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CREDIT RISK IN GROUP LENDING MODEL AT THE BANK FOR SOCIAL POLICIES IN HAU GIANG PROVINCE

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Abstract

This article analyses the factors affecting the group credit risk at the Bank for Social Policies in Hau Giang Province. A survey of over 105 borrowers in Chau Thanh A, Long My and Chau Thanh districts of Hau Giang Province (35 groups of loans) who receive loans in groups from the Vietnam Bank for Social Policies has been conducted. Results of Binary logistic regression show that 4 of the 8 factors reduce bad debt in borrowing groups (i.e. group leader knows his/her members as they enter the group, group leader educational attainment, members of a group know each other as they enter the group, and group size) while the remaining 4 factors covariate with overdue debt (i.e. distance from the group leader's house to the houses of group members, educational attainment of group members, group charter and frequency of visits among group members). If we know how to take advantage of these factors, group lending risk may be partially reduced at the Bank for Social Policies

Keywords:

Credit Risk, Group Lending, Bank for Social Policies, Repayment Performance, Social Ties

1. INTRODUCTION

Currently, there are more and more developing Asian countries have become great nation, notably four Asian dragons: Hong Kong, Singapore, South Korea and Taiwan. To get the success, these countries must make a great effort to develop infrastructure macroeconomic stabilization and certain indispensable to improve the quality of people's life. Vietnam, too, to become a developed country, Vietnam is implementing step by step to eradicate poverty by adopting the group lending model, typically the group lending model in the Vietnam Bank for Social Policies.

In reality, one of the difficulties for poverty reduction is the poor who are difficult to access to finance. Mainly, they have to access to financial institutions for loan which requires higher interest rates than the market. Things make difficulties for the poor to access financial resources from traditional banks are their lack of collateral or a number of procedures that they do not respond well. Besides, the Vietnam's rural are difficult to travel that makes the search for information and monitoring customer caused major obstacles. So, the traditional banks are not eager for a full potential market like this. These issues have been resolved as the group lending model appeared in a number of developed countries such as the Grameen Bank in Bangladesh, Southern Bank (Banco Sol) in Bolivia, and Bank Rakyat Indonesia.

The group lending needn't collateral and the manager as well as the direct supervisor is a local people (leaders) so the model for loans has solved all the problems that come from the borrowers and lenders. Poor households without collateral will be able to easily access to this low interest rates capital instead of higher interest rates, banks will add a new piece of land to pour their capital into and collected profit. However, when this model was applied at the Vietnam Bank for Social Policies, the nature of this model has made a significant change, such as the Grameen Bank in Bangladesh just lend a group of 5 people, at the Vietnam Bank for Social Policies, this model's size can be up to 50 people. Besides, the members are not jointly liable for the total loans of their group, is there any affection to the efficiency of the group's repay? The Vietnam Bank for Social Policies is beside management group leader and credit staff of the bank, there is also supervision by a third party - the social organizations. So, how do the supervision and social relations of the leader and the members of the group influence to the group's repay? For these reasons, we would like to choose the topic "Credit risk in group lending model at the Bank for Social Policies in Hau Giang Province" to find solution which helps lending model become more useful for people.

2. RATIONALE AND METHODOLOGY

2.1 CONCEPTS RELATED TO GROUP CREDIT RISK

2.1.1 Credit Risk:

- Concept

Credit is an economic category which exists across the different social formations. Understanding the most common way, credit is borrowing. According to the traditional concept, credit is a relationship in which a person transfers to another person the right to use a quantity of value or something with satisfied certain conditions by two parties.

Credit risk is the risk of asset loss when a partner does not make a financial obligations or contractual obligations to the bank, including unpaid due debts no matter what it is the original or interest debt. Understanding in another way, the credit risk is the risk that is irrecoverable due debts due to the borrower did not make loan commitments under the credit agreement, did not comply with the principle of repayment at maturity. This is the risk associated with granting credit operations of banks.

According to the decision 493/2005/QD-NHNN [1], the concept of credit risk is defined as follows: Credit risk in banking activities of credit institutions are likely to occur losses in banking operations of credit institutions by the customer fails to perform or inability to perform its obligations under the commitment.

Thus, it can be concluded, "Credit risk is the risk arising in the process of credit extension by banks, represented in fact by the customer is unable to repay or not to repay on time for banks".

- Classification

Based on the cause of the risk, the credit risk is divided into:

- Transaction Risk: is a form of credit risk that its cause is limitations in the transaction process and approval for loans, customer evaluation. Transaction risk has three major parts which are selection risk, guarantee risk and professional risk.

+ Selection risk: the risk is related to the process of evaluating and analyzing credit, when banks choose the loan plan effectively to make lending decisions.

+ Assurance risk: arises from such ensuring standards such as the terms in the loan agreement, types of collateral, ensuring subject, ensuring method and the standard for lending based on the value of guaranteed assets.

+ Professional risk: the risk related to the management of loans and lending activities, including the use of risk rating systems and techniques to handle having problem loans.

+ Risk category: is a form of credit risk that arises from limitations in management the lending category of banks, which are divided into two types: intrinsic risks and focusing risks.

+ Intrinsic risk: comes from the elements, the characteristics of individual, separately identifiable entity inside of each borrower or industry, the economic field. It comes from the characteristics of activities or using capital by borrowers.

+ Focusing risk: is the case which banks lend too much money for some clients, lending too many companies operating in the same industry, economic sector; or in the same geographical area; or the same high-risk loan type.

- Reason:

- Causes from borrowers

Intrinsic causes of each customer: the ability of poor financial autonomy, weak regulatory capacity, business management systems are not effective, the weak level of customer management that led to inefficient use of funds or loan losses, affect to the ability to repay or due to the lack of goodwill on the repayment of loans from borrowers.

- Causes from the bank

+ Banking staff do not strictly observe the regime of credit and lending conditions.

+ The lending policy and process are not close, no effective risk management process, less emphasis on customer analysis and classification of the credit risk for calculating the loan conditions and repayment ability. For small business and personal, the lending decisions of banks are mainly based on experience, not to apply credit scoring tools.

+ The capacity of forecast, analysis and credit evaluation, detection and treatment of having problem loans of credit staffs remain very weak, especially in industries requiring highly specialized knowledge that lead to make the mistakes lending decisions. On the other hand, ending decisions are right but the lack of inspection and control after lending which leads customers using funds wrongly and the bank did not stop in time.

+ The lack of information about the customer or the lack of reliable, timely and accurate credit information to review and analysis before granting credit.

+ Capacity and moral qualities of some credit officers are lack of qualification and the unsatisfactory management, use and treatment for banking officials cause credit risk to the bank.

- Group objective reasons

Be the effects outside the will of the customer and the bank, such as natural disasters, fires, the change in the management of economic policy, regional planning adjustment, the industry, the unsuitable legal framework, fluctuations in domestic and foreign markets, the changes between good supply and demand relationship... that make the enterprises fall into financial difficulties that cannot be overcome. So, no matter enterprises have good will, they aren't able to repay for the bank.

It should be noted that although the reasons are caused from customers or from the bank, subjective or objective reasons causing result that customers do not pay their debts. However, the clearly reason analysis and definition will help the bank having the appropriate remedial measures in each specific situation.

- Consequence

- For banks

When banks meet credit risk that cannot collect credit capital and interest on loans, banks have to pay for the principal and interest of due mobilization, which make banks imbalance in the receipts and payments. When the banks do not collect the debt, the rotation of credit of banks slows down, makes business ineffective and loses liquidity. This reduces the confidence of depositors and seriously affects to the reputation of the bank.

- For the economy

Banking activities involve many individuals and many sectors of the economy, so when banks face a credit risk or bankrupt, depositors will be panic and pull together to massively withdraw money not only in this bank, but also in other banks, making the whole banking system in troubles. Banking bankruptcy affects production and business situation of enterprises because they don't have money to pay his workers as well as buy materials. In that time, commodity prices will rise, unemployment are rampant, social are instable, the economy falls into recession. Credit risks could trigger a financial crisis affecting the whole region and the world.

Thus, the credit risk of a bank may occur at many different levels: in the least level, banks will reduce profit because their interest is not recoverable, in the hardest level, the banks will not obtain both capital and interest, debt without collect with high rates lead to bank losses and capital loss. If this situation lasts, banks will go bankrupt, causing serious consequences for the economy in general and the banking system in particular. Therefore, banking managers should be careful and

take appropriate measures to prevent and minimize risks in credit activities.

2.1.2 Group Lending:

To clarify this issue easily, we look at the group model of the Grameen Bank. Although this model has been replicated in many countries, they all have common characteristics. Grameen Bank conducts a test in the Jobra village. The first loans are not concomitant with the binding of joint liability. In fact, the economic scale is the original engine of the using of group lending model. However, Professor Yunus (the founder of Grameen Bank) and his colleagues quickly realized that more benefits will be spinoff when banks request the borrower concentrate into one group. From that, the screening, controlling and coercing costs for borrower repayment will be significantly decreased.

To systematize this initiative, banks established a mechanism in which two members of a five-member team will be lent before. If all loans are repaid in full and on time, two following members will be lent after four to six weeks. After four to six weeks, group leader will also be borrowed. This model is called as 2: 2: 1. First, these groups are formed basing on the close relationship among the members to support each other when needing. For example, if a group member don't attend the meeting, the group leader will repay the debt instead of the absent, so that debt will be removed and the team cannot owed. The original characteristics of the group lending model are the members of the group postponed in lending, without any other punishment.

From time to time, the official punishment gradually appears. In principle, if the unpaid debt problem becomes serious, all members of the group will not be borrowed. According to the initial model, the team members are not obliged to pay debts to other members, but, they will lose the right to borrow when the other members do not pay the debt. Of course, no members want to lose the priority right to borrow accepting pay to the other members' debts. The representatives of the Bank will be available to wait until all members of the group pay the debt.

In the ideal situation, if all team members fully repay the debts, this team will be borrowing much next time. If the relationship between the Banks and the borrowers is going well, the size of the loans will grow. Gradually, the size of the loans would be large enough to build a new house, renovate the old houses, purchase the machinery or even send their children to college.

2.2 FACTORS AFFECTING THE GROUP CREDIT RISK.

2.2.1 Information Asymmetry:

The theory of information asymmetric is a part of the information economy. Information asymmetry is a situation that the quantity of information of each party in transaction is unequal or obtains information costly. The Condition of information asymmetry exists in many markets, such as the labor market, the insurance market and the credit market.

Akerlof (1970) was one of the pioneers in the field of information asymmetry when he researched about the used car market. His research showed that the old car sellers were more understanding how old the car is than the buyers. That is information asymmetry between buyers and sellers. When the sellers offer a lot of products with different quality while the buyers don't have the ability to distinguish products, they tend to make their own prices. Then the seller will withdraw the quality products and price of from equal to less than the pay of the buyer. The result is that the market may risk a decline in size or be closed and the buyer does not have the opportunity to buy good quality products. That is the consequence of information asymmetry caused to the market [2].

Particularly for the credit market, the information asymmetry implies that the lender does not understand the borrowers by themselves so the lender cannot distinguish between less or more risk borrowers. To offset this risk amounts, the bank has to use the interest rate tool. However, lending rates affect again the level of risk of loans through two effects: adverse selection and deviant motivation

2.2.2 Adverse Selection:

Adverse selection problems arise in the financial market when credit demand is greater than credit supply. Then the lenders use the interest rate to filter to customers. When raising credit interest rates up, the project has lower income expectations will either have to withdraw because of insufficient ability to repay or to move on to the project with high profit expectations. Credit interest rates rose to a certain level, the market will achieve a new equilibrium. At this equilibrium, only the customers with projects having high profit expectations can accept high interest rates. However, these projects having high profit expectations often associated with high risk and less likely to succeed. Result is that the lender's customers are groups of high risk customers. This is something that the credit institution is not desired.

According to Stiglitz and Weiss (1981), a good interest rate is the interest rate lower than the traditional equilibrium interest rate and credit institutions should use other screening mechanism to filter customers, rather than the interest rate tool. This study differs from traditional lessons about market instruments, when demand exceeds supply at a certain price, the price increases to reduce the demand for achieving market equilibrium. However, in the case of information asymmetry, the lender should keep interest rates low enough to get a meeting of the project with the appropriate risk and use other tools to filter down to the amount of demand exceeding supply. Thus, when demand exceeds supply, the interest rate has not increased [3].

2.2.3 Moral Hazard (Deviant Motivation):

In fact, that interest rates affect the expected returns of the credit institutions is that lending rate alters the behavior of the borrowers. The interests of the lender and the borrower are not the same. Borrowers only interested in profits from their investment project in case the project does not go bankrupt. Lenders are interested in the behavior of borrowers, because it affects the probability of bankruptcy. As it is difficult or very expensive to control the behavior of borrowers so the credit institutions must pay attention to the impact of interest rates on borrowers' behavior.

The increase in lending rates will make the risk project more attractive and profitability of credit institutions will diminish. Thus, the increase in lending rates will stimulate the borrowers' implementation of risk project. This is in contrast with the interests of the credit institution, creates a different motivation for

credit institutions to limit credit rather than increase interest rates in the case of credit demand exceeding supply.

Deviant motivation in lending activities related to the lender cannot observe the efforts and behaviors of the customers as also cannot recognize the value of the profits of the project requested loan. We will assume that the borrower has two projects to choose from, a safe project and a risk project. With the safe projects having a high probability of success, but lower expected returns while risk project is low probability of success, but high profit expectations. However, the lender does not know which projects will be selected by the borrowers. When credit interest rates is low, borrowers investing in safe projects still have positive income, so they are willing to choose this project. When interest rates continue to raise to the level that make the safe project having a negative income, borrowers will switch to the risk project. The change in investment projects of the borrower will affect the income of the lender because the limited liability features of a credit contract, if the project is successful, the credit institution will receive all the principal and interest, but otherwise, what the credit institution get. Thereby leading to an average expected income of the lender is lower in risk project than safe project.

Every form of financial markets has different ways to overcome the problems of information asymmetry. If the official credit institutions tend to require collateral, or put on contract strict terms, or must carefully prepare the documents to demonstrate the ability to repay debts. Therefore, the borrower's official financial institution is usually enterprise or people having property.

However, a large part of the borrowers in the developing countries is poor. These are people who cannot meet the demands of the official credit institutions. So they have to rely on the unofficial market. In this market, the lenders use the non-traditional tools such as social relations, social sanctions ... to reduce the problems related to moral hazard and increasing pressure from loan repayment for borrowers.

2.3 THE PREVIOUS STUDIES

As the investment activities, other business, the assessment of investments bringing good or bad results are based on the income earned for business. For banking activities, it's also similar to this; one of the indicators to assess the performance of the bank is good or bad based on the rate of debt collection. The majority of studies on until the present time have not figured out how to solve the problems related to micro-credit, which only focuses on lending group has solved a number of issues related to information asymmetry in financial markets.

Vuong Quoc Duy (2015) studied in the elements of micro-credit needs of farmers in the Mekong River Delta, Vietnam. In chapter 7 of this study, it pointed out the comparison about the repayment performance between the individual borrower and group borrowers. Model double and tool variable Probit model is used to determine the factors affecting the barrier performance of the borrower to repay. Performance of the loan repayment in group positively influenced significantly by level of education and credit for farmers, and negatively influenced by the amount of the loan received. In addition, studies show that there are more appropriate basis for the establishment of rural credit programs from lender's perspective, but there is little relationship between borrowers and lenders, and among borrowers in the group lending program. This could be a first field research in the future. Many studies can also be conducted on the impact of the public credit for gender, access to innovation and integration contract [4].

Vuong Quoc Duy (2013) compared the efficiency of debt repayment of farmer households to non-farmer households, individual borrower and group borrower from the official bank in the Mekong Delta (MD) in Vietnam. The data used in the report were collected in the three provinces of the Mekong Delta (namely Can Tho, Soc Trang and Tra Vinh). The research surveyed randomly on 325 people, in which, 219 borrowers and 106 non-borrowers as a control group. The samples have nearly equal magnitude for each province. Among the borrowers, 106 borrowers loan individually and 113 borrowers loan in group. Double barrier model and tool Probit model was used to analyze the factors that affecting the performance of the borrowers to repay the debt. In addition, the ability to repay has been analyzed with the loan amount by the Tobit model. The results showed that, among those who borrow, the farmer households have higher repayment performance than non-farmer households. Repayment performance in the group is affected significantly by the education level of the borrowers, female borrowers and farmer borrowers and the loan characteristics (capital of the borrower); Results showed that women is "better" in the repayment of loans than men and the amount of loan affects the repayment performance. And irrespective of the loan amount, the farmers are the borrower and the borrower's gender [5].

Odongo Kodongoa and Lilian G. Kendi (2013) conducted the study on 32 microfinance institutions (survey 48 institutions, 35 replies, 3 faulty or lack of information) in Kenya for 3 years. The research has shown that group loans have the ability to reduce overdue better than individual loans. So to avoid the risk of bankrupt, the low loan is usually individual loans while large loans are often issued to borrowers in groups. The study results showed that in a group of loans, if a borrower group loans in safety (can repay the loan on time in 12 months), the group size can be increased and the old borrowers in the group will be priority for lower interest rates. This will reduce transaction costs and have a positive compound impact as it will encourage new members in the group to repay their loans in order to benefit from lower interest rates in the future and the rate of paying overall debt will be improved, which suggests that the charters of the group have the effect of reducing the risk of borrowers unable to repay the group. The microfinance institutions will apply the loan agreement with different terms for individual borrowers and groups borrowers in a different way. Although group lending has lower risk levels and achieves better efficiency, in Kenya, the micro-finance institutions like individual loans rather than group loans. After an amount of time for group lending, the microfinance institutions identify good person in the group then accept them for individual loans, as individual loans will gain higher profits than interest rates in group lending [6].

Moh'd Al-Azzam, Maria Heracleous and Sudipta Sarangi (2013) has conducted a research on the role of team leader and team members impacting on the group's debt risks in Jordan. Group lending theoretical model assumes that all team members are the same of their effect on repayment performance. But in reality, this may not be true. The authors used a unique set of data obtained from a survey of 160 borrower groups in Jordan to

investigate the impact of joint liability, screening and monitoring of activities, and the social relationship of the group leader and other group members on repayment performance. Negative binomial II regression models were used in the model. The results of the authors showed that the responsibility activities and the joint inspection of the team leaders related more strongly to implement the repayment than similar variables for the rest of the team members. Besides, the social relations of all the members have a significant impact on the debt, while the monitoring activities do not have a clear impact [7].

Eijkel and colleagues (2012) studied the role of group leader in two micro-credit programs in Eritrea when using Probit models with dependent variable is a dummy variable, it has a value of 1 if member is the leader and 0 if not the leader. The concern of this study is that one member evaluates other members' possibility of future borrowing with these credit programs. In addition to the dependent variable is the ability to borrow in the further, researchers also use the control variable as the dummy variables such as age, gender, education level, marital status, and with Islam or not. Besides a number of economic characteristics variables were included in the model: income, having loans in other programs, and 2 dummy variables are traders and farmers. Finally, there are variables related to the other members of the group: born locally, know about the activities of other members, to know about the sales of the other members, the number of years lived in the province and was once join another group. Findings showed that the probability of becoming leader was positively correlated with the assessment of the ability to borrow in the future. Moreover, high levels of education, male gender and the Muslims have high probability to become the leader. However, all of the control variables are not statistically significant in this study. Similar to the research by Niels Hermes, Robert Lensink and Habteab Mehrteab T. (2006), the controlling variables such as age, gender, educational level, religious or not ... there was no statistically significant, therefore need more similar studies to know if the results from these studies can be generalized or not. From here, creating orientation for studies in the future in other localities [8].

Niels Hermes, Robert Lensink and Habteab Mehrteab T. (2006) using Logit model to study delinquency rate of 120 groups in Eritrea and variables belong to monitoring capabilities and social relations of the group leader and group members. Research results showed that there are many variables of the leader about the monitoring effort and social relations affect greatly the delinquency. Meanwhile, with the same meaning as leader variables, the member variables in the group did not have a similar meaning. To do this research, research group has run Logit model used with dependent variable as the dummy variable (dummy) with a value of 1 and 0 with overdue and not overdue. The independent variables are the variables under control and social relations of both the leader and the members of the group: education, years of living in the locality, know members of the group before they enter, visitation.... Besides, there are some variables belonging to monitoring efforts of the group leader such as the size, having group charter or not. The result shows that social relationships of the group leader has a positive impact on the repayment efficiency of the group, while this is not true for the society's relationship to other members in this group. Besides, we didn't find evidence for the hypothesis that supervision active of the group leader had a more positive impact on the group's repayment. All variables measure monitoring activities of the group leader or other members in this group were found which is statistically significant. This may be the direction for studies in the future [9].

Wydick (1999) studied 137 groups of borrowers in Guatemala with the dependent variable is the dummy variable with value 1 if the loan group with good credit history, value 0 if the group has a history of bad credit. The independent variables were divided into social relationships in groups, creating pressure on the group, supervision in the group and the control variables. Results showed that the average distance between members may reduce the ability to monitor at the same level and reduce the repayment capacity of the group. Meanwhile, mastering income information of other members of the group weekly will enable the group's ability to repay debts better thanks to the effect of oversight and enhanced the ability to enforce debt payment. Meanwhile, the social relationships between group members do not have a clear relationship with the credit history of the group. In that time, the social relationships between group members do not have a clear relationship with the credit history of the group. Limitations of this study is not refers to the relationship of group leader to the team members how to affect the repayment capacity of borrowers in the group. This may be the orientation for future studies [10].

Matin (1997) used data from 246 households borrowed from Grameen Bank in Bangladesh to investigate the situation of fully repay on the due date. Logit models and the dependent variable are used as dummy variables with a value 1 for the debt is paid off completely on time, and the value 0 for repayment not completely paid off on time. The independent variables are the level of education, group size, number of years of participation in the group, other loan sources ... Research shows that education, group size was negatively correlated with the payments on time, meaning that those has educated and cultivated land below a certain threshold seems to have less problems with on time debt payments. Conversely, time of joining the group, other loan resources, and cultivated land has reached a certain level, these are have a negative impact to the repayment schedule. Results showed that these longtime borrowers will get slack in repayment. Moreover, the borrowers with multiple different credit sources and have a cultivated area larger than a specific level will have a higher probability of timely repayment [11].

Sharma and Zeller (1995) used Tobit models to study delinquency rate of 128 groups in Bangladesh with the independent variables are the characteristics of groups, communities and the lenders. Each independent variable is multiplied by the size of the group. Results showed that the amount of the loan, the number of family members in a group, and the gap square between the requested and the borrowed amount of loans was positively correlated with the rate of delinquency. That means large amounts of capital for poor people may increase their debt burden. And several family members of the group can increase the collusion and can reduce monitoring efforts and pressure to repay each other. While reducing the requested amount of the loan greater than a particular level can make the borrower no longer considered that loan program is a long-term partner anymore. In contrast, the difference between the requested and borrowed amount of loans, the main industries are agriculture activities, the difference to own land and the creation of the group was negatively correlated with the dependent variable. Thus it is

conceivable that the low level of lending cuts could increase efforts to repay to be able to borrow the loan later. Meanwhile, the groups have many members with agricultural cultivation shows better debt solvency than many groups operating in other industries. The large differences in land ownership also show the low repayment rate, which leads us to increase the diversity of ownership category in the group. And the self-formed groups can also improve screening more efficiently [12].

Wenner (1995) studied 25 groups in Costa Rica and divided them into three types of groups: no delinquency group, internal delinquency groups (the group members arising delinquency but the group has make an interim payment the borrower) and delinquency group (the group with members arising overdue debt but the group did not complete the payment to the lender). This study used two dependent variables: paid delinquency and unpaid delinquency for binary Probit model, Logit and Tobit model to analyze. The independent variables related to the characteristics of the group: official and unofficial screening, group savings, local infrastructure, and the number of times the loan staff inspecting. The results showed that the issue of internal delinquency was positively correlated with the number of times the credit officers inspecting debt. In other words, the more the number of times the debt is inspected, the more internal delinquency is raised. Meanwhile, the official screening was negatively correlated to the internal delinquency. This suggests that the groups write down the rules that group members must follow will help reduce internal delinquency. Besides the independent variables listed in the study, the independent variables such as the social relationship of the leader, the relationship of the members... have not been mentioned in this study. In subsequent studies, these issues can be put on a more detailed analysis [13].

2.4 RESEARCH METHODS

2.4.1 Methods of Data Collection:

Topic of using random data collection methods stratified in Hau Giang Province. Primary data will be collected by 02 templates designed for 02 interview subjects: the borrower and the group leader. Each group will interview the group leader and 2 group members. A total of 35 groups are expected to choose to get information.

Sampling method:

- Determine overall: 3 people in Chau Thanh A, Long My, Chau Thanh District of Hau Giang Province have loans in group at the Vietnam Bank for Social Policies
- Determine sample size: Based on statistical theory in textbook method and methodology of economical scientific research of Associate Professor - Doctor Nguyen Thi Canh, if when the samples were selected based on the overall, there are three main factors affecting the decision of the size of selected samples are: the data volatility (V), reliability (1-α) and the error percentage (MOE) [14].

+ The sample size is determined by the formula:

$$n = p(1-p)\left(\frac{Z_{\alpha/2}}{MOE}\right)^2 \quad (1)$$

In there:

- N: the sample size.
- P: the rate of appearance of the elements in the sampling unit right as the sampling target ($0 \le p \le 1$).
- $V = p(1\text{-}p)$: the data volatility.
- Z: the table investigating value of Z normal distribution corresponding to reliability.
- MOE: the tolerance with small sample sizes.

+ In the most unfavorable case, the volatility of the data is the maximum level, which means that value of the sample size (n) has the lowest value:

  + $V = p\ (1\text{-}p) \rightarrow \max. \rightarrow V\text{^'} = 1\text{-}2p = 0 \rightarrow p = 0.5$ (a)

+ Tolerances with small sample size is of 10% (b)

+ In fact, researchers usually use the reliability of 95% (or α = 5%) → $Z\_ (\alpha/2) = Z\_ (2.5\%) = 1.96$ (c)

Combined (a), (b) and (c), the sample size has minimum value: n = 96 observations.

Conclusion: the topic using the data of 105 observations, satisfactory with requirement set for the sample size.

Due to the limitations in the methods of sampling and sample number, as well as major research topics essentially apply knowledge which has been summarized in the learning process, so the results obtained from the topic that is difficult to generalize the overall and just only makes sense on a number of research samples.

2.4.2 Data Analysis Methods:

In this study, the group of authors uses probabilistic (Logit), dualistic (Binary Logit) models.

This method is like the linear regression method, but being built for the dependent variable model is a binary variable which received 2 values corresponding to the presence or absence of a characteristic or a result that need to concern.

Inserted data and binding conditions:

With Binary Logit regression, the dependent variable is some kind of event occurred or not. The dependent variable Y now has two values 0 and 1, with 0 is no occurrence of concerning events, and 1 is that events has happened. The independent variables may include qualitative and quantitative variables.

In this case:

+ If Y receives value 0, it is no delinquency.

+ If Y receives value 1, it is delinquency.

Binary Logit regression requires assessing of suitability of the model. Unlike the linear regression, usually the larger coefficient R^2 is, the more appropriate the model is, Binary Logit regression using -2LL indicator (-2 log like hood) to evaluate the suitability of the model. The smaller -2LL is, the higher the suitability is. In addition, the ability to explain the dependent variable of the combinations of independent variables was also considered by chi-squared test.

2.4.3 Research Models:

In this study, the authors would like to offer the following models:

$$\text{Noquahan} = \alpha + \beta\,\text{NT} + \gamma\,\text{TV} + \delta\,\text{Bienkhac} + \mu$$

Noquahan is a dependent variable; NT is a group of variables which reflects efforts to screening, monitoring and enforcing, social ties and personal characteristics of the group leader; TV is a group of variables reflecting efforts to screening, monitoring and enforcing, social relationships and personal characteristics of the members of the group; and Bienkhac is a group of variables reflecting the efforts to screening, monitoring and enforcing at the group level.

The dependent variable is a dummy variable with a value of 0 or 1. First we have 7 specific variables about the group leaders (NT); the variables were divided into 3 groups as follow:

- Variable group measures the supervision at the individual level: khoangcach, Viengtham.
- Variable group measures the Social ties: BietTVmoi, Namsong.
- Variable group measures the control and personal characteristics of the members of the group: Tuoi, Hocvan.

Beside the leader's variable group, the authors also have 8 variables for other members of the group (TV); these variables have the same meaning as 7 variables of NT. And finally, the authors have 3 variables at group-level (Bienkhac): Dieule, Conhom and Hopnhom.

Table.1. Variables in the Research Model

Variable Name	Classification	Explanation	Expectation Mark
Dependent variable			
Noquahan1		1 if at least one member of a group pointed out that he/she has problem with repayment of loans in the current cycle.	
Variables related to the group leader (NT)			
BietTVmoi	Social ties	1 if the group leader knows his/her members before forming the group.	–
Namsong	Social ties	The number of years the group leader has lived in the survey area.	–
Khoangcach	Observation	The average distance (in meters) between the group leader and the members of the group.	+
Viengtham	Observation	1 if the group leader regularly visits the group members.	+
Tuoi	Individual/ Control	Age of group leader (year).	–
Hocvan	Individual/ Control	Educational attainment of group leader, has value 0 if just primary school, the remaining has value 1	–
Variables related to group members (TV)			
BietTVmoiTV	Social ties	1 if the group members know each other before founding the group.	–
NamsongTV	Social ties	The number of year the members have lived in the survey area.	–
KhoangcachTV	Observation	The average distance (in meters) between the group members.	+
ViengthamTV	Observation	1 if the group members often visit each other.	–
TuoiTV	Individual/ Control	Age of members (year)	–
HocvanTV	Individual/ Control	Education attainment of group members, 0 if primary school, and the rest is 1	–
MdvayTV	Social ties	Members know loan purpose of other members or not.	–
Other variables (Bienkhac)			
Dieule	Group/ Control	1 if the group have rules, its own charter	–
Conhom	Group/ Control	The number of members in a group	+
Hopnhom	Group/ Control	1 if the group meet regularly (less than 1 month 1 time)	–

3. RESULTS AND DISCUSSION

3.1 SAMPLE DESCRIPTION

Here are some statistics showing some characteristics of the loan group at Bank for Social Policies in Hau Giang Province that the authors have collected through interviews of 105 borrowers, of 35 loan groups at Bank for Social Policies.

Table.2. Sexual characteristics of the sample

Gender	Number of People (people)	Proportion (%)
Male	75	66,7
Female	35	33,3
Total	**105**	**100**

Source: The results of data processing of the authors.

According to statistical data, the percentage of women in the loan group were surveyed is 35 on total of 105 members (accounting for 33.3%). This shows that there is a disproportion about gender of members in loan group at Bank for Social Policies, explained to this problem we can easily notice that the characteristics of the Vietnamese's family is that man will be the head and the main labor of the family, in addition to the characteristics of this loan households is 100% living in rural areas so that it's more persuasive. Because of the characteristics mentioned above so the most loan households undersigned at Bank for Social Policies are male, though this can affect the quality of loan group or not? A study by Ameen at the Suny University (New York) and a number of textbooks, said there is a disparity in the payment of debt and loan use between men and women, but not like the views of many others, in reality, this study

indicates that women perform better; and probably gender disparity ratio will affect the quality of loans in Bank for Social Policies of Hau Giang province.

Table.3. Occupation characteristics of the sample

	Profession	**Number of Members**	**Proportion (%)**
Occupation	No job		
	Rice cultivation	1	0,95
	Crop cultivation	56	53,33
	Shrimp aquaculture	22	20,95
	Raising chickens	4	3,81
	Raising ducks	8	7,62
	Raising cows	1	0,95
	Service – Trade	2	1,90
	Hired labor:	3	2,86
	Other:	5	4,76
		3	2,87

Source: The results of data processing of the group of authors.

Borrowers of Bank for Social Policies is the poor, difficult family conditions, these households are mainly employed in agriculture, the fact that with the number of members were interviewed, only 2 career are rice cultivation and crop cultivation, already occupied of the total 105 members interviewed 74.3%. With agricultural job and often low education of these objects, loan officers and group leaders need to support a lot of expertise in agriculture, aim to help borrowers using loans better.

3.2 RESULT ANALYSIS

Looking at the statistics we have some comments as follows:

1. We have the checklist results H_0: $\beta\_1 = \beta\_2 = \cdots = \beta\_k = 0$ with value p (sig.) = 0,0000 so we reject H0, that means linear combination of all the coefficients in the model makes sense in explaining the dependent variable.
2. -2 LL value shows the suitability of the Logit regression model, looking at the statistics we see value -2LL = 43.578, not very high. As such it represents quite well the suitability of the overall model.

Table.4. Results of running Logit model

Variable name	**B**	**Value *p* (Sig.)**	**Boundary value**
BietTVmoi	-9,045	0,002 (**)	-0,9440
Namsong	0,041	0,524	0,0020
Khoangcach	0,09	0,009 (**)	0,0004
Viengtham	-3,110	0,113	-0,0726
Tuoi	0,060	0,391	0,0025
Hocvan	-4,297	0,072 (***)	-0,1192
BietTVmoiTV	-5,095	0,012 (**)	-0,1904
NamsongTV	-0,060	0,119	-0,0025
KhoangcachTV	-0,003	0,158	-0,0001
ViengthamTV	1,939	0,078 (***)	0,1325
TuoiTV	-0,010	0,849	-0,0004
HocvanTV	3,050	0,016 (**)	0,1654
Mdvay	-2,51	0,835	-0,0101
Dieule	7,701	0,021 (**)	0,1205
Conhom	-0,111	0,067 (***)	-0,0046
Hopnhom	1,920	0,156	0,1139
Constant	0,335	0,920	
-2 LL = 43,578			
Average value 0,9563			
P (sig.) = 0,0000			

*, **, *** Respectively, the level of significance of 1%, 5%, 10%

Source: The results of data processing of the authors from the data collected.

Looking at the column of *p* values in the statistics table, we can see there are some statistically significant variables and some variables were excluded from the model as follows:

- Variable BietTVmoi: With value $p = 0.002$, this variable was statistically significant in the model with a significance level of 5%, the coefficient of the variable is negative, this is exactly the same with the expectations of the authors about the mark of the variable , this suggests that whether the leaders has known their new members before they joins in group or not that have an impact on reducing the group's delinquency, specifically the coefficient of variables is -0.9440, it's mean when increasing 1% about the leaders has known their new members, the delinquency will be reduced -0.9440% over the average value of 0.9563.
- Variable Khoangcach: the coefficient of the variable has positive sign, which is identical with the author's expectation about the mark of variables, to explain to this matter we can see that if the distance between the leader and the members is far, the travel will be more difficult and time-consuming and it will affect greatly the supervision of the leader, variable coefficient is 0.0004, it's mean when increasing 1% of the distance between the group leader and the group members, the delinquency will increase 0.0004% compared to the average value of 0.9563.
- Variable Hocvan: coefficient of variable is negative, this is the same as the author's expectation, to explain the matter we can see if the higher education the leader has, the higher their ability to access to the management methods will be, thereby contributing to improve the group leader's management ability, variable coefficient is -0.1192, which means an increase of 1% on the education of the group leader will decrease 0.1192% the delinquency compared to the average value of 0.9563. This is similar to the study of Eijkel and the partner (2012) for pointing out that people with higher education attainment have higher probability to become the leader.

- Variable BietTVmoiTV: coefficient of variable is negative; this shows that an increase of 1% of the group members know each other before, the group's delinquency will be decreased 0.1904% compared to the average values 0.9563. To explain this problem, it can be seen if the group members know each other before, so they can completely control each other on the use of loans for the right purposes, therefore it will be difficult to delinquency occur. This result is somewhat different from the research by Niels Hermes, Robert Lensink and Habteab Mehrteab T. (2006), in studying the control and the social relationships of the group members; it did not have any sense. This shows that taking the advantage and the relationship of mutual understanding of the members in the loan group of the Bank for Social Policies has brought positive effects compared to the loan in group model in some other countries.
- Variable ViengthamTV: variable coefficient is positive sign, which shows when increasing 1% on the visit of the members in the group, the group's delinquency will increase 0.1325%. This tells us that in the loan group, the majority of the delinquency group is not only a member of a group that both groups are overdue. This is absolutely true in comparison with the data collected. Besides, in the study by Niels Hermes, Robert T. Lensink and Habteab Mehrteab (2006), it also pointed out that the control in the group members will not impact the loan repayment schedule of the group members. Once again, it shows the inspection and supervision of the members in group at the Bank for Social Policies have better results than some loan group models at some countries.
- Variable HocvanTV: variable coefficient is positive sign, which is different from the expectations of the author, the explanation for this difference is we can understand that the group members with highly educated, their ability of understanding will be higher and from there they will find more investment channels if they have the capital and would be willing to invest capital if the channel is a higher benefit than their purpose in bank loans, if they losses in investment, the delinquency can be happened, variable coefficient is 0.1654, which means that when increasing 1% of the education of the group members, the delinquency will increase 0.1654% compared to average values 0.9563. The results of this study differ from the finding of Matin (1997) when using data from 246 households of Grameen Bank in Bangladesh to investigate the situation with fully repay on the due date. Matin's research indicated that education will have a negative correlation to the delinquency while this study indicates the positive correlation.
- Variable Dieule: Dieule has a significant level at 10%, the coefficient of variable has positive sign, it shows that when the charter of the group increased by 1%, the ability of the group was overdue rose to 0, 1205%. This is the impact of information asymmetry, leading to adverse selection, the more difficult the charter is, the more the borrowers disregard to have the loans. This result is similar to the findings by Niels Hermes, Robert Lensink and Habteab Mehrteab T. (2006), both studies showed that the activities of the group charter will decrease the delinquency.
- Variable Conhom: variable Conhom with significance level at 10%, the coefficient of variable carrying negative sign shows that the group size increased by 1%, the ability of the group was overdue decreased 0.0046%. This is understandable because in the same commune, if the members are more crowded, the control of the members will be more tightly, leading to the use of loans will be intended purpose.
- These results may differ from the results of research by Niels Hermes, Robert Lensink and Habteab Mehrteab T. (2006), but in the study of Wydick (1999) studied 137 groups of borrowers in Guatemala has shown that the distance between the members of the group had a negative correlation with the repayment schedule. This is especially true with the research result of the authors because when the group size increases in an unchanged range, the distance between the members of the group will be shortened.
- Regression method on the most powerful variable is that the group leader has known their new members, and the lowest is the distance from the leader to the group members.

4. CONCLUSION AND RECOMMENDATION

4.1 CONCLUSION

The authors conducted a survey of 105 people loaned in group at the Bank for Social Policies, and get the following results: in 105 people interviewed there are 36 people who said they had been problems with repayment; that means they owed delinquently, means delinquency occupied a high proportion of the group. Individuals experiencing this delinquency were mainly due to having the diseases when raising livestock, poultry, growing rice and fruit trees and used their capital to be true. The study results shows that 8 factors are: the leader has known the group members as they enter the group, the distance from the leader's house and the group members' houses, educational attainment of the leader, educational attainment of the members of the group, the group members know each other when they are in groups, the group's size, the group's charter and the visitation of members of the group. In 8 factors, there are 4 factors reducing the impact of bad debts in the loan group and 4 factors are covariant with the delinquency of the loan group. If we know how to take advantage of those factors, which may partially reduce the risk of loan problems at the Bank for Social Policies.

Based on the analysis on the existences of the loan group, the authors have proposed a number of measures to increase the role of the group leader, thereby contributing to reducing the group's delinquency: Meeting strengthening, having own group charter, taking advantage of the monitoring from the households living near the members...Concretely:

a. Priority to the members that the leader knows or has knowledge about them before they joint in the group.
b. Each team leader managed only members of a certain locality, distance from group members' house to group leader's house is not too far to affect the group leader's ability to monitor.

c. Enhance training management knowledge for group leaders by opening training classes or meetings the leaders can talk about how to manage groups of borrowers.

d. Priority members live in local borrowing group jointing to group, strengthen the supervision and monitoring about the use of funds of members, avoid improper use of funds.

e. Each group of loans that have rules on the activities of the group in order to control the use of funds of the group members. However, do not make more rigorous charters because this will cause barriers to good members when they want to loan group.

f. Need to find an appropriate group sizes, avoid too many members in a group, which affects visibility and the use of these funds for improper purposes of the group members.

However, to implement well these solutions, it requires the coordination of the bank along with the group leaders and the support of the local authorities.

4.2 RECOMMENDATION

To the bank:

a. Although the loan group's activities are mostly managed by the group leader, but it also need some help from the banks, especially from credit officers to manage directly in each area, to organize more direct inspection and association with the locality, to contribute to support and monitor the activities of the group leaders as well as the loan groups.

b. There is a not large part of the leaders still limited in their management process, although small, but it also affects the operations of the group, so the banks need to organize more activities to improve the management ability of the leaders.

c. Currently, the banks have too few penalties as well as deterrent measures for loan households who do not repay their debts, the only measure of current bank is taking to court, but before taking to the court there must be a lot more loan term extensions for the borrowers, in addition to the provision of the credit card to this loan households, completely there is no collateral, the bank therefore need to strengthen additional sanctions against not good loan households.

d. Besides resolving debt problems after the loan, the bank needs to tighten lending, if the reduction in delinquency situation cannot be solved, we can prevent this by screening personal loans at the bank.

e. To the leader

f. To the leader, as stated in the previous section of this study, the leader needs to do a better job in monitoring the activities and loan usage of the group members through measures such as strengthening the meeting group, regularly visiting the team members, setting out a number of charters to strengthen the management of the leader.

g. Besides, the leaders should take advantage of the social relations of themselves to contribute to reduce the group's debt problems, because when the leader has a good social relations in a region, they will have a lot of information about their borrowers as their business, whether they have ever have debt problems from which the leader will be able to decide whether or not to loan them.

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APPENDIX

Table.5. Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	BietTVmoi	-9.045	2.983	9.193	1	.002	.000
	namsong	.041	.064	.406	1	.524	1.042
	khoangcach	.009	.003	6.832	1	.009	1.009
	viengtham	-3.110	1.963	2.510	1	.113	.045
	tuoi	.060	.071	.735	1	.391	1.062
	hocvan	-4.297	2.392	3.227	1	.072	.014
	BietTVmoitv	5.095	2.022	6.346	1	.012	163.161
	namsongtv	-.060	.038	2.430	1	.119	.942
	khoangcachtv	-.003	.002	1.996	1	.158	.997
	viengthamtv	1.939	1.101	3.098	1	.078	6.949
	tuoitv	-.010	.051	.036	1	.849	.990
	hocvantv	3.050	1.267	5.794	1	.016	21.125
	mdvaytv	-.251	1.209	.043	1	.835	.778
	dieule	7.701	3.341	5.313	1	.021	2210.041
	conhom	-.111	.061	3.352	1	.067	.895
	hopnhom	1.920	1.352	2.016	1	.156	6.820
	Constant	.335	3.344	.010	1	.920	1.397

a. Variable(s) entered on step 1: BietTVmoi, namsong, khoangcach, viengtham, tuoi, hocvan, BietTVmoitv, namsongtv, khoangcachtv, viengthamtv, tuoitv, hocvantv, mdvaytv, dieule, conhom, hopnhom.

Table.6. The results running with SPSS models

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	94.961	16	.000
	Block	94.961	16	.000
	Model	94.961	16	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	43.578[a]	.595	.812

a. Estimation terminated at iteration number 9 because parameter estimates changed by less than .001.

Table.6. Model variable value

```
. mfx

Marginal effects after logit
      y  = Pr(nhom) (predict)
         =  .95635768
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
biettv~i*	-.9436097	.07402	-12.75	0.000	-1.08868	-.798541	.342857
namsong	.0017136	.00316	0.54	0.588	-.004486	.007913	50.6571
khoang~h	.0003642	.00026	1.42	0.156	-.000139	.000868	1292.86
viengt~m*	-.0725669	.07687	-0.94	0.345	-.223234	.0781	.809524
tuoi	.0025249	.00357	0.71	0.480	-.00448	.00953	55.0286
hocvan*	-.1192186	.08707	-1.37	0.171	-.289876	.051439	.742857
biettv~v*	.1904975	.14325	1.33	0.184	-.09026	.471255	.32381
namson~v	-.0025011	.00229	-1.09	0.274	-.006983	.001981	47.8857
khoang~v	-.0001445	.00011	-1.29	0.199	-.000365	.000076	919.595
viengt~v*	.1325313	.1397	0.95	0.343	-.141285	.406348	.733333
tuoitv	-.0004026	.00217	-0.19	0.853	-.004661	.003856	52.6476
hocvantv*	.1654976	.12914	1.28	0.200	-.087606	.418602	.504762
mdvaytv*	-.0101559	.04939	-0.21	0.837	-.106949	.086637	.647619
dieule*	.1205131	.09443	1.28	0.202	-.064568	.305594	.142857
conhom	-.0046326	.00412	-1.12	0.261	-.012708	.003442	48.2857
hopnhom*	.1139298	.13277	0.86	0.391	-.146289	.374149	.647619

(*) dy/dx is for discrete change of dummy variable from 0 to 1