Does Microcredit Have an Impact on Children? Evidences from Vietnam

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Abstract

Vietnam has been successful in economic growth and poverty reduction. One of important antipoverty program is micro-credit for the poor. Although there are a large number of studies on the impact of micro-credit programs on income and poverty reduction, there is little evidence on its impact of children. This paper aims to evaluate the impact of micro-credit on child labor and education in Vietnam using Vietnam Household Living Standard Survey (VHLSS) 2006 and 2008. Overall, this study does not find significant impacts of micro-credit on education and labor of children.

Key word: children education, child labor, microcredit.

JEL classification: I32; I38; H43; H81

1. INTRODUCTION

Human capital is considered as the main engine for the economic growth (Lucas, 1988; Rommer, 1990) while education plays an important role to improve the qualification of labor force. Investing in education is a decisive factor for great career, higher income and better social welfare in the future (Verbic, Majcen and Cok, 2009; Krueger and Lindahl, 1999). However, child labor is prevalent in developing countries. With high poverty and poor schooling opportunities, as a result, children are forced to earn for living, being deprived their childhood, interferes with their ability to attend regular school, and that is mentally, physically, socially or morally dangerous and harmful.

Child education, as well as, child labor is important issues calling researchers and Governments to study and to be in search of effective solutions. Development economics has been researching on decisive factors of child education and labor of children (see, for example, Becker and Tomes, 1976; Black et al., 2005). Also, a huge number of empirical studies have been investigating on this issue (for instance, Behrman et al., 1999; Bhalotra, 2003; Edmonds, 2003; Filho, 2008; Krutikova, 2009). Base on those studies and empirical evidences, general determinants are household income, demographical characteristics of children, parental education, poverty status, as well as, other household members. School quality and distance to schools, related to the education supply, also determinants of schooling of children.

Among decisive variables of education and labor of children, household income is key factor that determined education of children and child labor. Household with low income, especially in developing countries with widely available of farm or informal work, are not payable to education cost for children and children is inclinable to work for additional income (see, Edmonds, 2008; Basu et al., 2010). Therefore, improving household income is able to provide households chance to afford education costs for children and decrease child labor.

ILO and UN CRC have been trying to protect children from work and improve their life condition. Many programs have been implementing to help children to access to education services and reduce labor of children phenomenon. Microcredit plays an important role of influencing on household, especially microcredit. There are many studies about its effects on household income and expenditure. Nevertheless, the impact of microcredit on education and labor of children is still not researched. The main

purpose of this study is to determine the factors and terms in microcredit programs affecting on the education, as well as, labor of children of a family. Interestingly, the research performs the role of microcredit and its effect on those.

Vietnam is a developing country where many people are still living in poor, especially, in rural and mountain areas. Government of Vietnam always pays interested in reducing poverty. Vietnam Government has been implementing a number of programs for supporting to poor households. Vietnam has achieved a great success in growing up school enrolment for children and obtaining the Millennium Development Goals (MDGs) on education (Dang et al., 2013). The proportion of working children aged 6 to 14 reduced from approximately 12 percent in 2004 to 7.4 percent in 2012.

However, the poor had been quite difficult to access to the loans of banks located in urban until microcredit was introduced in Vietnam in 1980s. It has been proving its significantly positive effects on household in the rural and mountain areas. Since microcredit projects were deployed in Vietnam, the income of households that joined in those projects has been increased significantly. With better living standard, the household's consumption of education services are also improved, as a result, the productivity of family's members increase, their income is also positively affected. Children have more chances to go to school instead of working to contribute to the income of the household.

Vietnam Bank for Social Policies (VBSP) is the institution that implements almost microcredit programs in Vietnam such as: Poor households program, Disadvantaged students program, Job creation program, etc. As of December 31st, 2010, total outstanding loans of VBSP is VND 89,462 billion, in which: Poor households program account for 40.43 %, Disadvantaged student program account for 29.12 %, Extremely disadvantaged ethnic minority households program account for 0.48%. With implementing microcredit programs, households' education of children increased significantly and the share of children in labor force decreases considerably. In 2006, the poor and non-poor claimed to use around 2 and 16 percent of the VBSP credit for service and business activities, respectively, as well as, debt repayment, house construction, healthcare and education. (Nguyen, V.C. 2008).

This paper aims to evaluate the effect of microcredit programs implemented by Vietnam Bank for Social Policies (VBSP) on child labor and education. It is structured

into six sections. Section 2 presents the literature review. Section 3 introduces data sets used in this study. Section 4 and 5 present the empirical analysis of microcredit and its impact on children in Vietnam. Finally, section 6 concludes.

2. LITERATURE REVIEW

Microcredit has become more popular in recent years but there is no common definition for this issue. Andrews (2006) presented that *"the provision of financial services for poor and low income people and covers the lower ends of both rural and agriculture finance"* is called as microcredit. Meanwhile, Sharma (2001) considered microfinance as *"the provision of a range of financial services such as deposits, loans, payment services, money transfers, and insurance to poor and low-income households and their micro-enterprises"*.

Norwegian Nobel Committee (2006) stated that microcredit enables people to break out of poverty while a number of critics found that microcredit is not able to access the poorest of the poor (Scully, 2004), or that the poorest are deliberately excluded from microcredit programs (Simanowitz and Walter, 2002). Even, somes studies also argued that group loans, which are often used by microcredit institutions, lead to high transaction costs since most microcredit schemes have regular group meetings (Armendáriz de Aghion and Morduch, 2000).

The advantages of microcredit are proved in many research and studies. Bhatta (2001), Brau and Woller (2004) showed the positive contributions of microcredit to enhance living standard for the poor in Nepal and sub-Saharan Africa. Sharma (2001) found that microcredit has effected on the poor, as well as, socio-economic growth. Another researcher, Dhakal (2007), found that microcredit like a development tool which increase households' income. Hermes and Lensink (2007) had some findings about the effects of microcredit. They found that it offered a better chance for client to earn money. The poor received fund from the microcredit projects and implemented to do business or purchased tools for farming.

Previous studies presented numerous of positive effects of the microcredit on the education of children. Morduch et.al (2009) found that the microcredit has impacts on education and healthcare of borrowing households. Pitt and Khandker (1998)

discovered that the microcredit has positive effects on education, for example, girls received more schooling. Roome (2008) concluded that the microcredit has important role in improving education expenditure and healthcare service spending of the households. Microcredit providers give money to the poor and low-income families in rural and mountain region and then enable them to level up schooling and healthcare. Holmes et.al (2011) confirmed that "borrowers spent more on education and healthcare than their similar non-borrowers. Credit participation has highly positive and significant effects on the poor's healthcare and education spending in the peri-urban areas".

However, there are some researches showing the negative effect of the microcredit. Wydick (1999) found that the relation between microcredit and children' schooling was not obvious. Brett E.Coleman (2002) indicated that village bank programs were conducive to several measures of household welfare. Households participating in microcredit programs were almost wealthier than those of nonparticipant in Northeast Thailand. But this paper had an elimination that "the microcredit loans positively affect many measures of household welfare for the wealthy committee members, but the impact is largely insignificant for poorer rank and file members". However, other researchers found no impacts or even adverse effects on education level of household (Hazarika and Sarangi (2008); Morduch (1998)).

Lam et.al (2007) stated that labor of children contribute to smooth income of Brazilian families in urban during temporary unemployment spells of adult household head. Filho (2008) found that the rate of girl participating in labor force reduced with increased benefit income, but only when a female received benefits. Meanwhile the effect of income on boys' labor participation was smaller and less statistically significant. Behrman and Knowles (1999) indicated that the associations between household income and children's school success in Vietnam were considerable. "Higher-income households have greater school expenditures in part". Binder and Scrogin (1999) stated at least four reasons for objection ability of labor of children such as: child labor decreases children's current welfare and future welfare; reducing children's schooling result in slowing the pace of national economic development and level up the dependence upon children's earning, "making for a vicious cycle of continued child labor". Robinson (2000) found that the child labor is the consequences of poverty combined with lack of access to credit. Besides, Jacoby and Skoufias (1997); Ranjan (2001); Dehejia and Gatti (2005); Edmonds (2006) also considered lack of

access to credit as major factors responding for inadequate education for children in developing countries.

However, another study, Islam and Choe (2009), showed that "household participation in a microcredit program may increase child labor and reduce school enrollment. The adverse effects are more pronounced for girls than boys. Younger children are more adversely effective than their older siblings and the children of poorer and less educated households are affected most adversely". Hazarika and Sarangi (2008) found that "in the peak harvest season, household access to microcredit, measured in a novel manner as self-assessed credit limits at microcredit organizations, raises the probability of child work in households with sample means of owned land and number of retail sales enterprises".

The concentration of Vietnam is justified for two reasons. First, although the importance role of the microcredit in Vietnam and the presentation of various microcredit schemes in recent years, there are just a few studies that have examined the impact of microcredit in Vietnam, and they merely focus on welfare outcomes of households (Nguyen, 2008, Lensink and Pham, 2009). Second, the fact has shown a growth in the practice of child labor in Vietnam throughout the process of economic development (Edmonds and Turk, 2004, Edmonds, 2007), and of an intense participation by children in economic activities conducted at rural households in Vietnam (Edmonds and Pavnik, 2005b). Since these household activities are often selected as a primary target of various microcredit programs currently active in the country, the effect of participation in microcredit programs on the incidence of child work is likely to occur.

Nghiem et al. (2007) investigated data on 470 households across 25 villages in Vietnam was collected using a quasi-experiment survey approach to overcome self-selection bias then concluded that participating in microfinance has significantly contributed to the reduction of poverty using the national standard, which is about US 20 cents/person/day. While a possible interpretation that poverty incidence increases with the duration of microfinance when the international poverty line is used although this finding is not statistically significant.

The microcredit has been revealed as a potentially effective tool to fight against poverty. The spread of the microcredit appears to coincide with a sharp decrease in

poverty rate across countries. However, empirical studies have not reached a consensus about the extent to which the microcredit contributes to poverty reduction. Pham and Izumida (2002), Quach (2006), and Tinh et al. (2011) have recognized that microcredit created positive impacts to poverty reduction while Nghiem et al. (2012) revealed that the effect of microcredit to poverty reduction of was negligible. This study determined the effects of microcredit using data sets from the Vietnam Living Standard Surveys (VLSS) from 1992 to 2010.

Hao (2005) used data from the Vietnam Living Standard Survey (VLSS) data in 1993 and 1998, in which more than one thousand households were sampled repeatedly in both periods. The Probit regression is applied to estimate determinants of credit and the Heckman two-step method to estimate the impact of credit on household welfare. The findings showed that access to formal credit has a positive impact on consumption per capita but the magnitude of this impact is modest. For example, one per cent increased in the volume of credit borrowed, ceteris paribus, led to 0.07 and 0.06 per cent increases in consumption per capita in 1993 and 1998, respectively.

Lensink and Pham (2012) used panel data with a sample of about 3,200 households, obtained from VLSS 2002 and 2004 to evaluate the impact of microcredit provided by VBSP on self-employment profits in Vietnam. The findings indicated that microfinance had positive and significant impacts on self-employment profits of the borrowers. More importantly, microfinance had positive impacts on poverty reduction and these impacts were more significant for the poorest households. In addition, the authors did not find direct impacts of credit access on fixed investments of expenditures. Despite the achievement, some limitations still can be found in this study. Firstly, the study only focused on VBSP – one of the current microfinance service providers in the nation. Secondly, the research also focused only on rural areas while VLSS data provide information of households in urban areas as well.

Pham and Nguyen (2009) used the data from the recent household surveys for Vietnam 2004 – 2006 for investigating the impact of actual participation in a microcredit program on household decision on child schooling and child labor for rural Vietnam. This paper found that credit participation by households motivates children to spend more time in economic work, and less in domestic work. This increase in economic work can be attributed to a child-labor demand effect of the

business/production expansion, which is stimulated by an increased access to credit of the household. We are, however, not able to draw any causality between school attendance, schooling gap and credit. Perhaps, schooling of children remains intact as children tend to reallocate their time between economic and household work, and even giving up part of their leisure time for schooling purpose.

3. DATA SET

In this study, Vietnam Household Living Standard Surveys in 2006 and 2008 will be used. Both datasets cover 9,189 households with 39,071 individuals including approximately 8 thousand children. These data sources are representative for rural and urban areas and 8 geographical regions. There are 64 provinces with 128 strata and random communes. The quantity of communes in each stratum is proportionate to the population proportion of the strata over the total population. These data sources provide necessary data of households such as basic demography, employment and labor force participation, education, health, income, expenditure, housing, fixed assets and durable goods, participation of households in poverty alleviation programs, as well as, information on credit, international remittances, private transfers, pensions and social allowances received during the 12 months before the interview, etc. Then, based on the theoretical arguments and empirical evidences, some relevant recommendations will be provide to improve policy framework for microcredit projects and enhance the positives effects of microcredit in the future.

4. MICROCREDIT AND CHILDREN IN VIETNAM

4.1 Microcredit in Vietnam

Microcredit is a part of Vietnam's finance system that plays an important role in poverty reduction, especially in rural and mountainous areas. Microcredit is to provide the poor microcredit to help them to do business. Currently, VBSP and Microcredit organizations are providing services such as savings, money transfer services and micro-insurance for approximately four million households in Vietnam. Microcredit activities have diversified sources of income for poor households while reducing the risk of economic damage, contributing to the achievement of national objectives of poverty reduction.

Thus, the poverty rate decreased dramatically from28.9% in 2002 to15.5% in 2006, 14% in 2011.

There are many advantages for developing microcredit in Vietnam. Firstly, microcredit network includes a number of big organizations that spread out to districts and communes such as: VBSP, AGRI Bank, People's Credit Fund and microcredit organizations along with the involvement of repute institutions such as the Vietnam Women's Union, Vietnam's Farmers Association. Secondly, Vietnam has a lot of potential for dissemination of microcredit services by the savings of the poor trend increasingly higher due to the rise of income, meanwhile, many customers in remote and rural areas easily access to microcredit services through the savings and loan groups. On the other hand, the progress of information technology allows MFIs to operate more flexible, higher efficiency and quality at low cost.

The percentage of borrowing and loan size per borrower by areas and regions in 2006 and 2008 in Vietnam are presented in the following table.

Table 1: % Borrowing and Loan size per borrower by areas and regions in 2006 and 2008

	2006		2008	
	% Borrowing	Loan size per borrower	% Borrowing	Loan size per borrower
By Areas				
Urban	4.3	5556.0	6.5	7274.1
Rural	8.0	4851.4	11.2	7085.7
By Regions				
Red River Delta	2.8	4044.6	6.2	6451.2
North East	12.1	4908.9	14.1	6922.8
North West	18.3	5164.6	19.1	6980.4
North Central Coast	13.0	4423.3	16.1	7609.3
South Central Coast	6.8	5822.2	11.5	7960.7
Central Highlands	10.0	6970.7	15.5	7785.0
South East	4.5	5474.1	7.0	7154.8
Mekong River Delta	5.1	4616.4	7.0	6340.5
Total	7.1	4965.6	10.0	7117.8

In this table, the borrowing percentage and the loan size per borrower are presented by areas , as well as, by regions in 2006 and 2008. In which, the rate of borrowing in rural area is approximately twice higher than in urban in both 2006 and 2008. In rural, the rate of people want to access to microcredit increased from 8.0 percent in 2006 to 11.2 percent in 2008 while this rate in urban was 4.3 and 6.5 percent, respectively. In the

opposite side, the loan size per borrower in both areas also went up from 2006 to 2008 but the average loan size in rural was lower than in urban area. However, the gap of loan size per borrower between rural and urban was narrowed from approximately 700 in 2006 to 200 in 2008. The demand of mico-credit of people living rural has significant increase in both absolute and relative.

In addition, this table also presents the increasing trend in both borrowing rate and loan size per borrower from 2006 to 2008 by regions, include: Red River Delta, North East, North West, North Central Coast, South Central Coast, Central Highlands, South East and Mekong River Delta.

Firstly, the differences of rate of borrowing are stated by regions. The highest borrowing rate belongs to North West with 18.3% in 2006 and 19.1% in 2008. Although being lower than North West, the borrowing rate in regions such as North East, North Central Coast and Central Highlands still stay above 10 percent. In the opposite side, the borrowing rate of Red River Delta, South Central Coast, South East and Mekong River Delta are under 10%, in which, Red River Delta has the lowest borrowing rate with 2.8% in 2006 and 6.2% in 2008.

Secondly, the differences between the loan size per borrower are also revealed by regions in 2006 and 2008. Central Highlands had the highest loan size per borrower in 2006 at 6,970.7, but in 2008, highest loaz size per borrower belonged to South Central Coast, at 7,960.7. Interestingly, the loan size per borrower in North Central Coast increased significantly from the penultimate position at 4,423.3 in 2006 to the 3rd position at 7,609.3 in 2008.

Table 2: % Borrowing and Loan size per borrower by the poverty and ethnicity in 2006 and 2008

	2006		2008	
	% borrowing	Loan size per borrower	% borrowing	Loan size per borrower
By Poverty				
Non-poor	5.8	5096.0	8.8	7368.9
Poor	15.3	4654.8	18.8	6267.7
By Ethnicity	7.1	4965.6	10.0	7117.8
Kinh	5.8	4932.0	8.5	7049.9
Minorities	17.4	5053.8	21.6	7333.7
Total	**7.1**	**4965.6**	**10.0**	**7117.8**

At the beginning, the borrowing rate and loan size per borrower are presented by the poverty with the same increasing trend from 2006 to 2008. The borrowing rate of the poor was higher than this rate of non-poor with approximately 2.5 times higher than in 2006 and double higher in 2008. Meanwhile, the loan size per borrower of non-poor is lower than this figure of the poor in both 2006 and 2008.

Then, it expresses the borrowing rate and the loan size per borrower by ethnic, in which, both of them have increasing trend from 2006 to 2008 with borrowing rate from 7.1% to 10% and loan size per borrower from 4,956.6 to 7,117.8, respectively. The borrowing rate of the ethnic was higher than this rate of the non-ethnic with approximately three times higher in 2006 and 2.5 times higher in 2008. Besides, loan size per borrower also had the same difference with this figure of the ethnic being higher than non-ethnic in both 2006 and 2008.

4.2 Education and labor of children

Table 3 presents the rate of school enrollment in urban and rural in Vietnam in 2006 and 2008. Although being at high rate-above 80%, the percentage of school enrollment decreased from 2006 to 2008 with the figures in urban being higher than in rural area. Secondly, school enrollment rate witnessed a significantly decrease of 8 regions in the period 2006-2008. In 2006, almost regions had school enrollment rate at above 90 percent, but no region reached to 90% in 2008. However, Red River Delta still had the highest rate in 2006 and 2008 with the rate being at 95.5% and 89.7%, respectively. Meanwhile, North West and Mekong River Delta were still in the lowest group of school enrollment rate. In general, the school enrollment rate reduced from 92.8% to 84.4%.

Table 3: % school enrollment by areas and regions in 2006 and 2008

	% school enrollment	
	2006	2008
By Areas		
Urban	95.5	89.9
Rural	92.0	82.8
By Regions		
Red River Delta	95.5	89.7
North East	93.9	83.4
North West	83.3	79.3
North Central Coast	94.7	89.0

	% school enrollment	
	2006	2008
South Central Coast	93.7	86.0
Central Highlands	93.9	84.8
South East	90.4	82.6
Mekong River Delta	90.0	76.3
Total	92.8	84.4

Table 4: % school enrollment by poverty and ethnicity in 2006 and 2008

	% school enrollment	
	2006	2008
By Poverty		
Non-poor	94.6	86.7
Poor	85.6	73.0
By Ethnicity	92.8	84.4
Kinh	94.3	86.0
Minorities	84.5	75.3
Total	**92.8**	**84.4**

There are also differences of school enrollment rate between poor and non-poor people that can be seen in *Table 4*. Poor people have less opportunity to access to education than the non-poor. For example, school enrollment rate of the poor were 85.6% in 2006 and 73% in 2008, while these figures of the non-poor were 94.6% and 86.7%, respectively. In summary, school enrollment rate tended to decrease from 2006 to 2008. The same trend happened with the school enrollment rate by ethnic. This table shows that the school enrollment of the ethnic is more difficult than non-ethnic in this period. The study rate of ethnic reduced approximately 10%, as well as non-ethnic's rate.

Table 5: % labor of children and working hour per children by areas and regions in 2006 and 2008

	2006		2008	
	% labor of children	working hour per children	% labor of children	working hour per children
By Areas				
Urban	0.0	21.7	0.1	100.5
Rural	0.1	73.1	0.2	192.4
By Regions				
Red River Delta	0.05	30.35	0.13	140.73
North East	0.14	90.72	0.25	245.71
North West	0.22	206.46	0.39	423.88
North Central Coast	0.06	54.66	0.19	134.96

	2006		2008	
	% labor of children	working hour per children	% labor of children	working hour per children
South Central Coast	0.05	23.73	0.11	106.36
Central Highlands	0.13	63.54	0.19	158.74
South East	0.05	62.99	0.14	171.74
Mekong River Delta	0.08	79.76	0.18	194.05
Total	**0.08**	**61.80**	**0.17**	**172.22**

Table 5 presents the child labor percentage and the working hour in rural and urban in 2006 and 2008. In which, both of two ratios increased from 2006 to 2008. This period witnessed a dramatic increase of working hours per children with a five times increase in urban and about 2.5 times growth in rural. Interestingly, the labor of children rate in urban in 2006 was approximately 0, but it increase significantly to 0.1 percent in 2008. However, child labor rate, as well as, working hour per children in urban was absolutely lower than two ratios in rural during the period 2006-2008. The gap of working hour per children between rural and urban decreased from three times in 2006 to double in 2008.

Also, the comparison of child labor rate and working hour per children were presented by regions. North West had the highest rate of labor of children at 0.22% in 2006 and 0.395 in 2008, following by Central Highlands and North East. In the opposite side, the lowest rate belonged to South East, Red River Delta and South Central Coast. Interestingly, the rate of North Central Coast increased quickly from third lowest rate in 2006, at 0.6% to third highest rate in 2008, at 0.19%. Meanwhile, the working hour per children was also the highest in North West with 206.46 in 2006 and 423.88 in 2008. Some regions witnessed a surge in working hour per children, included: Red River Delta and South Central Coast increasing approximately 5 times, South East increasing about 2.7 times, etc….In general, labor Vietnam during of children tend to grow rapidly and has difference from regions in the period 2006-2008.

Table 6: % labor of children and working hour per children by poor and ethnicity in 2006 and 2008

	2006		2008	
	% labor of children	Annual working hour per children	% labor of children	Annual working hour per children
By poverty				
Non-poor	10	46.4	10	145.3
Poor	20	125.0	30	305.1
By Regions				
Kinh	10	44.4	10	139.3
Minorities	20	159.4	40	357.8
Total	**10**	**61.8**	**20**	**172.2**

While child labor rate of the non-poor seemed to be stabilized at 0.1% in 2006-2008, this rate of the poor in increased 1.5 times from 0.2% in 2006 to 0.3% in 2008. Along with the increase in labor of children rate, working hour per children also sharply increase with more than 3.5 times for the non-poor and 2.5 times for the poor. The working hour per children of the non-poor and the poor reached to 145.3 and 305.1, respectively in 2008. During this period, two ratios of the poor were higher than these of the non-poor. In this table, it can be seen that children who were born in poor families have to work more than children living in non-poor families.

Not only do these ratios have difference between the poor and non-poor, they also have difference from ethnic. Ethnic children participate more in child labor and work more than children living in non-ethnic households. In 2006, labor of children rate of ethnic was double higher than this rate of non-ethnic, while working hour per children was approximately 4 times higher, respectively. In 2008, although the rate of child labor of non-ethnic was equal to 2006, the ethnic's rate increased double in compared with 2006. In addition, the working hour per children of non-ethnic surged 3 times to 139.3 in 2008, while the figures of the ethnic increased doubles in compared with 2006 to 357.8 in 2008. Nevertheless, during this period, working hour per children of ethnic was always higher than this figure of non-ethnic.

5. EMPRICAL RESULTS

5.1 Estimation method

We used a similar model as Nguyen and Marrit (2014) to analyze the impacts of microcredit on children's education and labor, in which, the regressions of children's education and labor were run on microcredit and other control variables as follows:

$$y_{ijt} = \beta_0 + M_{jt}\beta_1 + X_{ijt}\beta_2 + H_{jt}\beta_3 + G_t\beta_4 + \pi_{ij} + \varepsilon_{ijt} + u_j + v_{jt}$$

y_{ijt}: Education enrollment and child labor (child labor is measured by working hour per year) of child i in household j in year t.

M_{jt}: The amount of microcredit borrowing of household j in year t. The expected signal of this variable is (+).

X_{ijt}: The characteristics of the child i in year t (include: age, gender, education, health…). The expected signal of this variable is (+).

H_{jt}: The characteristics of the household j in year t (include: number of children, ethnic, urban, head age…). The expected signal of this variable is (-).

G_t is the dummy variable of the year 2008.

π_{ij} and ε_{ijt} are time-invariant and time-invariant unobserved variables of children.

u_j and v_{jt} are time-invariant and time-invariant unobserved variables of households.

The methodology of this study is fixed-effects regression, through using the VHLSS raw data set to create a relevant panel data set for the econometric models. The fixed-effects regression can eliminate the time-invariant unobserved variables of children and households. As a result, the problem of endogeneity is reduced in the fixed-effects regressions.

5.2 Data and variable summary statistics

This study measurs the impacts of microcredit on school enrollment and child labor of households in Viet Nam. With using the Viet Nam Household Living Standard Survey in 2006 and 2008 (VHLSS 2006 and 2008) conducted by General Statistics Office (GSO) with technical support from UNDP and the World Bank, these objectives are pursued. The survey investigates individual characteristics at the household level including: Percentage of the poor at the age of 7-15. School attendance rate at the age of 7-15 Household size, Proportion of household member aged <15, Annual crop land and

Perennial crop land. The data set cover for both rural and urban area, as well as, 8 geographical regions in Vietnam.

In the *Table 7*, variable definitions and summary statistics for our sample with 3,085 observations in 2006 and 2008 are described much more detailed.

Table 7: Summary statistics of variable data

Description	Obs.	Mean		Std. Dev	
		2006	2008	2006	2008
Percentage of the poor at the age of 7-15	3085	19.30	16.87	39.47	37.46
School attendance rate at the age of 7-15	3085	93.28	83.42	25.04	37.20
Household size	3085	5.10	4.99	1.55	1.55
Proportion of household member aged <15	3085	38.29	30.23	16.78	18.95
Percentage of household member aged >60	3085	4.31	4.54	9.54	9.91
Annual crop land	3085	3,857.00	3,884.30	7,652.16	7,952.58
Perennial crop land	3085	1,033.26	1,490.77	4,436.01	8,455.89

In this table, the poverty rate decreased from19.30% in 2006 to 16.87% in 2008. The second variable is school enrollment rate which stayed at quite high level through the period of 2006-2008. However, the main trend of school attendance rate reduced from 93.28% in 2006 to 83.42% in 2008. These figures suggest that children at the age of 7-15 in 2006 to 2008 in our model should be used for analysis in order to evaluate the impact of microcredit on targeted group.

Household size and percentage of household member aged > 60 kept unchanged in this period. The average of household size was approximately 5 people in both 2006 and 2008. The percentage of household member aged over 60 years old had a light increase from 4.31% in 2006 to 4.54% in 2008. Meanwhile, the percentage of household member aged under 15 years old decreased by 8%, from 38.29% in 2006 to 30.23% in 2008.

5.3 The impact of microcredit on children

Firstly, the regression of the two simple econometric models is run with the variables includes: *% borrowing, loan size per borrower, household size, proportion of household*

member age<15, proportion of household member age>60, annual crop land, perennial crop land and *dummy variable* represent for the year 2008. In the first econometric model, the effect of *% borrowing* and *year2008* on school enrollment in household is examined. Looking at *Table 8*, the variable *borrowing percentage* has no statistical significance because the figure P > |t| = 0.867> 0.05. Also, there is the similar result in the second econometric model. The third model examines the effect of loan size per borrower and year2008 on school enrollment. But the variable *loan size per borrower* in this model also has no statistical significance. Through 6636 observations divided in 3318 groups, the empirical result of regressing two simple models show that there is no effect of microcredit on study enrollment of children in households.

Secondly, the more complex econometric model regression is implemented based on two simple models above, the second model and fourth model. By adding more variables into the econometric model, the regression result will be more precise. Some additional variables contain: household size, proportion of household members aged 15 years old, proportion of household member aged over 60 years old, annual crop land and perennial crop land. The regression results of these models are also showed on the *Table 8*. In this table, there are three variables in the second model that have no statistical significance. They are annual crop land, proportion of household members aged over 60 years old and perennial crop land, especially, borrowing percentage and loan size per borrower with their P > |t| figures being higher than 0.05. In the opposite site, household size and proportion of household member aged less than 15 years olds have statistical significance. In the second model, if household size increases 1 unit then school enrollment will increase 0.0232 units at 5 percent degree of confidence. The growth level of school enrollment when proportion of household member aged less than 15 years old increase 1 unit is 0.2282 units at 1 percent degree of confidence. These figures in the fourth model are 0.0233 and 0.2277, respectively. This empirical result means that borrowing percentage and loan size per borrower do not impact on school enrollment of children living in investigated households.

Table 8: The effect of loan size per borrower and borrowing percentage on school enrollment by using fixed-effects regression

VARIABLES	(1) School enrollment	(2) School enrollment	(3) School enrollment	(4) School enrollment
% Borrowing	-0.0028	-0.0058		
	(0.0165)	(0.0165)		
Loan size per borrower			-0.0014	-0.0016
			(0.0021)	(0.0021)
Household size		0.0232**		0.0233**
		(0.0094)		(0.0094)
Proportion of household member aged <15		0.2282***		0.2277***
		(0.0510)		(0.0509)
Proportion of household member aged >60		-0.1129		-0.1151
		(0.1196)		(0.1194)
Annual crop land		0.0124		0.0126
		(0.0135)		(0.0135)
Perennial crop land		-0.0047		-0.0048
		(0.0060)		(0.0060)
year2008	-0.0840***	-0.0638***	-0.0836***	-0.0634***
	(0.0060)	(0.0066)	(0.0060)	(0.0066)
Constant	0.9281***	0.7225***	0.9285***	0.7225***
	(0.0045)	(0.0516)	(0.0043)	(0.0516)
Observations	6,636	6,636	6,636	6,636
R-squared	0.061	0.071	0.061	0.071
Number of i	3,318	3,318	3,318	3,318
R2	0.0606	0.0714	0.0607	0.0715

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

To analyze the effect of microcredit on child labor, the econometric regression model with different variables is conducted. Base on this method, the empirical results of the model are found out and the role of each independent variable in the change of dependent variable – child labor is examined. Child labor is represented by rate of child labor and working hour of children living in households.

The econometric models include independent variables such as: borrowing percentage, household size, and proportion of household member aged less than 15 years old, proportion of household member aged over 60 years old, annual crop land, perennial crop land and year2008. These variables impact on the dependent variable – *dworkhour* which represents for the rate of working children. The empirical result of regressing econometric model base on 6,636 observations divided in 3,318 groups is stated on the *Table 9*. The result shows that household size, proportion of household

member aged under 15 years old and dummy variable *year2008* have statistical significance. In the opposite site, borrowing percentage, loan size per borrower and proportion of household member aged over 60 years old perennial crop land have no statistical significance due to P>|t| index higher than 0.05.

In the fifth model, when household size increases one unit, the rate of working children decreases 0.0267 units at 1 percent degree of confidence (ceteris paribus). The respectively decrease of *the rate of working children* when proportion of household member aged under 15 years old increase one unit is 0.1806. Meanwhile, if annual crop land increases one unit, the rat of working children decreases 0.0239 units at 10 percent degree of confidence (ceteris paribus)

Continuously, this model's result shows that in the sixth model, if household size grows up 1 unit then the rate of working will reduce about 0.0269 units at 1 percent degree of confidence (ceteris paribus). Meanwhile, these figures for household member aged under 15 years old and annual crop land are 0.1791 and 0.0243 unit, respectively.

After replacing the dependent variable the rate of working children in the fifth and sixth model of this section with working hour of children living in households, the regression model and report the empirical result are applied as the *Table 9*. There are only household size, proportion of household member aged under 15 years old and *year2008* have statistical significance with P>|t| index being lower than 0.05. If household size increases 1 unit then working hour of household children will have a decrease of 21.87 in seventh model and 21.85 in eighth model at 10 percent degree of confidence. However, other variables have no statistical significance, include: borrowing percentage, loan size per borrower, proportion of household member aged over 60 years old, annual crop land and perennial crop land. It is synonymous that microcredit has no effect on the working hour of children living in investigated households.

Table 9: The effect of loan size per borrower and borrowing percentage on child labor by using fixed-effects regression

VARIABLES	Rate of child labor	Rate of child labor	Working hour of children living in households	Working hour of children living in households
% borrowing	0.0181		-12.26	
	(0.0196)		(21.83)	
Loan size per borrower		0.0043		-0.71
		(0.0028)		(2.68)
Household size	-0.0267***	-0.0269***	-21.87*	-21.85*
	(0.0089)	(0.0088)	(12.12)	(12.11)
Proportion of household member aged <15	-0.1806***	-0.1791***	-211.58***	-212.40***
	(0.0570)	(0.0570)	(78.40)	(78.66)
Proportion of household member aged >60	0.1213	0.1262	125.68	127.25
	(0.1227)	(0.1229)	(157.90)	(157.26)
Annual crop land	-0.0239*	-0.0243*	-5.50	-5.60
	(0.0125)	(0.0124)	(18.76)	(18.76)
Perennial crop land	0.0023	0.0024	-3.80	-3.81
	(0.0063)	(0.0063)	(4.54)	(4.54)
year2008	0.0781***	0.0771***	92.37***	92.26***
	(0.0072)	(0.0072)	(9.01)	(9.02)
Constant	0.2862***	0.2863***	253.08***	252.43***
	(0.0512)	(0.0511)	(72.15)	(72.10)
Observations	6,636	6,636	6,636	6,636
R-squared	0.068	0.069	0.055	0.055
Number of i	3,318	3,318	3,318	3,318
R2	0.0680	0.0685	0.0546	0.0545

Robust standard errors
in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. CONCLUSION

This paper uses Vietnam Household Living Standard Surveys in 2006 and 2008 with the data source representing for 8 regions, as well as, 64 provinces in Vietnam. By using these data source and fixed-effects regression of econometric models in previous sections, this paper finds out that borrowing rate, as well as, the loan size per borrower has no effect on the children's education. Children who are living in the households which borrow from microcredit programs are not influenced. Their study-attendance seems not to depend on the change of borrowing rate and loan size.

In addition, this paper also states empirical results that reveal for no impact of micro finance on child labor in Vietnam. Empirical results show that both borrowing

rate and loan size per borrower have no statistical significance in the econometric models. Working hour, as well as, rate of child labor does not depend on the change of borrowing rate and loan size per borrower.

In conclusion, there is no effect of microcredit on children's school enrollment, as well as, child labor in households borrowing microcredit from VBSP. Microcredit impact on households' income in short term, through which have effect on child labor and education of children in long term. Thus, increasing school enrollment not only depends on microcredit but also government policy which impact directly on education of children such as: education scholarship, lending money for school enrollment, propaganda to enhance parents' understanding.

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