Such an example could be on applying a copula-based to bivariate Tobit model for capturing the joint distribution of consumption and investment loans. Copula can deal with non-normal distribution.