**Credit access of farming households for rural development**

**in Northern midlands and mountainous areas of Vietnam.**

Ta Nhat Linh1, Phan Thu Trang2, and Philippe Lebailly3

1 School of Banking and Finance, National Economics University, Hanoi, Vietnam; [tanhatlinh@gmail.com](mailto:tanhatlinh@gmail.com)

2 School of Banking and Finance, National Economics University, Hanoi, Vietnam; [trangpt912@gmail.com](mailto:trangpt912@gmail.com)

3 Economic and Rural Development Unit, Gembloux Agro-Bio Tech, University of Liege, Belgium; [Philippe.Lebailly@uliege.be](mailto:Philippe.Lebailly@uliege.be)

**Abstract**

*Agriculture sectors play an important role in rural development of a country, ensuring food supply, increasing national income and poverty reduction. Vietnam is well known as an emerging nation, in which agriculture is the base of the economy. However, the matter of credit access for agriculture still remains a confounding problem. The paper aims at recognizing the determinants of credit access in rural remote areas of Vietnam using the Northern midlands and mountainous areas as the case study, including formal and informal credit. The paper uses data from Vietnam Household Living Standard Survey 2018 (VHLSS 2018) of General Statistics Office of Vietnam. The logit and linear regression models are applied to investigate the factors that determine household credit accessibility, i.e., the households’ credit market participation and borrowing amounts. Findings of this analysis expose the different significant determinants of formal and informal credit market access. The implications of these findings for enhancing formal credit accessibility and reducing reliance on informal markets are considered.*

Keywords: credit access, credit constraint, developing countries, rural credit market, Vietnam

**1. Introduction**

In most developing countries, food security as well as poverty reduction cannot be achieved and sustained without the presence of the agricultural sector. On the other hand, agriculture production is regarded as the origin of rural development, contributing a large proportion to GDP and employment creation. Agriculture-related activities indeed help farmers to increase sustainably their income and welfare. Vietnam is a well-known developing country with 70% population living in rural areas whose main income is derived from agricultural production(GSO, 2019). However, credit accessibility of farmers still remains a confusing problem. Credit access limitation is possibly attributed to policy landscape as well as imperfection of financial markets. In reality, the existence of formal credit constraints is observed more than the informal ones. The segmented co-existence of the two markets in rural Vietnam has been researched in a lot of previous literature.

Northern midland and mountainous geography that is fairly special is known as a mountain and half-mountain region in the North of Vietnam. It administratively insists 15 provinces. The region owns the largest area in Vietnam with around more than 100,000 square kilometers, accounting for 28.6% of the country’s total area. Moreover, farming households in the regions make up for about 80% with more than 70% of labor working in agricultural sectors. The agriculture production of some provinces of the region is mainly subsistence agriculture. Therefore, rural financing in the region plays an important role in raising income as well as increasing farmers’ livelihood.

In reality, lack of collateral and proof of regular income can be seen the most obstacles with farmers, even poor and low-income ones. A biggest number of ethnic minorities in Vietnam, about 56.2%, live mainly in Northern midlands and mountainous areas. Around 70% of poorest population in Vietnam is minorities (GSO, 2019). With the particular characteristics of the region, significant results of this study focusing on rural credit access will arise.

Based on the consideration above, the aim of this study is to find out the determinants of farming households credit access in rural areas of Northern midlands and mountainous areas of Vietnam. The rest of this paper is organized, as follows. Section 2 summarizes some issues of rural credit markets in Vietnam and some developing countries. Section 3 presents the methodology used in this paper. Some results and discussion about the determinants of the research site are shown in section 4. Based on that, some implications proposed to accelerate formal credit access of households and conclusion is presented in section 5.

**2. The issues of rural credit markets in some developing countries and Vietnam**

***2.1. Factors affecting rural credit access of farming households***

There are a lot of perception/ definitions of credit access in previous literature all over the world. It is very simply that access to credit can be stated as approaching credit services or loans from lenders (Zeller et al., 1996). Determinants of credit access are factors of households’ characteristics and capacities that have impacts on both borrower and lender side. The characteristics are often demographic and socio-economic ones (Evans, Adams, Mohammed, & Norris, 1999). In details, basic factors such as age, gender, education, family member numbers, farming experiencing, dependency ratio have clearly been figured out to significantly affect credit access in many studies (Barslund & Tarp, 2008; Hananu, Abdul-Hanan, & Zakaria, 2015; Kosgey, 2013; Li, Gan, & Hu, 2011). In addition to demographic factors, socio-economic factors related household capacities could be regarded as the most important criteria in the process of loan application screening by the lenders. They include both observable and unobservable factors. Household assets which is seen as collateral is likely to be one of main constraints. Collateral, livestock size, farm size as well as agricultural and non-agricultural income are all factors that present household debt repayment (Akudugu, 2012; Bao Duong & Izumida, 2002; Chandio & Jiang, 2018; Field & Torero, 2006; Saleem, Jan, Khattak, & Quraishi, 2011).

Besides observable factors, unobservable factors, i.e. social capital/ networks have been confirmed in correlation with farmers’ credit accessibility. The proxies of social capital range differently in each research. Social networks/capital is known as group membership, having acquaintances in existing credit institutions or family members working for Government organizations and so on (Akudugu, 2012; Barslund & Tarp, 2008; Hananu et al., 2015; Khoi, Gan, Nartea, & Cohen, 2013). These factors can be seen one of the most vital factors that have significantly impact on informal credit access in some countries where households find difficult to adequately access formal markets.

***2.2. The characteristic of Vietnam rural credit***

The rural credit markets of Vietnam as well as the other developing countries include the main three sub-markets: formal, semi-formal and informal markets. Due to its particular features, semi-formal markets are excluded in this paper. Almost all Vietnam commercial banks, Vietnam Bank for social policies (VBSP) and the People’s credit funds (PCFs) are the three main formal sources in rural zones of Vietnam. Among Vietnam commercial banks, Vietnam Bank for Agriculture and Rural Development (VBARD) accounts for the largest proportion of loans for agriculture and rural sectors. VBSP often supplies low-interest rate credit to poorer people without collateral. The three institutions (VBARD, VBSP and PCFs) make up approximately 70% of total rural credit market share. Informal credit sources in rural Vietnam often come from relatives, friends, informal revolving credit associations (“ho, hui, phuong”), local lenders, and local traders/sellers with no collateral and high interest on loans.

One of the salient features of rural credit markets in Vietnam is the segmentation of formal and informal markets, in which informal credit markets are likely to be dominant to formal ones due to formal market imperfection and policy environment. The segmentation of rural credit markets is due to borrowing purpose differences. The formal markets focuses on lending for production while the informal ones are referred to meet diverse demand of households (Bao Duong & Izumida, 2002; Barslund & Tarp, 2008). One another character of Vietnam rural credit market is constrained credit market participation, in which formal institutions as credit suppliers postpone taking part in and borrowers find difficult to borrow from formal sources.

**3. Materials and Method**

***3.1. Study site and data***

The study has used data from VHLSS 2018 with selected 922 rural farming households of the Northern midlands and mountainous areas. All necessary information related households’ characteristics and capacities are filtered from VHLSS 2018. Table 1 below presents the description of variables used in the models in the next section.

Table 1. Description of variable

|  |  |
| --- | --- |
| Variables | Description |
| Age | Age of household head (year) |
| Gender | Gender of household head, man=1, woman=0 |
| Marital status | Marital status of household head, married=1, otherwise =0 |
| Vocational education | Having vocational education=1, otherwise =0 |
| Ethnicity | Kinh=1, otherwise =0 |
| Number of working people | Number of people with income |
| Dependency ratio | Dependent people/ total people in family |
| Group membership | Member of a credit group: 1=yes, 0=no |
| Saving | 1=yes, 0=no |
| Occupation | Head of family is farmer only =1, otherwise=0 |
| Ln\_owned\_land | Log of value of dwelling land with ownership certificate (m2­) |
| Land ownership certificate | 1=having certificate, 0=no |
| Ln\_farm\_land | Log of value of farm land (m2­) |
| Ln\_agri\_income | Log of value of income from agriculture (thousand dong) |
| Ln\_non\_agri\_income | Log of value of income from agriculture (thousand dong) |
| Ln\_agri\_expenditure | Log of value of expenditure from agriculture (thousand dong) |

***3.2. Theoretical framework and Empirical models***

Credit access can be broadly understood as relationship between credit demanders and suppliers. The two main actors will decide household credit market participation and the obtained amounts (Zeller, 1994). Factors related to demand side are to provide information whether households have credit demand or not as well as whether they are credit constrained or not. In terms of lenders’ behavior, they will make decisions through lending decisions through approving loan amounts based on borrowers’ characteristics (Aleem, 1990). The characteristics will be screened to value borrowers’ creditworthiness. In many cases, not all households will receive full amounts they applied for (De Aghion, Armendáriz, & Morduch, 2007).

The logit and normal regression OLS model was applied to identify the determinants of credit access at the household level. Due to the coexistence of the formal and informal credit markets, the rural credit access models are separated to include the two sectors. Household credit accessibility includes households’ participation in credit markets and the borrowed loan amounts based on previous literature, which are assumed to be influenced by a number of household characteristics as two equations as follows:

**(1)**

In equation (1) if a household has access to credit (including formal and informal sources) and 0 if otherwise, and captures all household socio-economic characteristics, income, credit and production factors, as shown in the table 1.

Next, household characteristics are also assumed to have effects on the size of loans the household takes up in equation (2). Under the case , represents the log of the expected value of the amount received by each household. That means is observed only when , i.e., the household i has access to credit. The equation (1) is estimated using the logit model while normal OLS is used for equation (2).

**4. Results and Discussion**

***4.1. Socio-economic description of the samples***

Table 2 below shows the means and standard deviations of some key indicators of all samples.

Table 2. Means and standard deviations of some indicators

Source: Authors’ calculation from VHLSS 2018

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| *Age* | 922 | 46.33 | 12.56 | 19.00 | 87.00 |
| *Gender* | 922 | 0.86 | 0.34 | 0 | 1.00 |
| *Ethnicity* | 922 | 0.37 | 0.48 | 0 | 1.00 |
| *Marital status* | 922 | 0.88 | 0.33 | 0 | 1.00 |
| *Vocational education* | 922 | 0.10 | 0.30 | 0 | 1.00 |
| *Number of working people* | 922 | 2.69 | 1.05 | 1.00 | 8.00 |
| *Dependency ratio* | 922 | 0.06 | 0.17 | 0 | 1.00 |
| *Group membership* | 922 | 0.67 | 0.47 | 0 | 1.00 |
| *Saving* | 922 | 0.08 | 0.27 | 0 | 1.00 |
| *Occupation* | 922 | 0.69 | 0.46 | 0 | 1.00 |
| *Owned\_land* | 922 | 81.17 | 44.78 | 15.00 | 340.00 |
| *Land ownership certificate* | 922 | 1.00 | 0.07 | 0 | 1.00 |
| *Farm\_land* | 922 | 11,921.51 | 23,346.81 | 10.00 | 387,650.00 |
| *Agri\_income* | 922 | 51,203.18 | 78,140.87 | 245.00 | 1,249,954.00 |
| *Non\_Agri\_income* | 922 | 39,746.87 | 113,536.30 | 29.00 | 1,628,894.00 |
| *Agri\_expenditure* | 922 | 23,229.58 | 46,269.65 | 105.00 | 679,437.00 |
| *Formal amounts* | 366 | 55,841.29 | 93,811.81 | 12.00 | 1,400,000.00 |
| *Informal amounts* | 69 | 45,400.00 | 58,833.48 | 1,200.00 | 400,000.00 |

As shown in the table above, the average age of farmers as family head is quite high, around 46. The reason is that younger people in rural areas seem to choose to migrate to the big city for working instead of agricultural production. Some factors such as household income both from agricultural and non-agricultural sectors, area of farm land as well as borrow amounts considerably vary. On average, the amounts of of informal loans are greater than the formal one. The maximum formal amount that a household can borrow is 1.4 billion dong while the number is just 400 million dong for informal.

Table 3. Source of credit

Source: Authors’ summary and calculation from VHLSS 2018

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sources of credit | | Number | Percentage (%) | Total |
| Borrowers | Formal | VBSP | 256 | 69.95 | 435 |
|  |  | VBARD | 99 | 27.05 |
|  |  | Others banks | 4 | 1.09 |
|  |  | Local authorities | 1 | 0.27 |
|  |  | PCFs | 6 | 1.64 |
|  |  | *Sub-total* | *366* | *100* |
|  | Informal | Farmers' Association | 3 | 4.35 |
|  |  | Veterans' Association | 1 | 1.45 |
|  |  | Women's Union | 13 | 18.84 |
|  |  | Local seller | 3 | 4.35 |
|  |  | Local lenders (no money lenders) | 4 | 5.80 |
|  |  | Friends and Relatives | 44 | 63.77 |
|  |  | Local informal credit | 1 | 1.45 |
|  |  | *Sub-total* | *69* | *100* |
| Non\_Borrowers |  |  |  |  | 487 |
| Total |  |  |  |  | 922 |

Table 3 below describes the credit sources of survey respondents, including formal and informal credit. Of the 922 survey households, there are 435 borrowers and 487 non-borrowers. Of the 435 borrowers, 366 borrowed from the formal markets while only 69 borrowed from informal markets. Number of formal borrowers in Northern midlands and mountainous areas is much bigger than that of informal. On the other hand, among formal sources, proportion of households borrowing from VBSP is greatest. It is the fact that poor farmers choose to borrow from formal sources with lower interest rate or they have more chance to obtain subsidized credit programs than other regions.

***4.2. Factors affecting households’ credit market participation***

Table 4 explains the factors affecting households’ credit market participation in rural areas of Northern midlands and mountainous region as pool sample. As shown in table 4, factors significantly affecting households’ participation in credit markets are: age, number of working people, saving, area of owed land, farm land, income and expenditure from agricultural production. However, it will be bias if we pool informal and formal credit demand of households. Formal and informal credit participation of households are separated in table 5.

Table 4. Determinants of households’ credit market participation as pool sample

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Coef.** | **Std. Err.** | **z** | **P>z** |
| Age | -0.0199928 | 0.0083301 | -2.4 | 0.016\*\* |
| Gender | -0.206191 | 0.3007766 | -0.69 | 0.493 |
| Ethnicity | -0.0015899 | 0.1777192 | -0.01 | 0.993 |
| Number of working people | 0.135059 | 0.0794441 | 1.7 | 0.089\* |
| Dependency ratio | -0.241215 | 0.6257126 | -0.39 | 0.700 |
| Group membership | 0.1729948 | 0.154944 | 1.12 | 0.264 |
| Saving | -2.731892 | 0.5281527 | -5.17 | 0.000\*\*\* |
| Occupation | -0.2532143 | 0.1710222 | -1.48 | 0.139 |
| Ln\_Owned\_land | -0.3452503 | 0.1615548 | -2.14 | 0.033\*\* |
| Having land ownership certificate | 0.2606477 | 1.046792 | 0.25 | 0.803 |
| Ln\_Farm\_land | 0.1137639 | 0.0670809 | 1.7 | 0.09\* |
| Ln\_Agri\_income | -0.477013 | 0.227521 | -2.1 | 0.036\*\* |
| Ln\_Agri\_expenditure | 0.4052159 | 0.1993262 | 2.03 | 0.042\*\* |
| Ln\_Non\_Agri\_income | -0.0018885 | 0.0390253 | -0.05 | 0.961 |
| Marital status | 0.3623695 | 0.3055442 | 1.19 | 0.236 |
| Vocational education | 0.11004 | 0.2549795 | 0.43 | 0.666 |
| \_cons | 1.879569 | 1.35127 | 1.39 | 0.164 |
| Number of obs | 922 |  |  |  |
| Prob > chi2 | 0.0000 |  |  |  |
| Dependent variable | Borrowing=1, non=0 | |  |  |

Source: Authors’ calculation from VHLSS 2018

\*: Significant at 10% level.

\*\*: Significant at 5% level.

\*\*\*: Significant at 1% level.

In table 5 below, it is very interesting that the three factors age, saving and owned land have significantly negative impact on formal credit access of farmers. In spite of high average age of farmers as analyzed in section 4.1, negative impact of age on formal credit access at the level of 5% means younger farmers have greater demand than the older. This finding is consistent with some research in Vietnam. Barslund stated the negative relationship between age and formal access in four surveyed provinces in Vietnam (Barslund & Tarp, 2008). Saving factors are significantly negative at the level of 1% in connection to household borrowing. The reason is that household savings can be regarded as self-financing sources in need (Akudugu, 2012; Khoi et al., 2013; Quach, 2005; Sebatta, Wamulume, & Mwansakilwa, 2014). Interestingly, the explanatory variable owned land indicating the living areas have also negative impact on formal access at the 1% level. Owned land can be a proxy of household wealth that means households with larger owned land areas have less demand for formal credit than the others.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Formal sources | | | Informal sources | | |
|  | **Coef.** | **Std. Err.** | **P>z** | **Coef.** | **Std. Err.** | **P>z** |
| Age | -0.0165 | 0.0084 | 0.05\*\* | -0.0173 | 0.0159 | 0.278 |
| Gender | -0.2765 | 0.3050 | 0.365 | 0.3760 | 0.5531 | 0.497 |
| Ethnicity | -0.2283 | 0.1810 | 0.207 | 0.6716 | 0.3308 | 0.042\*\* |
| Number of working people | 0.1177 | 0.0800 | 0.141 | 0.0758 | 0.1472 | 0.606 |
| Dependency ratio | -0.1113 | 0.6411 | 0.862 | -0.9706 | 1.4092 | 0.491 |
| Group membership | 0.1469 | 0.1574 | 0.351 | 0.1857 | 0.2853 | 0.515 |
| Saving | -2.4463 | 0.5300 | 0.000\*\*\* | - | - | - |
| Occupation | -0.2110 | 0.1727 | 0.222 | -0.0667 | 0.3059 | 0.827 |
| Ln\_Owned\_land | -0.5222 | 0.1658 | 0.002\*\*\* | 0.4877 | 0.2824 | 0.084\* |
| Having land ownership certificate | 0.9503 | 1.1942 | 0.426 | -1.2262 | 1.2371 | 0.322 |
| Farm\_land | 0.0734 | 0.0680 | 0.28 | 0.1528 | 0.1180 | 0.195 |
| Ln\_Agri\_income | -0.2347 | 0.2290 | 0.306 | -0.9526 | 0.4506 | 0.035\*\* |
| Ln\_Agri\_expenditure | 0.3116 | 0.2013 | 0.122 | 0.4701 | 0.3919 | 0.23 |
| Ln\_Non\_Agri\_income | 0.0085 | 0.0396 | 0.83 | -0.0405 | 0.0686 | 0.555 |
| Marital status | 0.3429 | 0.3125 | 0.272 | 0.0123 | 0.5700 | 0.983 |
| Vocational education | 0.1614 | 0.2570 | 0.53 | -0.3886 | 0.4739 | 0.412 |
| \_cons | 0.2674 | 1.4705 | 0.856 | 0.9516 | 1.9469 | 0.625 |
| Number of obs | 922 | | | 922 | | |

Table 5. Determinants of households’ credit market participation as separated sources

Source: Authors’ calculation from VHLSS 2018

\*: Significant at 10% level.

\*\*: Significant at 5% level.

\*\*\*: Significant at 1% level.

Concerning the determinants of informal credit market participation in table 5, the factor of owned land have significantly positive effect on informal access at the level of 10%. Ethnicity that has no impact on formal accessibility significantly positively affect informal market access at level of 5%. Ethnic minorities with low and non-educated level who have little knowledge and credit information demand less informal credit than Kinh majority. The coefficient of agricultural income is significantly negative at 5%. Informal interest rate is much higher than the formal ones. Therefore, households with lower agricultural income prefer borrowing from informal sources rather than formal ones. On the other words, they cannot borrow from formal institutions on the basis of income.

***4.3. Determinants of household borrowing amounts***

Table 6 indicates the determinants of borrowing amounts of farming households in the Northern midlands and mountainous areas. The separated samples will be investigated to avoid bias. As shown in the big first column of table 6, the variable of ethnicity is found to have significantly positive impact on formal amounts at the level of 1% while it has no impact on formal access as in section 4.2.

Table 6. Determinants of borrowing amounts

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Formal sources | | | Informal sources | | |
|  | **Coef.** | **Std. Err.** | **P>t** | **Coef.** | **Std. Err.** | **P>t** |
| Age | 0.0039 | 0.0060 | 0.51 | -0.0070 | 0.0167 | 0.679 |
| Gender | -0.0556 | 0.2211 | 0.802 | 0.7539 | 0.6956 | 0.283 |
| Ethnicity | 0.4333 | 0.1307 | 0.001\*\*\* | 0.5762 | 0.3443 | 0.1 |
| Number of  working people | -0.0224 | 0.0564 | 0.692 | 0.1300 | 0.1731 | 0.456 |
| Dependency ratio | -0.6413 | 0.4833 | 0.185 | 2.6521 | 1.6727 | 0.119 |
| Group membership | -0.1068 | 0.1080 | 0.323 | -0.0620 | 0.2849 | 0.829 |
| Saving | -0.1432 | 0.4713 | 0.761 | - | - | - |
| Occupation | 0.0050 | 0.1209 | 0.967 | -0.1289 | 0.3312 | 0.699 |
| Ln\_Owned\_land | 0.2438 | 0.1131 | 0.032\*\* | 0.9145 | 0.2964 | 0.003\*\*\* |
| Having land ownership certificate | 0.8625 | 0.9679 | 0.373 | -0.1206 | 1.2093 | 0.921 |
| Farm\_land | 0.0203 | 0.0486 | 0.677 | 0.1477 | 0.1314 | 0.266 |
| Ln\_Agri\_income | 0.0608 | 0.1386 | 0.661 | -1.1498 | 0.4839 | 0.021\*\* |
| Ln\_Agri\_expenditure | 0.0597 | 0.1189 | 0.616 | 0.9758 | 0.4072 | 0.020\*\* |
| Ln\_Non\_Agri\_income | 0.0333 | 0.0290 | 0.252 | 0.0863 | 0.0705 | 0.226 |
| Marital status | 0.3053 | 0.2330 | 0.191 | -1.4845 | 0.7997 | 0.069\* |
| Vocational education | 0.3599 | 0.1761 | 0.042\*\* | -0.4259 | 0.5144 | 0.411 |
| Number of obs | 366 |  |  | 69 |  |  |
| Dependent variable | Log (borrowing amount) | | |  |  |  |

Source: Authors’ calculation from VHLSS 2018

\*: Significant at 10% level.

\*\*: Significant at 5% level.

\*\*\*: Significant at 1% level.

Accordingly, among formal borrowers, Kinh majority can obtain greater amounts than ethnic minorities. Kinh majority is more educated and informed so they have opportunity to borrow more money from formal sources as well as have informal demand credit as in section 4.2. On the other words, Kinh is believed to have better ability of debt repayment. This finding is consistent with many studies in Vietnam (Duy, D’Haese, Lemba, & D’Haese, 2012; Khoi et al., 2013). Similarly, household with greater living area could borrow more money from formal lenders. The variable owned land significantly impacts on formal amounts at the level of 5%. Almost all financial institutions such as commercial bank and PCFs are willing to offer big amounts on the basis of corresponding collateral value (Chandio & Jiang, 2018; Rahman, Hussain, & Taqi, 2014). Vocational education is discovered to have significantly positive correlation with formal amount at level of 5%. Well-trained household heads with better knowledge and information as well as good skills also have better creditworthiness. That is the reason why they can borrow more money.

In terms of informal amounts, owned land factor have similarly effects as on formal amounts, significantly at 1% level. Agricultural income significantly negatively affects on informal amounts while agricultural expenditure is opposite. Households with lower agricultural income and higher agricultural expenditure tend to obtain more loans from informal sources to expand their production, pay for input and other expenditure. It is the households that find difficult to provide verification of their income to the banks. The results of OLS also present the significant impacts of marital status on informal amount uptake. That means household heads are having spouse tend to obtain less informal credit than single household heads. Single heads often have more financial burden and hence access informal sources. On the other hand, single heads is likely to have lower creditworthiness than a couple.

**5. Conclusion and implication**

This research attempts to recognize the determinants of farming households’ credit access in rural Vietnam with the case of the Northern midlands and mountainous areas. The results of the paper confirm that households’ credit market participation is affected by: age, saving and living area in terms of formal access in compared with ethnicity, living areas and agricultural income of informal. From the OLS regression, it is shown that ethnicity, living area and vocational education have significant impact on formal amounts while informal amounts are significantly determined by living area also, agricultural income and expenditure, and marital status.

The results have important implications for research fields of rural credit access, especially for remote and mountainous areas where ethnic minorities and poor population are much credit constrained. Government should have policies to fill the gap between borrowers and formal lenders to minimize the effects of informal credit. On the other hand, formal institutions in the particular areas need to enhance their lending procedures in response to macro economic policies, making loans more flexibly to all classes of borrowers.

This study is subject to certain limitation due to VHLSS data restrictions, however, it also provides literature for further research in rural Vietnam.

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