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POOR HOUSEHOLDS' CREDIT ACCESSIBILITY: THE CASE OF RURAL VIETNAM

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ABSTRACT

This paper examines determinants of accessibility to rural poor households in Vietnam from the viewpoint of policy makers, credit institutions and poor households. From supply side annual report of provider will be cited, from demand side, VHLSS primary data provided by GSO will be used. Beside that semi-structured questionnaire survey will be conducted to collect qualitative information. Logit model is employed to investigate the determinants of their outstanding loan. The quantitative model's results express that age, education, regional differentiation, industrial differentiation, land, asset affect to credit access of poor households. The qualitative analysis finds out some recommendations for adjustment the poverty reducing credit policy.

Key words: *rural finance, rural poor, credit accessibility*

INTRODUCTION

According to Decision No. 10/2007 / QD-TTg on 23/01/2007 of the Prime Minister and International Standards of Industrial Classification of United Nations (ISIC Rev.4), banking is disaggregated in the service sector. This concept is also in accordance with the classification of financial services sub-sectors in the General Agreement on Trade in Services (GATS) (Dao, 2011). However, there are many parts in Vietnam that people cannot access to banking services, especially in the rural regions. Rural regions in Vietnam play an important role in agricultural activities, fisheries and ensure national food security. The real situation reveals that the status of accessibility to banking services and facilities is low, the proportion of agricultural loans are modest compared to the potential advantages of the region. The situation suggest more research on this issue. Although there are several research conducted on this topic such as Nu (2012) about the impact of credit to the poor in Vietnam's rural regions in 2004-2006 or Huy and Khoi (2014) about determinants of credit access in Hau Giang province in Vietnam, the scope and time of research exhibit limitations on the topic. This is the main motivation for the authors to conduct this study.

RESEARCH METHOD

Data description

Data taken from The Household Living Standards Survey (VHLSS) (GSO, 2012), which is conducted by General Statistic Organization in Vietnam (GSO), is used in this research. There are 9399 households in the survey, representing for 6 regions including both urban and rural areas in Vietnam. Content of VHLSS investigation include: demographic characteristics, education, health and health care, income, expenditure, assets, household utensils, housing, sanitary facilities, participation poverty reduction programs and credit. This is one of the most reliable survey in the country which having large sample and quality questions. Therefore, the dataset is suitable for investigating the accessibility to credit program for the poor households in rural Vietnam.

To measure access to access preferential credit program for poor households in rural Vietnam, the authors have extracted 1,260 households who are issued poor book (a kind of poor certificate, which records the poor credit history) by the commune (local government) including 1,146 poor households in rural areas, in which, 457 poor households borrow preferential credit program while 689 poor households cannot borrow from this program. There are some missing data on credit activities for the poor households, therefore, these observations are omitted from the data set. The final sample includes 928 poor households in rural Vietnam having poor book, in which 409 have credit participation while 519 cannot participate.

Data analysis

Following Pitt and Khandker (2002), Morduch (1995), Rozelle *et al.* (1999), Syeda (2008), Nguyen (2007), Yusuf *et al.* (2013) and Muhongayire (2013) credit programme was specified by participation as a function of household characteristics. In this research, binary logistic regression model was used, in which, the linear probability model is estimated by ordinary least squares. Wooldridge (2009) recommends the linear probability model, which is simply an application of the multiple regression model to a binary dependent variable. Binary dependent variables broadly defined as a dependent variable whose range of values is substantively restricted. A binary variable takes on only two values, zero and one. When binary dependent variable is discrete and takes on a small number of values, it makes no sense to treat it as an approximately continuous variable. Discreteness of binary dependent variable does not in itself mean that linear models are inappropriate. Wooldrdige (2009) uses maximum likelihood estimation (MLE) in regression because of the nonlinear nature of the maximization problem.

Logistic model is applied to examine the degree of each independent variables affecting to dependent on:

$$\ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_k X_k$$

By linearization method, the model becomes linear functional form as follows:

$$P_i = \frac{e^{\beta_0+\beta_1 X_1+..+\beta_k X_k}}{1+e^{\beta_0+\beta_1 X_1+..+\beta_k X_k}}$$

Where Pi is the probability that the poor household i can access to preferential credit program, X_k is the determinants of preferential credit accessibility, β_0 is the intercept, and β_k is the regression coefficient.

The model expresses that all things being equal, the probability of changing preferential credit accessibility in accordance with an increase of X_k. The signs of coefficients present the directions of X_k 's impact on credit accessibility. The model includes determinants of preferential credit accessibility in rural regions in Vietnam, which is expressed in Table 1.

RESULTS AND DISCUSSION

Descriptive statistic

Table 2 shows that average values of variables including Income, Land and Ass differ from maximum and minimum values, the kurtosis and skewness are uneven distributed and wide dispersion. As a result, the expectation sign of some variables may change and coefficients of some variables become insignificant when included the original value of these parameters in the model. For that reason, logarithm form of these variables are used.

The results reveal some factors such as age, total land and durable assets owned by the poor are correlated with credit access at 5% significant level. The correlations expressed in Table 3 are not higher than 0.4, therefore, applying logit model is less likely to experience multicollonearity (Verbeek, 2004). Also, Pearson Chi-Square is applied to examine the correlation between credit access and dummy variables. The results exhibit that variables including gender, ethnic, household heads having got secondary degree, the main activities of poor households relating to agriculture, businesses, services or simply having a job, the poor in Red Delta Region, Northern Midlands and Mountainous are significant at 1% while other parameters such as household heads are employed, households live in Central Highlands are significant at 5%.

Table 1. Variables employed in the model

Variables	Data description	Estimation of variables
ACP	Dummy variable (1: poor households have credit access 0: poor households cannot access to preferential credit)	Based on question of VHLSS
Age	Age of poor household	
Age2	Square of age of poor household	Age2=Age^2
Gender	Gender of households' head (1: household head is male; 0: household head is female)	
Ethnic	Ethnic (1: Ethnicity of household head is Kinh 0: others' ethnicity)	
Edu_i	Dummy variable with i=1,4 including no degree, primary degree, secondary degree and high school degree.	
Income	Average annual income of a member in a poor household (thousand Vietnam dong)	Logarithm of average annual income/ person/ month * 12 months
Farm	Dummy variable 1: household head is farmer 0: household head is not a farmer	
Nonfarm	Dummy variable: 1: poor household head engaged in manufacturing and services 0: poor household head does not engaged in manufacturing and services	
Employ	Dummy variable: 1: poor household head is a worker 0: poor household head is not a worker	
Job	Dummy variable: 1: poor household head is employed 0: poor household head is not employed	
Ptwork	Dummy variable: 1: household head has got jobs besides the main one 0: household head has not got jobs besides the main one	
Land	Total land owned by the poor household (Unit: m^2)	Logarithm of total land
Ass	Total durable assets of the poor household (Unit: thousand Vietnam dong)	Logarithm of total durable assets
REGIONj	Region dummy variable of the poor household j=1,6 including Red River delta, Northern Midlands and Mountainous, North Central area and Central Coastal Area, Central Highlands, South Eastern Region and Mekong Delta.	

Source: Synthesis of the authors based on previous studies and the characteristics of rural Vietnam

Table 2: Descriptive statistic of some variables employed in the model

Variable	n	Mean	Maximum	Minimum	Std. Dev	Skewness	Kurtosis
ACP	928	0.441	1	0	0.497	0.239	1.057
Age	928	47.127	92	16	16.338	0.605	2.519
Income	928	8936.121	190572	1440	8594.286	11.347	220.551
Land	928	4557.645	135239.5	24	7277.458	8.156	122.745
Ass	928	924.128	33500	0	3026.094	5.553	39.329

Source: Estimations of the authors based on data from VHLSS 2012

Table 3. Correlation matrix of the variables

	ACP	Age	Income	Land	Ass
ACP	1				
Age	-0.226*	1			
Income	0.019	0.112*	1		
Land	0.121*	-0.155*	-0.020	1	
Ass	0.076*	-0.066*	0.150*	0.042	1

*: significant level at 5%

Source: Estimations of the authors based on data from VHLSS 2012

Logistic model

The parameter estimates based on logistic model are presented in Table 4. Wald test (Chi^2 = 95.22, Prob = 0,000) reveals the robustness of the model with percentage of concordance 62.72%. Age of household head, square of household head's age, household head does not got a degree (Edu1), poor household engaged in production and business services (Nonfarm) or other jobs (Ptwork), total land owned by poor household (LnLand), Northern midlands and mountainous (REGION2) and Central Coastal area (REGION3) exhibited important factors in getting access to preferential credit program for the poor.

To analyze the impact of each factor affecting access to preferential credit program for the rural poor in Vietnam, simulation probabilistic approach on each regression parameter was performed (Table 5). As shown on Table 3, that age of household head is positive correlated with poor credit accessibility. This means that if other variables are constant,

Other things are constant, age of household head is positive correlated with poor credit accessibility. Accordingly, the age increase will force the increase of credit access, however, existing a threshold that age expresses negative impact. Data show ages of household heads range from 16 and 92 years old, in which, age of households having credit participation are 42 years old on average while 50 years old is the average age of households cannot access to credit. In addition, the average age of poor household head ranges from 45 to 46 concludes that the living quality is improved comparing to the last 5 years while household head 's age ranges from 49 to 53 experiences the same quality of living standard or even decreasing. Empirical evidence also exhibits that Exp (B) = 1.078 > 1, which means 1 unit increase of age will make the probability of preferential credit participation and non-participated household rise 1.078 times and 0.693% comparing to the beginning level of 10%. If the initial probability is 20%, the likelihood of credit access will be 21.222%, increase 1.222% and the increase level will be 1.59% if the initial probability changes to 30%. Finally, square of age is negative correlated with preferential credit accessibility.

One of the most important factors affecting the credit access in rural Vietnam is education. In fact, households without education earn least compared to higher educated household heads. The average income of household heads without any degree is 730.437 VND/ person/ month while people having primary degree and secondary degree can earn 62.169 VND/ person/ month higher and can reach the income of 1.036.657 VND/ person/ month. In addition, the proportion of life improving compared to the previous 5 years of household head without education is higher than one with a degree. Other things remain constant, Exp (B) = 1.694 > 1 implies that moving from a household without education to a household with a degree, the proportion of credit access rises 1.694 times, or increases 5.839% compared to initial probability of 10%. In case household head has primary and secondary degree, the rate is 1.399 and 1.639, respectively, or 3.45% increase with the initial probability is 10%.

Regarding household's occupation, if the poor involved in business activities and services, the probability of credit access can rise 1.683 times, or 5.756% comparing to initial likelihood of 10%, other things remain unchanged. The statistics also show that households operated in business activities and services with the average income of 954.677 VND/ person/ month, 243.566 VND/ person/ month higher than household involved in agricultural activities or employed. However, if the poor household head participates to a preferential credit program besides main job, the proportion of household accessing credit will decrease 0.378 times (1-0.622), or 6.46% probability, decreasing 3.54% and 6.552% comparing to initial

Table 4. Parameter estimation in logistic regression model

Variable	Coefficient	Std. error
Dependent :		
ACP (yes = 1)		
Constant	-6.771***	1.759
Independent :		
Age	0.096***	0.0322
Age2	-0.001***	0.0003
Gender	0.147	0.233
Ethic	0.456*	0.245
Edu_1	0.677***	0.235
Edu_2	0.431*	0.234
Edu_3	0.635**	0.263
Income (ln)	0.182	0.178
Farm	0.835	0.512
Nonfarm	0.669***	0.242
Employ	0.212	0.210
Job	-0.778	0.576
Ptwork	-0.611***	0.231
Land (Ln)	0.256***	0.082
Ass	0.051**	0.025
$REGION_2$	1.067***	0.332
$REGION_3$	0.858***	0.312
$REGION_4$	-0.054	0.409
$REGION_5$	0.785	0.690
$REGION_6$	0.624*	0.374
Obs = 928		
Wald Chi^2 (22) = 95.22; Prob > Chi^2 = 0,0000		
Log pseudo-likelihood = -4860913.7		
Concordance = 62.72%		

*** p<0.01, ** p<0.05, * p<0.1
Source: Estimations of authors

probability of 10% and 20%, respectively, other things remain constant. The main reason is the average income of the household having extra job is 742.677 VND/ person/ month, lower than the household without extra job. However, 47.84% households having extra job experience higher living standard comparing to 5 previous years, significant higher than households without extra jobs (18.53%). Therefore, households with extra jobs can easily escape from poverty, which means the possibility of participating a preferential credit program is decreasing.

Total land owned by the poor household is positive correlated to credit accessibility. In specific, total land increase 1% will promote 1.221 times, or increase 11.942% and 23.379% compared to initial probability of 10% and 20%, respectively, other things are unchanged. Data exhibits that the average land owned by the poor household is 4557.645 m2, while the preferential credit participations own 5547.578 m2 on average, 1770.053 m2 higher than household without credit access and the poor on average. Similarly, durable assets' value owed by the poor household increase 1%, the probability of credit access will rise 1.04 times, or 10.363% compared to 10%, other things are constant. In specific, a participation of preferential credit program owns 1.181.838 VND of durable assets on average while the household without credit access, value of average durable assets is 721.038 VND. The results shows that the land property or durable assets significantly

Table 5: Simulation probabilistic approach of preferential credit program for the rural poor in Vietnam (%)

Dependent variable ACP (yes = 1)	Coef (B)	EXP(B)	Probability of credit accessibility when independent variable changes1 unit and initial probability is:		
			10%	**20%**	**30%**
Independent variable					
Age	0.096	1.078	10.693	21.222	31.592
Age2	-0.001	0.999	9.993	19.988	29.984
Ethic	0.456	1.426	13.678	26.282	37.934
Edu_1	0.677	1.694	15.839	29.748	42.060
Edu_2	0.431	1.399	13.450	25.907	37.477
Edu_3	0.635	1.639	15.408	29.070	41.265
Nonfarm	0.669	1.683	15.756	29.618	41.908
Ptwork	-0.611	0.622	6.460	13.448	21.034
Land (ln)	0.256	1.221	11.942	23.379	34.343
Ass (ln)	0.051	1.040	10.363	20.643	30.840
$REGION_2$	1.067	2.295	20.316	36.454	49.582
$REGION_3$	0.858	1.950	17.809	32.774	45.526
$REGION_6$	0.624	1.625	15.297	28.893	41.058

affect to credit accessibility, because this is one of the criteria to ensure ability to repay debt as well as a credit constraint for the poor households in rural Vietnam.

Compared to the Red River Delta , the probability of preferential credit access to the poor household in Northern midlands and mountainous region is 2.295 times higher, or 10.316% while to the poor located in North Central Coast and central coastal provinces, this proportion is 1.95 and 1.625, or 7.809% and 5.297%, respectively compared to the initial likelihood of 10%, other things are constant. The statistics show that the proportion of credit accessibility in The Red River Delta is the lowest in 6 regions 27/113 households (23.89%), followed by Central Highland with (33.33%), Mekong Delta 40.91%, North Central Coast and central coastal provinces 42.01%, South Eastern region 50% and Northern midlands and mountainous region 53.71%, which is the highest rate of credit accessibility in the country. In addition, compared to the poor in the first 5 regions, the income of household in Northern midlands and mountainous region is lowest with 662.0155 VND/ person/ month. Hien (2013) also reveals the constraints in expanding the accessibility to banking services in Mekong Delta. For example, many credit institutions are not interested in investing into this region because of (i) transportation difficulties, infrastructure weaknesses and scattered population while the loans are relatively small, evaluation is labor-intensive and production is heavily dependent on nature; (ii) low education while the people is not interested in banking services, especially complicated lending procedure; (iii) Southern people's characteristics that prefer spending than saving.

In summary, among all determinants of preferential credit access for the poor household in rural Vietnam, regional differences are the most significant factor. Also, education and households involved in production and business create considerably different in credit access. Moreover, gender, income and households working as hired employees or farmers, employment status or the poor in Central Highlands, South Eastern region are insignificant, which means that these factor do dot affect to credit access.

CONCLUSION AND RECOMMENDATION

Conclusion

From the statistic description and quantitative approach, determinants of credit accessibility of the poor households in rural Vietnam are examined, the significant variables include:

1. Region differences (between households located in Northern Midlands and Mountainous, North Central area and Central Coastal Area and households in Red River Delta). This is the most significant variable affecting preferential credit access. In specific, the larger proportion of poor households in a regions, the higher probability of credit access. This implies the supportive policies are focused on poorer regions.
2. Education and households involved in production and business activities also create considerable differences in preferential credit access, which is in accordance with previous research. In which, higher education improves preferential credit information resulting higher credit access. Similarly, financial capacity of households engaged in production and business activities is increased, therefore, promotes the probability to repay debts. In addition, credit access can be improved since the poor credit policies mainly apply for production, not for consumption.
3. Age of household head is negatively correlated with credit access. This is a new finding of this study and appropriate with the objectives of credit for the poor, which is focused on production purposes.
4. Ethnic differences are also a new finding of this study, representing special characteristics in Vietnam. Accordingly, many preferential credit policies apply for minority ethnics such as 37 decrees of Government and 140 decisions of Prime Minister, in which Ethnic Minorities Committee manages 9 policies while 121 policies are managed by Ministries and governmental authorities (Thư, 2014). This may be due to ethnic minorities usually live in remote areas, which leading to lack of information and less educated overwhelming the impact of preferential policies. Further studies are needed for this issue.
5. The demographic characteristics often affect credit accessibility in previous studies such as gender, average annual income, main productive activities, households are hired, employment status and poverty in the Central Highlands, South Eastern Region are insignificant in this study. This partly due to preferential credit program in Vietnam does not discriminate region, gender and occupation.

Recommendation

Due to limited resources for preferential credit for the poor, the government should concentrate on job creation, diversification of non-agricultural sectors, education, especially for ethnic minorities, easing collateral to promote the preferential credit accessibility of the poor, as follows:

1. Regarding to employment. Preferential credit should associate with job creation. Besides policies supporting production activities, the state government or local governments should tailor credit products with more preferential such as longer maturity, larger amount and lower interest. These incentives assist the poor households to invest in traditional industries utilizing materials available in the region, developing tourism (take advantage of the characteristics of each region) and traditional villages (paintings, embroidery, handicrafts, furniture made from brocade and other traditional villages); helping the poor to enlarge the market for agricultural products and traditional products, avoid dependence on farming with considerably potential risks.
2. Education and propaganda. The poor in rural areas in Vietnam, especially ethnic minorities with low education level, limited expertise, mainly farmers, restricted understanding of preferential credit programs. Also, they afraid to go to the Bank for Social Policy and Poverty Reduction Fund to learn and register for preferential credit program. Therefore, the government needs to support staff training and organizational activities of credit institutions such as the Bank for Social Policy, Poverty Reduction Fund political and social institutions in rural areas especially in remote areas such as propagate loan policies to every single poor households. Besides, the Government should support specifically for ethnic minority households as reduce tuition fee, grant textbooks, educate Vietnamese.
3. Specific preferential credit policy to each region. Local governments in each region differently implement supports preferential credit for poor households. In fact, differences in credit access ratio in every region will facilitate to the transfer of experience, find out constraints of access and tailor appropriate solutions for individual region.
4. Programs providing preferential loans to producers should pay attention to the age threshold for poor households to increase credit access to the highest level, according to policy-oriented of the government.

Limitation

This research applied available data in VHLSS, if possible, reaching the investigated households to conduct a qualitative research examining the reasons of credit constraints will make the picture become broader and multi-dimension. In addition, preferential credits are usually unsecured loans with different social capital resources, in which collateral is not a determinant. However, this issue has not regarded in VHLSS yet. Further research could make the database of more comprehensive to will overcome this limitation.

Finally, the study examines characteristics of households affecting to probability of credit accessibility. It is concluded that lack of capital is the leading cause of poverty (Robinson, 2001). However, there are ways to support the poor, not necessarily directly through lower interest rates. Instead, applying other methods such as technology transfer is also a good solution. In addition, only poor households are considered in the research while near-poor households also need supports because that easily back to poverty. Therefore, the observations should be expand in further research by involving credit supply side, not only demand side as this work.

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