

# FACTORS AFFECTING THE ACCESS TO FORMAL CREDIT BY FARMING HOUSEHOLDS IN THE MEKONG DELTA IN 2009

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*The article discusses the factors affecting the access to formal credit by farming households in the Mekong Delta in 2009. Data includes 288 samples surveyed directly by authors and their colleagues in the period from May to October 2009. Employing the Heckman Selection Model, our research proves that head of the household (or householder) of Kinh (or purely Vietnamese) origin, locality where householder lives, size of the household, proportion of dependants, householder's participation in local authorities, and land area owned by the householder affect their access to formal credit supply.*

**Key words:** Formal credit, farming household, Heckman model

## 1. Introduction

Vietnam changed from the centrally-planned economy to a market one after the economic reform was launched in the 1980s. The economy has changed considerably with its average growth rate increasing from 4.6% in the 1980s to 7.6% in the 1990s and 7% in 2008. Proportion of the poor reduced remarkably from 15% in 2007 to 13% in 2008 (VLSS, 2008). These achievements are partly due to the progress of financial sector (Quach et al., 2003). Uneven development of urban and rural areas, however, is one of worrying problems. In the first decade of the 21st century, the personal income was some US\$300 a year, and it rose to US\$716 in 2006 and 1,024 in 2008 (VLSS, 2008). In addition, difference in personal income between those two areas is on the increase. As Ayumi Konishi, ADB Country Director for Vietnam, put it "Economic growth in Vietnam has been largely eq-

uitable. But as the economic growth accelerates, income disparity can widen." As a result, the Vietnamese government finds it vital to improve rural living standards in order to achieve sustainable socioeconomic development.

Like many developing countries, the credit supply in rural areas in Vietnam comprises two sectors, formal and informal ones. The traditional approach to rural finance worked well under the formal rural financial systems (Vu, 2001). Moreover, the formal credit develops slowly and lacks competition between institutions while the demand seems to exceed the supply. According to a rough estimate of IFDA (2005), the demand for credit by farming households equaled some US\$3 billion a year while the formal supply could ensure only US\$850 million. This means that the formal credit supply can satisfy only 30% of the demand (Cao, 1997). As a result, the of formal and informal credit sectors in Vietnamese credit market has actually co-existed.

Identifying features of farming households that affect their ability to get access to the formal credit not only is a theoretically meaningful problem but also helps economic authorities work out and implement the credit policies at present and in future. However, there have been very few researches on determinants of access to credit for the households all over the world in general and in the Mekong Delta in particular (Ruth Putzeys, 2002). Therefore, this research tries to examine such problems in the Mekong Delta and address the following issues:

- Reviewing briefly some previous researches on determinants of access to credit in Vietnam and other countries.
- Characteristics and method of researching the formal credit in rural areas in the Mekong Delta.

- Identifying the factors that affect the access to formal credit by farming households.
- Suggesting some measures to promote the rural credit market in the Mekong Delta.

## 2. Literature Review

A study by Diagne (1999) of the financial market in Malawi indicates that the structure of household assets is found to be much more important than the total value of household assets or land area as being a determinant of household access to formal credit. Specifically, higher shares of land and livestock in the total value of household assets are directly proportional to the access to formal credit. However, the land area remains a significant determinant of access to informal credit. Francis N. Okurut (2000) concludes that access to bank credit is positively and significantly affected by age, gender, household size, household per capita expenditure, education level and race. In addition, level of poverty may reduce the possibility of accessing the formal credit. Semi-formal credit access is positively and significantly affected by household size, per capita expenditure, provincial location and being colored while the negative and significant factors in determining access to semi-formal one include being male, rural location, being poor and being white. Informal credit access is negatively and significantly influenced by education level and race. The study of Khalid Mohamed (2003) in Zanzibar, Tanzania, shows that the age, gender, education, income levels, and degrees of awareness of credit availability influence on access to credit by small farmers and fishermen in Zanzibar.

In the case of Vietnam, Ha (1999) finds that the characteristics of householders and household expenditures have significant effects on probability of borrowing by rural households and on the size of loan size provided. In addition, the education and social position of householders have positive impacts on this issue. However, the age has negatively influenced the probability of borrowing but positively on the loan size. Unexpectedly, the household size has negative impacts to probability as well as loan borrowed. In addition, Vu (2001) studied the determinants of access to credit by farming households in the Hồng River Delta, Vietnam. His findings show that the value of households' assets enhances the probability of access to credit.

## 3. Methodology and identification of variables in the model

### *a. Methodology:*

The aim of this paper is obtained with the help of Stata Analysis software, and especially the Heckman Selection Model. This procedure appeared in the literature as a simpler alternative to maximum likelihood methods to estimate the parameters of a model of selection. This model includes a second equation called the selection model, besides the one to be estimated that determines whether an observation make into sample causing the sample to be non-random. In order to avoid bias, the estimation must take into account the phenomenon of sample selection. Consider the following equation, which causes sample selection:

First step: Probit model is used to determine the factors affecting the access to formal credit of rural households. The model is generally represented as follows:

$$Y = F(X_1, X_2, \dots, X_n) \quad (1)$$

where Y is defined as a dummy variable to determine the probability of access to formal credit of rural households. (Y=1 if the households can access the formal credit, and Y = 0 otherwise). This means that the households apply for the loans and receive the loan from the formal credit institutions. Based on the studies by Duong and Izumida (2002), and by Mikkel Barslund and Finn Tarp (2008), the Vietnam Bank for Rural and Development of Vietnam (VBARD) is seen as the biggest formal banks, followed by the Vietnam Bank for Social Policy (VBSP). Due to objective conditions and characteristics of surveyed areas, this paper is bound by two given banks for the credit access.

Second step: OLS model is used to determine the factors affecting the size of loan received by the households. This is considerably seen as follows:

$$OLS [\text{Loan size } (Y)] = F(X_1, X_2, \dots, X_n) \quad (2)$$

The independent variables in model 1 and model 2 are defined as follows:

X1: the age of the householder by years.

X2: is defined as a dummy variable which has value 1 if the householder is male and 0 for female.

X3: is defined as a dummy variable which has value 1 if the householder was married and 0 otherwise.

X4 and X5: are defined as dummy variables which have value 1 if the householder locates in Cần Thơ (Sóc Trăng), 0 otherwise.

X6: is defined as the schooling years attended by household head in the Vietnamese education sector. The lowest level is 0 when the householder is illiterate and the highest one is 12 when the householder finishes the grade 12.

X7: is defined as a dummy variable which has value 1 if the householder is of Kinh origin and 0 otherwise.

X8 and X9: are defined as dependency ratio in family that is indicated by the ratio of people who are less than 15 years of age and higher than 60 years of age to the total member in the family.

X10: is defined as a dummy variable which has value 1 if the householder or one of other members works for the community or local authorities and 0 otherwise.

X11: is defined as total land area (by 1,000 m<sup>2</sup>) possessed by the household. This area includes both the farming and housing land the household is employing regardless of land-use right certificate.

X12: the land-use right certificate is defined as a dummy variable which has value 1 if the householder has that certificate and 0 otherwise.

X13: is defined as the total value of households' assets by VND1,000. This is indicated based on the left value of assets hold by the households and only asset whose use value is of five years or more is included in this variable.

X14: is defined as distance from the households' home to the formal banks at their location. This is indicated by meter.

Besides, Mills ratio is also estimated to assess the probability that the model is affected by the sample selection as well as the variables being used.

## **b. Hypotheses:**

The main hypothesis in this research is that which factors affect the peasants' access to formal credit in the Mekong Delta. To assess the hypothesis, we try to answer the following questions:

- Does the land area of the household affect its access to the formal credit?
- Is asset value of the household important to its access to the formal credit?

- Is the access to the formal credit affected by the householder's ethnicity?

- What is the effect of number of dependants of the household on its access to the formal credit?

- Does the householder's education influence his/her access to the formal credit?

- Does the gender of the householders make any difference in their access to the formal credit?

## **4. Numerical data**

This research uses the data of 288 samples obtained from direct interviews in three provinces of Cần Thơ, Sóc Trăng, and Trà Vinh in 2009. The samples are randomly chosen and structure of samples is as follows.

**Table 1: The sample of households survey in the Mekong Delta in 2009**

Province	Number of samples	As %
Cần Thơ	94	32.64%
Sóc Trăng	100	34.72%
Trà Vinh	94	32.64%
Total	288	100%

Source: Authors' survey in May – September 2009

## **5. Empirical results**

The table 2 primarily shows the Heckman Selection Model in two steps. As given in the table, each dependent variable is typically affected by the characteristics of households as well as the villages. Due to effectively addressing the problem and controlling the sample selectivity bias in the second stage, regression requires the selection of at least one variable that uniquely determines the probability of access to formal credit but not the continuous choice of loan size. In fact, two independent variables that are Kinh origin and family size of household affect the probability of access to credit but not the loan size expectedly received by the borrower. This means that the problem of selectivity bias is generally solved. Moreover, the Mills ratio is not significant in the equation, which indicates that the errors in the two stages of equations had been uncorrelated. Hence our dataset there would not have been omitted variable bias if the two equations had been estimated separately. Followings are the probable explanations of the findings.

**Table 2: Heckman Selection Model**

Variables	Access to formal credit		Loan size	
	dF/dx	Std.err	dF/dx	Std.err
Age	0.0093	0.0789	-0.0590	0.0381
Gender	-0.0879	0.2053	0.0786	0.1183
Marital Status	0.1125	0.8667	-0.4447	0.5164
Education	0.0335	0.1106	<b>0.1159</b>	<b>0.0680*</b>
Cần Thơ	-0.0023	0.2561	-0.0815	0.1456
Sóc Trăng	<b>-0.5811</b>	<b>0.2582**</b>	<b>-0.3679</b>	<b>0.1629**</b>
Religion	-0.0023	0.1817	0.1753	0.1127
Working for local authorities	<b>0.4546</b>	<b>0.2582*</b>	0.1059	0.1574
Dependant ratio	<b>0.3282</b>	<b>0.5319***</b>	-0.3156	0.3355
Land use right certificate	-0.4649	0.3430	<b>0.3528</b>	<b>0.2194*</b>
Total Land	<b>0.0179</b>	<b>0.0096*</b>	<b>0.0444</b>	<b>0.0145***</b>
AGE <sup>2</sup>	0.0004	0.0009	<b>0.0007</b>	<b>0.0004**</b>
FAMILY <sup>2</sup>	<b>-0.0759</b>	<b>0.0262***</b>	0.0012	0.0035
Building	-0.0239	0.0818	<b>0.2267</b>	<b>0.0501***</b>
Kinh origin	<b>-0.4463</b>	<b>0.2524*</b>		
Family Size	<b>0.7845</b>	<b>0.3053***</b>		
Distance to bank			0.0001	0.0003
LAND <sup>2</sup>			<b>-0.0006</b>	<b>0.0003*</b>
Cons	-21.382	21.625	83.209	1.2616***
Mills (Lambda)		<b>0.82</b>	<b>0.3059</b>	<b>0.3742</b>
Rho			0.4324	
Sigma			0.7076	
No observations	274			
Censored Obs	78	Uncensored Obs		196
Wald X <sup>2</sup> (23)	135.80	Prob ≥ X <sup>2</sup>		0.000

Note: Robust t statistics in parentheses: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Firstly**, estimated coefficients of the total lands held by households are statistically significant effects and expected positive signs on both probability of access to formal credits and the loan size. This variable only significantly impacts the probability farming household's access to formal credit at 10-percent significant level but on loan size received by households at 1-percent significant level. Land size characterizes ability to expand production of the farming household so high demand for credit. The formal lenders consider land size of farming household as a standard to lend. The bigger the total land area is, the bigger the loan size is expected to be by the household.

However, most of rural households in the Mekong Delta are not only receiving the loan from VBARD but also from the VBSP. The latter usually provides poor rural households with fiduciary loans. This policy produces one of backward effects of the land area in which the households with large farming area has little possibility of securing bank loans. The research shows that when the land area increases a unit (one hectare), the possibility of accessing the formal credit and size of loan increases by 1.8% and 4.4% respectively. This finding is confirmed by Ha (1999).

**Secondly**, location of Sóc Trăng province has a statistically significant effect on the probability of access to formal credit and loan size expected by households at a 5-percent level. A negative effect of this variable on dependent variable means that possibility of securing formal credit of households in Sóc Trăng is 58.11% lower than that of their counterparts in Cần Thơ and Trà Vinh. It is understandable because most poverty alleviation programs are carried out in remote and depressed districts of Cần Thơ and Trà Vinh with the result that households

in Sóc Trăng have fewer opportunities to get access to the programs.

**Thirdly**, being of the Kinh origin has a negatively and statistically significant impact on the access to credit but not on the loan size expected by the households. In fact, proportions of residents of Kinh, Kh'mer and Chinese origins in the Mekong Delta are 53%; 44% and 3% respectively (field survey 2009). This variable reflects the fact that householders of Kinh origin have fewer chances to get access to formal credit in comparison with other groups. This is due to the fact that most of credit programs such as Job Creation and



135 Credit Programs, etc. target on surveyed areas in which the high proportion of Kh'mer located, thus they are likely to benefits from given programs. Rough estimates show that possibility of accessing the formal credit by householders of Kinh origin is 44.36% lower than the ones from other ethnic groups.

**Fourthly**, statistical significance of the size of the household, dependant ratio and social status of the householder is 1%; 1%; and 10% respectively, for the possibility of accessing the formal credit but not for the loan size. Participation in local authorities means better chances to get access to the formal credit in comparison with other householders because they can easily establish good relations with local authorities, including banking institutions.

Other variables concerning members of the household mean that bigger households need more credits for consumption and other expenses when one or several members cannot cover all expenses. Moreover, big households with a high proportion of dependants are considered to have low ability to expand their production and repay debts, and banks are reluctant to extend credit to them. That is why they have to resort to informal credit. Studies by Tran (1998), Le (2002) and Pham and Izumida (2002) also mention this situation.

**Lastly**, the value of household's assets, which includes value of building and land-use right certificate, have statistically significant effects on the loan size expected by the households of 1% and 10% levels respectively. The value of given independent variables indicates the healthiness of the farm household. The formal lenders consider given variables as collateral to reduce risk. Due to the requirement, only farming households with collateral assets may apply and get formal loans. Farming households with higher asset values may be considered as creditworthy and solvent. Poorer households, with smaller asset values, often lack capital as well as means of production. Thus, the high amount of loan might be obtained due to the high demand for credit. The finding indicates that when the total assets of rural household increase by one unit, the probability of getting bigger loan size will increase by 22.67% and 35.28% respectively. This result is mentioned in previous studies like Bell et al (1997), Vu (2001), and Khalid Mohamed (2003).

## 6. Conclusion and suggestions

### *a. Conclusion:*

This paper analyses determinants of access to formal credit for the rural households as mentioned earlier in the rural MD. The data used is derived from the real survey of authors including 288 farming households with general information given in earlier section. Based on the theory and empirical studies, the aim of this study is obtained by Heckman Selection Model of estimation. Probit model is used to determine the probability of households' access to formal credit. Then, the propensity score is utilized to explain the relationship between probability of access to credit for the rural households and characteristics of households. The OLS model is utilized for the loan size expected by households. Last, the Mills ratio is presented for the selection bias test. The findings indicate that the household and village characteristics that include the age, ethnicity, household's education, location of households, and marital status of householder have affected the probability of access to credit and loan size. The results are similar to those of previous studies.

The aim of this paper is mostly obtained in the term of statistical perspective. However, due to the limitation of time and resources, some shortcomings should be noted. Firstly, this paper does not capture the competition between credit providers in the rural market. Secondly, the paper used the simple probit model to analyze the result instead of the ordered probit model. Thirdly, most peasants didn't keep necessary records properly with the result that most data are depend on their memory. The data collected and used in this research, however, still provide good information for suggestions about measures to enhance possibility of accessing the formal credit by peasants and efficiency of rural credit programs in the Mekong Delta.

### *b. Suggestions:*

The formal credit system can satisfy the market demand because of low and stable costs. This advantage is really significant for the supply of formal credit to farming households in the Mekong Delta. Results of analyses show that the access to formal credit is affected by various factors. The following are some suggestions for consideration.

## - For borrower:

Rural credit is important to farming households. To access the formal credit, peasants should secure and handle necessary information when they need bank loans. The information includes credit procedures, terms and interest rate. In addition, peasants should be encouraged to get access to banking services and ready to be debtors. Next, borrowers must prove their creditworthiness by repaying both principal and interest timely, which help lenders evaluate borrowers' credit history exactly. With a good track record, borrowers can access the formal credit easier in future.

## - For peasants who need capital but have not secured bank loan:

One of reasons why peasants have not secured loans from the VBARD is their failure to give the land-use right certificate as security to the lender. In this case, they should complete procedures for getting the land-use right certificate as soon as possible. This is particularly necessary for rice-farming land. In addition, peasants should be encouraged to access banking institutions by learning information concerning bank loan through mass media, the banks themselves and other sources. Peasants can also look for such information and help from local civic organizations.

## - For banking institutions:

The access to formal credit is affected by households' locality and ethnicity, which requires the banks to provide peasants with information about credit procedures in order to help them get basic knowledge of bank credit. Researches on the credit market, especially difference between demand and supply, are also necessary. In addition, banking institutions should modernize and reform their ways of doing business, human resource, technology, kinds of loans supplied, policy on their staff members, and plan to integrate into the world market. Solving these problems can encourage the banks to improve their performance and attract more customers■

## References

1. General Statistical Office of Vietnam 2008 (GSO, 2008)
2. International Funds for Agricultural Development 1995 (IFAD 1995)
3. Vietnam Living Standard Survey 2008 (VLSS 2008)
4. Bell, C., Srinivasan T.N. and Udry, C. (1997). "Rationing, Spill over and Interlinking in Credit Markets: The Case of Rural Punjab", *Oxford Economic Papers*, Vol. 49, pp 557 - 585.
5. Cao, D.D. (1997) Impacts of Interest Rates, Borrowing Transaction Costs on Borrowing and Structure of Rural Credit Market: A Study of Soctrang Province. MA thesis in Economics of Development, Vietnam – Netherlands Project, HCMC.
6. Diagne, A. (1999). "Determinants of Household Access to and Participation in Formal and Informal Credit Markets in Malawi", Food Consumption and Nutrition Division, Discussion Paper No 67
7. Francis N. Okurut. (2006). "Access to Credit by the Poor in South Africa: Evidence from Household Survey Data 1995 and 2000", Stellenbosch Economic Working paper: 13/2006.
8. Ha, N.T.T (1999). "An Analysis of Informal Versus Formal Microfinance for the Poor in Vietnam", The Vietnamese – Netherlands Master's program in development economics. Class 6 (1999-2001)
9. Khalid Mohamed (2003), *Access to Formal and Quasi-Formal Credit by Smallholder Farmers and Artisanal Fishermen: A Case of Zanzibar, Research on Poverty Alleviation (REPOA)*, Mkuki na Nyota Publishers, P. O. Box 4246, Dar es Salaam, Tanzania,
10. Le, N.H. (2002) An Analysis of Access to Formal Credit by Household Farms: The Case of Vietnam. MA thesis in Economics of Development, Vietnam – Netherlands Project, HCMC.
11. Mikkel Barslund and Finn Tarp, (2008), "Formal and Informal Rural Credit in Four Provinces of Vietnam", *Journal of Development Studies*, Vol. 44, No.4, 485-503, April 2008.
12. Quach, M.H., Mullineux, A.W., and Murinde, V. (2003). "Microcredit and Household Poverty Reduction in Rural Vietnam", Paper presented at the DSA Conference in Glasgow, Sep. 10 – 12, 2003 and at the ESRC conference in Manchester, Oct. 31, 2003.
13. Ruth Putzeys (2002), "Microfinance in Vietnam: Three Case Studies", Rural Project Development, Hanoi 2002.
14. Tran, T.D. (1998). "Borrower Transactions Costs and Credit Rationing: A Study of the Rural Credit Market in Vietnam", Paper prepared for the conference 'Vietnam and the Region: Asia-Pacific Experiences and Vietnam's Economic Policy Directions', Hanoi: April 20-21, 1998.
15. Vu, T.T.H (2001). "Determinants of Rural Households' Borrowing from the Formal Financial Sector: A Study of the Rural Credit Market in Red River Delta Region, MA thesis in Economics of Development, Vietnam – Netherlands Project, Hanoi.