DOES BORROWING (FORMAL / INFORMAL)
MATTER FOR THE WELFARE OF THE POOR?
EVIDENCE FROM THAILAND

BY

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

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LIST OF ABBREVIATIONS

ACCES	Access with Quality to Higher Education
CCT	Conditional Cash Transfer Programmes
CDD	Community Development Department
DID-PSM	Difference-In-Difference Propensity Score Matching
DPW	Department of Public Welfare
FIAM	Foundation for Integrated Agricultural Management
KG	Kilogram
LIC	Low income card
MOI	Ministry of Interior
MoLW	Ministry of Labor and Social Welfare
MoPH	Ministry of Public Health
NGO	Non-Governmental Organization
OLS	Ordinary Least Square
PAP	Poverty Alleviation Project
RFA	Rural Friends Association
SHGs	Self Help Groups
TV	Television
VCR	Video Cassette Recorder
VND	Vietnam Dong
4Ps	Pantawid Pamilyang Pilipino Programme

PREFACE

This research project is submitted in partial fulfillment to the requirement for Bachelor of Finance (Hons). The authors solely carried out this final year project based on previous researches that quoted in the reference list and also under the supervision of Ms. Lau Siew Yee.

The results of this research project are concluded based on the objective of examining the causal relation between welfare of the poor and borrowing in the rural areas in Thailand. Other than that, there are also other external factor that are correlated to the welfare or borrowing such as household expenditure, household assets and agricultural assets. Hence, we included the three sets of external factors as control variables in this research paper to provide a clearer picture about the causal effects of borrowing to readers, such as governments, policy makers, financial institutions and future researchers.

In a nutshell, upon the completion of this research paper, plentiful of knowledge pertaining to the situation of poverty in Thailand and how borrowing helps the poor are attained and comprehended.

ABSTRACT

The purpose of this report is to examine the causal link between welfare of poor households and borrowing. The focus area of our study is rural area in Thailand. The data used is cross-sectional data from the Rural Area Household Annual Resurvey in 2011; it consists of 1,200 households that took part in the particular survey. This report uses the potential outcome framework and regression-control strategy to examine the relationship between welfare and borrowing of the poor households. Furthermore, we use three categories of control variable in our study, which are demographic background, household characteristics, as well as occupation and savings of households. Generally, this report finds some evidence of positive correlation between welfare of the poor and both formal and informal borrowing. In particular, borrowing improves the consumption on own rice grown and probability of owning a walk tractor. This may be the result of government policy that creating a favourable environment for agricultural activity.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

Chapter 1 is the introductory chapter that describes the background of the poor people in rural areas. Government has launched a few programmes such as village funds, and set up commercial banks in the village, however failed. In this research, we would like to examine the relation between standard living of the poor and borrowing, both formal and informal, in rural areas of Thailand.

1.1 Research Background

Poverty in Thailand is primarily a rural phenomenon: approximately 7.3 million (80 percent) of the country's population are poor people, and live in rural areas (The World Bank, 2015). Most of the poor are in the North and Northeast regions of Thailand, approximately 2.92 million, and have remained relatively large compared to other regions (Bird, Hattel, Sasaki, & Attapich, 2011; Rural-Urban Poverty and Inequality in Thailand, 2013). This is because Thailand government only focuses on improving the economic in urban areas by constructing physical infrastructure and creating job in Bangkok when Thailand is moving from agricultural economy to industrial economy (Nations Encyclopedia, n.d.).

Thus some people in rural areas choose to work in urban areas, somehow some choose to continue to stay in rural areas as farmers (Thailand Growth, Poverty and Income Distribution, 1996). This has make the poor people in

Northeast even poorer until they could not meet their basic needs. For example, some of them only live in tiny wooden shacks because they are unable to afford a wooden house. They have limited education, so most of them only completed primary school, which constraints some farmers' ability to manage their crop production when there is too much of rain or drought. As a result, their average income per capita is low: only $400 per year (Michael, n.d.).

To sustain their living, the poor need a formal loan from financial institution such as village fund of the Thaksin Shinawatra government, and the Bank of Agriculture and Agricultural Cooperatives of Thailand. Generally, some poor people obtain formal credits to finance their expenses, but most of the poor have limited access to formal credits. Village funds provide financial assistance to the poor, though commercial banks claim that small loans are always associated with high default risk and high transaction cost. In rural areas, people always require only loans in small amount, however, banks need a higher cost to obtain necessary information of borrowers, to evaluate the creditworthiness and to monitor the use of loans (Coleman, 1999).

Hence in order to alleviate poverty in rural areas the government has tried a few programmes such as setting up agriculture bank or direct commercial bank to deliver formal credit at minimum interest rate to rural areas, however, failed. This is because there is political difficulty for government to enforce loan repayment and most of the loans are received by relatively less poor people (Coleman, 2006). Furthermore, the poor are also have insufficient collateral to secure the loans. So they have to seek other financing from informal sources which has no collateral requirements and more accessible (Gine, 2010).

Most of the time, such as to pay off the loan from banks at the fixed date on the contract, poor people in rural areas choose informal credit (Arjchariyaartong & Sricharoen, n.d.). They seek help from relatives, friends or moneylenders, which primarily based on social links to get loans at a free interest rate from friends and relatives or a high interest rate from

moneylenders compared to formal credit. This is because there is no collateral requirement is needed from informal credit (Karaivanov & Kessler, 2016).

1.2   Problem Statement

In rural areas, there are limited or even no formal credits. In order to alleviate poverty in rural areas, there are few efforts have been developed by government agencies and non-government agencies to promote pro-poor development. Department of Public Welfare (DPW) of the Ministry of Labor and Social Welfare (MoLW) administrated cash transfer programs to the poor people such as direct cash assistance to families in need, to elderly people and poor residents in the village. Ministry of Public Health (MoPH) also administrated low income card (LIC) programme that provides free medical services to targeted poor people. Poverty Alleviation Project (PAP) has been initiated by Community Development Department (CDD) of the Ministry of Interior (MOI) in 1993 to provide loans without interest to poor household in helping them out in generating daily activities (Thailand Growth, Poverty and Income Distribution, 1996). As time to time, Thaksin administration initiated many populist schemes participate in few projects as debt reduction, micro-credit schemes, low-cost housing and the universal health care scheme and Village Funds to finance poor people in rural areas (Anuchitworawong, 2007). However, poverty issue in rural areas is still serious even with many programmes and social aids have been done.

Although many programmes have been introduced, very few poor households borrow from a proper financial institution. One of the reasons is, among others, the poor are less likely to provide collateral to get a formal loan. Financial institutions always require a down payment,

collateral or promoter's contribution to avoid the default risk. The amount of borrowed money is tied to the size of the collateral. It means that the more a borrower pledges, the more loans she will get. So the poor borrowers only get small loans, but sometimes commercial bank refused to lend to them.

Commercial banks find that it is more troublesome to lend to the poor because banks need to collect the information of borrowers such as the trustworthiness, the nature of business, and the ability to repay the loan even the size of loan is small. Banks also need to make sure them the money is used in a proper way as promised. All these efforts take time, so banks will charge a higher interest rates which the poor cannot afford.

Another reason could be formal loans require fixed term of repayment, which can be burdensome for the poor. For microcredit, a weekly repayment after one week of borrowing is required. Poor people usually borrow money to start a business and forced themselves to work harder to repay the loan after months. So in most of the time, people in rural areas will access to informal loans, which provide a more flexible repayment schedule, instead of formal loans (Gine, 2010).

Nevertheless, moneylenders provide informal loans with higher interest rate compared to formal loans. Moneylenders usually stay in their village and are more accessible and convenient for the poor in rural areas. Moneylenders would not need a high cost to collect the information of borrowers. When moneylenders act as a monopoly in the market, they tend to increase the interest rate to earn more on lending. Moreover, borrowers usually are the people they already know and moneylenders exploit the advantage to raise interest rate (Banerjee & Duflo, 2011).

Does obtaining a loan help improving the welfare of the poor? Some poor households borrow money to start a business, which may bring a great fortune to the households if the business prospers. Some may borrow for the purpose of education, which could help them to gain knowledge on improving crop production and hence their standard of living.

1.3   Research Objectives

1.3.1 General Objectives

To examine the relation between standard living of the poor and borrowing, both formal and informal, in rural areas of Thailand.

1.3.2 Specific Objectives

(i)   To examine the causal link between household expenditures and borrowing

(ii)   To identify the relationship between household assets and borrowing

(iii)   To indicate the causal link between agriculture assets and borrowing

(iv)   To investigate the relationship between household expenditures and other forms of borrowing

1.4   Research Questions

(i)   Does borrowing affect the household expenditures of the poor?

(ii)   Does borrowing affect the ownership of household assets of the poor?

(iii)   Does borrowing affect the ownership of agriculture assets of the poor?

(iv)   Do other forms of borrowing matter for household expenditures?

1.5 Hypotheses of the Study

H_0: There is a positive relationship between borrowing and household expenditures.

H_1: There is a positive relationship between borrowing and the ownership of household assets of the poor.

H_2: There is a positive relationship between borrowing and ownership of agricultural assets.

H_3: Informal borrowing will increase the household expenditures.

1.6 Significance of the Study

The focus of our paper is on the question of whether formal loans or informal loans affect the welfare of the poor in Thailand. This study can be beneficial to the governments, policy makers, financial institutions and future researchers, because not many researcher study on both formal and informal loans at the same time. This paper will examine the causal relation between welfare of the poor and borrowing on both formal loans as well as informal loans. Eventually, governments, policy makers and financial institutions can have a better understanding on the needs of poor people in rural areas. Hence, favorable poverty alleviation programmes and policy can be designed accordingly based on the recommendations and policy implications provided in this research paper. For instance, Thailand government or other developing countries could provide loan with low interest rate to the poor, improve the coverage of the loan and etc. Besides, future researchers can have a better picture on how borrowing affects the welfare of the poor from the contribution to literature of welfare in this research paper.

1.7   Conclusion

In a nutshell, this chapter describes the way of how formal loans and informal help to improve the living conditions of poor people in rural areas. In next chapter, we will discuss about the literature of welfare of others work.

1.8   Chapter Layout

This report proceeds as follows: Chapter 2 summarizes the findings and discussion of the literature of welfare, and the theoretical framework. Chapter 3 presents the methodology, data and variables. Chapter 4 shows the result and findings. Chapter 5 is concludes.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter summarizes the findings of previous literatures that study the relationship between borrowing and welfare, it also presents the theoretical framework of our study that based on underlying Theory of Change.

2.1 Review of the Literature

2.1.1 Access to Credits and Poverty

The literature of finance and welfare provide some evidence of wider access to credits may reduce poverty. Adepoju and Oluoha (2008), for example, their study suggests that access to credit has positive impact on poverty status of rural households in Ogun state, Nigeria. Meanwhile, household size, education level, and primary occupation are also the important determinants of the poverty status. When people access to credit, their production level were rose, thus increased their income and household welfare. During period of incomes shortfall, borrowing could help to smooth their consumption. Morduch (1999) suggests that expending the credit access to more people will improve the income of the poor. He also claims that the effect of a dollar increase in income of poorest households is 5 times larger than the marginally poor households. This suggests that poorest households can gain more benefits when

accessing to credit. Li, Gan, and Hu (2011) also support that, in China, the total amounts of microcredit obtained have significant positive relationship with the households welfare. This finding suggests that households will benefit more when they involved more in the microcredit programme.

Using 1992/1993 and 1997/1998 samples, Quach, Mullineux, and Murinde (2005) empirically state that household borrowing, although is small, has a significant positive relationship to the household welfare in rural Vietnam. With borrowing, per capita expenditure, per capita food expenditures and per capita non-food expenditure of rural households have risen. This suggests that credit is useful to help the poor escape from poverty. Using data of 2008, Lam and Bui (2014) support that access to credit remain effective on improving the welfare of rural household in Vietnam in term of per capita expenditure and per capita non-food expenditure. Luan and Bauer (2016) study the impact of provision of credit in rural area in Vietnam. The results suggest that credit has the capability to improve the total income, per capita income and nonfarm income of rural households. During period of income shortfall, households are more likely to seek credit in order to invest in production and smooth consumption. With accessing to credit, total nonfarm income has remarkable increase. However, impact of credit to agricultural activities is uncertain.

Furthermore, Karlan and Zinman (2008) find access to credit has significant and positive impacts on job retention, income, food consumption quality and quantity, and household decision-making control and mental outlook, but negative impacts on mental health. Overall, the net impacts are significant and positive. Moreover, they find no negative effect on expensive credit. Later, Zinman (2010) examine the impact of restriction on expensive borrowing in Oregon and conclude that there is a negative effect on recent or future financial status. With credit restriction, it hinders productive investment or consumption smoothing, at least for a short-term

period. Moreover, they may borrow from a more inferior source with higher interest rate if they are limited from formal way.

Burgess and Pande (2005) find expansion of bank branches in rural areas reduce poverty in India. Introducing banks in rural areas increase saving mobilisation and credit provision, which in turn increase total per capita output in rural areas. The rural branch expansion provides employment opportunity, and small-scale businesses benefit the most from the programme. Similarly, Li, Li, Huang, and Zhu (2013) also claim that establish a new rural credit market in China can improve the rural social insurance system, expanding educational loans for poor, and providing more money for rural credit markets. Moreover, formal financial institutions are encouraged to lend money to rural households with innovative loan models and financial instruments. This is helpful in mitigating the credit rationing, issue thus improving the welfare of rural households. However, Lahkar and Pingali (2016) find that expansion of credit access not only increases welfare of the poor, but also increase the default and interest rates. They further say that the benefits of expansion tend to be realized in the long run. The reason is there are some imperfect practices like loan to the underserving borrowers cannot be eliminated in the short run. On the opposite, Han and Hare (2013) examine the effect of bank branch withdrawal in rural China. They find that there is a significant and negative impact on credit availability to rural households, with stronger impact in informal than formal credit markets.

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2.1.2 Formal Credits

Formal credits can be a mechanism that the poor finance their consumption and expenses. Some studies show that provision of microfinance improves welfare of poor households, in particular. For example, Miled and Rejeb (2015) used data of 596 microfinance institutions, found that microcredit loans per capita have significant negative relationship with poverty head count ratio, and have a significant positive relationship with the expenditure of consumption, suggesting that microfinance is useful to alleviate poverty through consumption. Berhane and Gardebrokek (2011) and Kyessi and Furaha (2010) find that microfinance credit significantly increased both annual per capita household consumption and the probability of improving housing, result in improving living conditions or poverty alleviation. However, Berhane and Gardebrokek also state that one time borrowing has no impact on housing improvements, but significantly improved per capita consumption.

Sometimes, formal credits are being used for investment purpose instead of consumption purpose. Imai and Azam (2012) claim that microfinance is positively significant related to the Bangladesh household welfare. The researchers conduct Difference-In-Difference Propensity Score Matching (DID-PSM) and confirm there is statistically significant positive effect of microfinance loans on growth of income and food expenditures. The reason is when a loan is used for productive activities, it will improve their income. Meanwhile, if the loan is used for non-productive activities, it will improve the consumptions of borrower. Mahmood, Hussain, and Matlay (2014) examine the relationship between microfinance and poverty reduction on ten female entrepreneurs who secured microfinance loans for their new or established enterprise. As a

result, they found that women are successful in increasing their income and therefore have a positive impact on poverty reduction.

However, Tu, Viet, and Loi (2015) claim that in Vietnam, accessing to formal credit has no impact on living standards except expenditure on education in short-term. They state that access to credit is not enough to reduce the poverty. Poor need professional consults and supports in ways of using capital. Akotey and Adjasi (2016) prove that there is a weak positive association between microcredit and household welfare. It only improves households' welfare notably if combined with microinsurance. The reason is poor always trap into poverty by some incidents such as poor health, flood, drought and income shocks. It is important to manage these kind of risk with comprehensive microinsurance schemes to achieve the goal of helping poor people escape from poverty.

The ability of the poor to repay a loan is the famous question in financial sector. Bank will loss entirely if the borrower defaults on the loan. Therefore, they set high prerequisite and making poor face difficulty to borrow a loan. Quach (2005) and Togba (2012) find that microfinance is easier explored to credit rationing problem due to information asymmetries that causes the problems of adverse selection and moral hazard. Li, Li, Huang, and Zhu (2013) empirically prove that 61.5% of rural households in China suffered from credit rationing. This led to a huge welfare loss in terms of household net income (15.7%) and consumption (18.2%) of poor. Sengupta and Aubuchon (2008) suggest that entrepreneurs also suffer from the credit rationing problem, especially the small-business entrepreneurs. The creditworthiness level of small-business entrepreneur is uncertain due to insufficient credit histories, thus limit their accessibility to credit. To address the information asymmetries problem, there is always a high transaction cost incurred. Therefore, poor people who want to borrow a small loan are not willing to pay such a high transaction cost. They are more likely to borrow from informal source that

charges a lower transaction cost. This can relate to the study of Stiglitz and Weiss (1981), which show the high interest rate charged will bring negative impact on repayment rate. Besides, it discourages creditworthy borrowers (adverse selection) and forcing those borrowers to choose high risk high return investment in order to cover the principal and interest charged (moral hazard).

To avoid the losses from credit risk, sometime bank will require collateral to secure the loan. However, many poor do not have the ability to pledge collateral on the loans. Huerta (2010) support that lack of collateral is a main reason that causes many households could not able to access to microfinance. In fact, the loan prerequisites favour the non-poor borrowers and prohibit the poor to access the credit. Sandhu (2013) claims that housing finance loan is more likely to serve the high income groups and ignore the low income groups. Similarly, Luan and Bauer (2016) also claim that credit affects the income significantly and positively among the better-off and richest households but the effect is limited among the poor.

2.1.3 Government Programme

As mentioned in the beginning of reviewing of literature, greater accessibility to credit can improve the welfare of the poor household. Therefore, it is essential for government to launch a lot of effective programmes that provide credit accessibility to the poor citizen in order to help them escape from poverty. In fact, there are some of the successful government programmes around the world had improved the welfare of their citizen. For example, national-level subsidized loan program, ACCES (Access with Quality to Higher Education) in Colombia. Melguizo, Torres, and

Velasco (2016) examine the effect of ACCES and empirically prove that the programme is effective to encourage the enrolment rates, decrease the dropout rates, and improve the academic performance. In the recent literature, Moore & Donaldson (2016) state that government of Thailand is focusing on small-scale activities that poor could participate after the failure to resolve the poverty issue through promoting entrepreneurship. Currently, Thai government is collaborating with NGOs and farmers on promoting the agricultural, handicrafts and rural tourism activities and linked them to international market. The effect is uncertain for now and should be observed in the future.

Although government has put efforts in launching different financial support programs to reduce conditions of poverty among the people, it shows that most of the poor still could not enjoy the benefits. Li, Gan, and Hu (2011) claim that microcredit programmes are effective on improving household welfare, but it is not necessary could reduce poverty. The reason is most of the participants in microcredit programmes are non-poor households. The bad thing is the percentage of non-poor people who involved in the programs rose time by time. Sandhu (2013) also supports that, the poor encounter many constraints in borrowing. Sometimes, investment in education, extension services, health care, and infrastructure are more cost-effective ways of reducing poverty than provision of financial services. The other reason proposed by Gloede, Menkhoff, and Waibel (2015) in a psychology observation paper is poor people in Thailand tend to be risk averse. They are not willing to involve themselves in high risk high return activities. This explains well the result obtained by Yanya, Hakim, and Razak (2013) suggesting that entrepreneurship has no effect on the income of the poor.

2.1.4 NGO programme

Except government, they are also few NGOs had put effort on poverty reduction in 19 century. For example, the Self Help Groups (SHGs) which are a small voluntary association of poor people come together for the purpose of solving their common problems through self-help and mutual help had emerged in India after 1996. Patel (2014) claims the economic status of SHG members are improving gradually in term of their income. However, the researcher also conclude that expenditure patterns of SHG members must change due to both important expenditures, health and education expenditure, that determine the future welfare are not satisfactory. In addition, Sivachithappa (2013) suggests that self-help groups should link with lending agencies to meet the credit needs of the poor. It could help the poor to build assets and thereby reduce their vulnerability. Besides, it could improve poor household income, expands their employment opportunities, empowers women, and enhances the accessibility of other financial services.

Microfinance loan is always associated with high default risk. It is very important to gain high repayment rate of microfinance loan. Grameen Bank is a successful case of NGO-led programme which has a high repayment rate (approximately 97% in 1998). One of the possible reasons is Grameen Bank introduced flexi-loan that allows borrowers to pay back their debt in different ways. Sengupta and Aubuchon (2008) study the effect of flexi-loan and claim that repayment rate is higher by allowing borrowers to reschedule their loan when they are facing finance problem. However, Chavan and Ramakumar (2002) state that high repayment rate is associated with high administrative cost and this cost eventually will pass to borrowers by increasing the interest rate.

Furthermore, Rural Friends Association (RFA), and the Foundation for Integrated Agricultural Management (FIAM) have introduced village bank program to provide microfinance service to the women in rural areas in Thailand. However, study of Coleman (1999) shows that the effect is not significant in term of the poor people asset, production, expenses, and savings. In opposite, the women's debt had increased due to borrowing money from moneylenders to pay their village bank loan. Anuchitworawong (2007) supported that Thai people with multiple debt obligations normally experienced adverse financial conditions. They will have positive growth on expenditure but negative growth on income. The situation become worse when some of the committee members in the programmes borrowed money from village bank at lower interest rate and then lend out to poor people at higher rate. In short, later study of Coleman (2006) concludes that the programmes was failed as the borrowed money is not compulsory being used in economic productivity activity.

2.1.5 Informal Credits

The poor can be better off through borrowing from informal sources. Giang, Wang, and Chien (2015), Nguyen and Berg (2011), and Quach, Mullineux, and Murinde (2005) argue that, in Vietnam, informal credits are a key source of credit, although it charges almost double interest rates as compared to formal credits. As the empirical results, informal credit can increase expenditure of poor households, and the effects are relatively large compared to formal credits (28.53 thousand VND/person/month). It has accounted for 9% in average total expenditure of poor households. Thus, the credit has contributed significantly to improve the lives of the poor

household's welfare, reduce poverty and inequality. One possible reason is informal credits are more accessible compare to formal credit, suggesting future credit policy should not focus on offer low interest rate, but also simple procedures to meet the emergency financial needs of the poor. Moreover, Sambe, Korna, and Abanyam (2013) find that informal financial institutions could improve living standard of their member and have the potential to overcome poverty if the loans were used for investment, building of houses, health and education expenses, and agricultural activities. The researchers state that informal financial institutions are effective in promoting socio-economic development of Adikpo town by providing high possibility of accessing loans to their members. However, non-members of the institutions found to be relatively poor and difficult to access short and medium term credit facilities from conventional formal financial institutions.

Informal credit is another source of the poor whenever they are constrained by formal credit. However, is it compulsory a poor can access to informal credit? Li, Li, Huang, & Zhu (2013) suggest that, in China, informal credits have a positive impact on the loan supply, thus improving the accessibility to credit and effective on poverty alleviation. Yuan and Xu (2015) look into detail, study the possibility of poor access informal credit using data of rural China. Results suggest that informal credit constraints are affected by wealth, social network, age and education, indicate that poorer households have less chance to access informal credit. Moreover, the poor have no way to invest in their social capital to expand their social network, cause them be trapped into poverty.

Although access to informal credit are proved to be useful in poverty alleviation in many literatures, Akudugu (2014) suggests informal credit borrowers may get fallen into vicious cycle of poverty due to high interest of the informal loans to be repaid. Haugen (2005) claims that high informal interest rates are either due to high costs (risk premiums and enforcement costs) or

monopoly rent. Lenders of informal credit are not paying attention on the uses of the loan as high as the formal credit lender, result in inappropriate use of informal credit on activities that cannot generate income. As the consequence, they are not able to repay their loan. In short, borrow from informal source will lower their purchasing power and spending power on things that could improve their welfare such as education, medical care, and human capital.

2.2 Review of Relevant Theoretical Models

Pande et al. (2012) constructed a causal mechanisms related to how formal financial services can increase the poor's income based on the underlying Theory of Change. 'Theory of Change' is a theory that more like an 'outcome framework'. It is about setting a long term goal first, and then moves backward to realize the steps needed to achieve the goal. For instance, to increase the income of poor, it is a necessary for poor to get access to finance service.

Figure 2.1: Theory of change: causal mechanisms
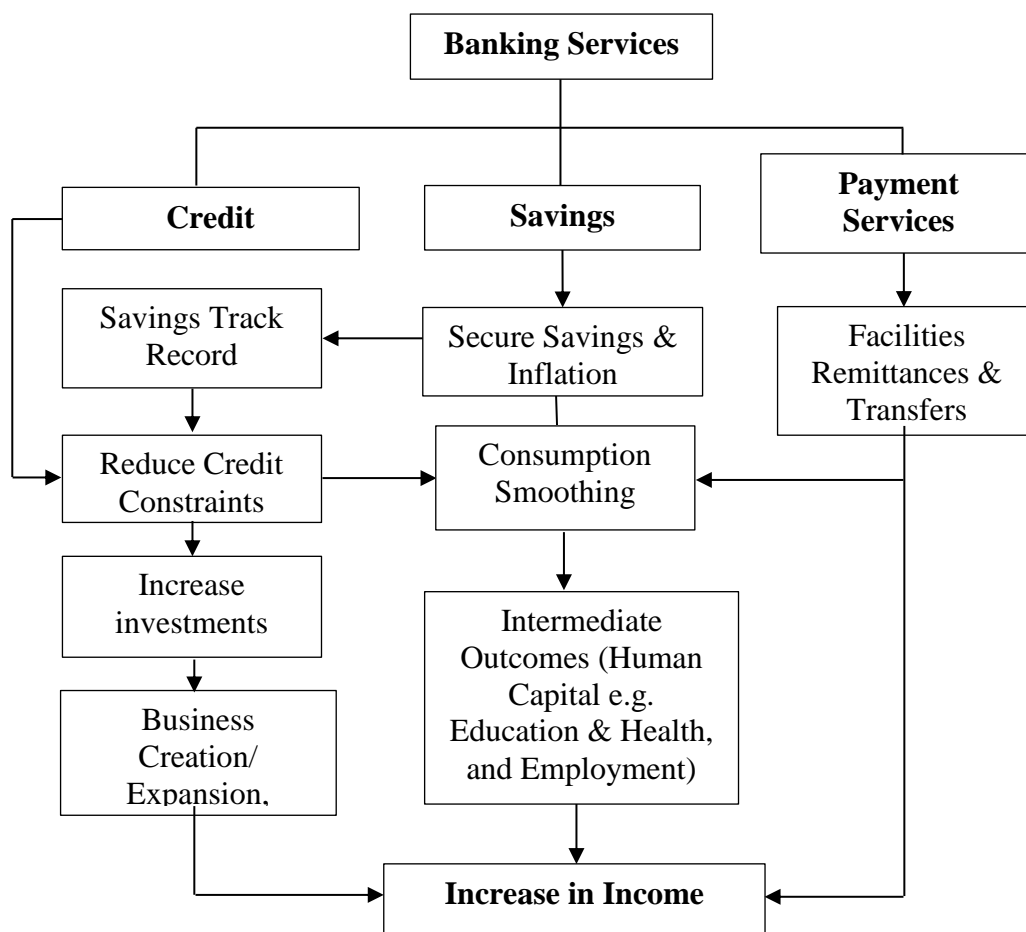
Source: Pande et al. (2012). *Does poor people's access to formal banking services raise their incomes?*

Basically, financial services relate to three aspects: credit, saving, and payment service. From saving aspect, bank provides saving service to financial surplus units with low interest rate as reward. With record of savings, banks have the information about individuals' cash flow, hence when the financial surplus units want to borrow a loan in future, banks can evaluate the creditworthiness easier. This helps in solving the trustworthiness issue and insists people in accessing credit service. Except using the information such as savings track record to facilitate the risk management, it also provides secure savings and inflation protection to the investors for the consumption smoothing purpose in order to increase the saving mobilization. People may invest on saving for retirement to obtain a

better overall standard of living in the future. Thus, there is increment of human capital such as better education and health medication and employment due to there is sufficient money as backup in saving account.

From the credit perspective, banking services may help to provide the potential information about profitable investments. Credit constraints are the significant problems or barrier to the people welfare. With information provided like saving record, it helps to reduce the constraints and facilitate the capital resource allocation. Other than that, the other way of reducing credit constraints is offering a credit card. It is a simple tool that provides short-term credit to large number of consumers whom passed the evaluation of default risk that based on the information from the saving track record and their financial power. Moreover, people who using a credit card need to repay the credit amount. This repayment record will be used to evaluate whether a person is a good borrower. After getting a loan, borrowers may utilize the loan in two ways: either for investment or consumption purpose. If the money goes to investment, it may increase entrepreneur or expansion on business. If the money goes to consumption, it may provide increment in human capital such as health, education or employment.

For the payment services, it helps to facilitate remittances process. This is essential for the purchasing process as it can smooth the process and make the exchange of goods and services easier. Furthermore, payment services play an important role for international money transfers. When a transaction is international nature, it is nearly impossible to pay the payment face to face. Hence, they need a trustable institution to involve in the payment process. Bank will help in transferring or sending the money abroad and providing certain information such as exchange rate, fees and taxes charge as well as agent fee charge in the transfer process. This can help in smoothing the consumption and encourage the globalization. With wider choices, people able to enjoy better quality goods and services, thereafter improve their standard of living.

2.3 Proposed Theoretical Framework

To study the effects of borrowing on the welfare of the poor, we build our model based on Theory of Change.

Figure 2.2: Proposed Theoretical Framework
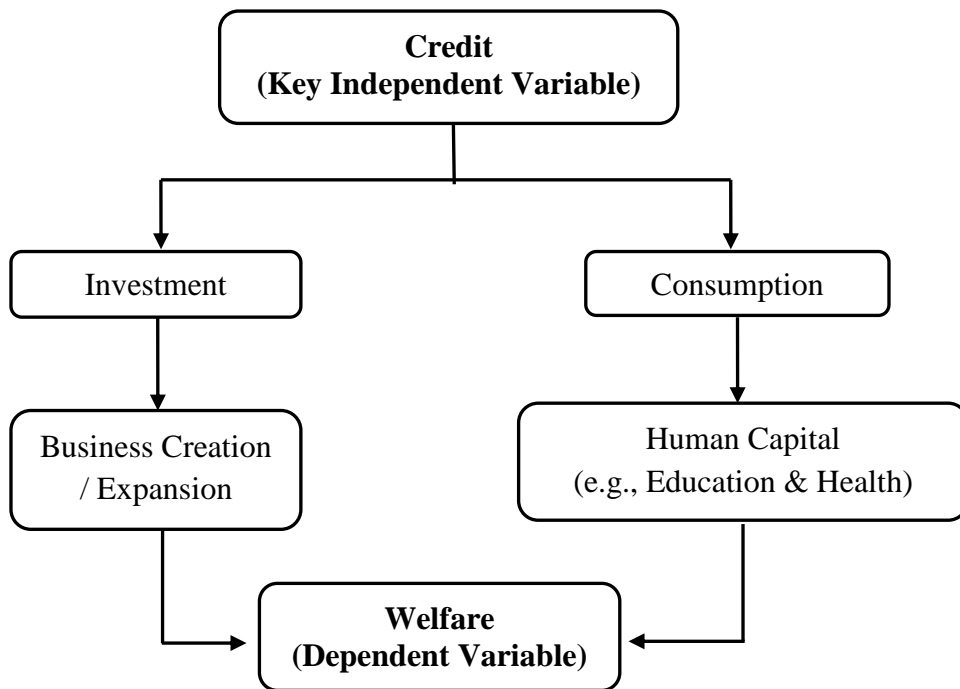
Adapted from: Pande et al. (2012). *Does poor people's access to formal banking services raise their incomes?*

Our framework focuses on how the access to credits, which is one of the mechanisms in Theory of Change, can increase the welfare of the poor. First, investment is a channel that connects access to credit and income change. Thai people may borrow a loan for investment purpose. Investment is an income generating activity that provides borrowers extra returns. For example, people may use the loan to create a new business or expand their business such as investing in agricultural assets to expand their agricultural activities. Then the extra returns obtained from the expansion will increase the income and welfare of the poor. Besides, investment in agricultural assets such as walk tractor and other farm asset

may make the production process faster and easier, thereafter improve their productivity.

The poor may also use the loan to finance their daily consumption such as expenditure and household assets. For the household assets, with borrowing, the poor may enhance their living standard due to greater spending power. For example, the poor households may use the money from borrowings on their needs and wants such as motorcycle, cell phone and bicycle. Besides, for the expenditure, for example, they may use the money for education, health, or employment purposes that can ultimately improve their welfare as better education and employment opportunity could reduce poverty.

2.4   Hypotheses Development

H_0: There is a positive relationship between borrowing and household expenditures.

H_1: There is a positive relationship between borrowing and the ownership of household assets of the poor.

H_2: There is a positive relationship between borrowing and ownership of agricultural assets.

H_3: Informal borrowing will increase the household expenditures.

2.5   Conclusion

In short, this chapter comprises the previous works of other researchers. In next chapter, we discuss the methodology of our study.

CHAPTER 3: METHODOLOGY

3.0 Introduction

This chapter presents the potential outcome framework, the empirical strategy, data and variables along with the summary statistics.

3.1 Potential Outcome Framework

We examine the causal effect of borrowing using the potential outcome framework based on Angrist and Pischke (2009) and Angrist and Pischke (2015). Borrowing is a binary decision includes only either borrowing, which denotes as $D_i = 1$, or without borrowing, which denotes as $D_i = 0$. Hence, there are two potential outcomes for welfare: Y_{1i} if $D_i = 1$ and Y_{0i} if $D_i = 0$.

$$Y_i = \propto_1 + \propto_2 D_i \tag{1}$$

Equation (1) shows the causal link between welfare and borrowing where Y_i is the welfare of the poor, and D_i equals one if an individual borrows and zero otherwise. The coefficient $\propto_2$ measures the casual effect of borrowing.

$$Y_i = \propto_1 + (Y_{1i} - Y_{0i})D_i \tag{2}$$

Besides, the coefficient of $\propto_2$ in equation (1) can be rewritten in terms of $(Y_{1i} - Y_{0i})$ in equation (2) that indicates the difference between outcome of individual i if she borrows (Y_{1i}) and if she has have had not borrowed (Y_{0i}). However, we can never observe the two welfare status of individual i at the same time. The reason is when we observe Y_{0i} of individual i, Y_{1i} is unobservable, and vice versa.

Instead of measuring the individual causal effect, we measure the average causal effect of borrowing, which is written in the form of $E[Y_{1i} - Y_{0i}]$.

$$E[Y_{1i} - Y_{0i}] = E[Y_{1i}|D_i = 1] - E[Y_{0i}|D_i = 0]$$

$$= k \qquad (3)$$

In equation (3), $E[Y_{1i}|D_i = 1] - E[Y_{0i}|D_i = 0]$ denotes the observed difference in welfare with borrowing and without borrowing; $E[Y_{1i}|D_i = 1]$ denotes the average welfare of the poor with borrowing while $E[Y_{0i}|D_i = 0]$ denotes the average welfare of the poor without borrowing; and k denotes average treatment effect on the treated. However, a simple comparison of $E[Y_{1i}|D_i = 1]$ and $E[Y_{0i}|D_i = 0]$ may bias the estimate of coefficient $\propto_2$ in equation (1) due to the selection bias problem. Regardless with borrowing, people may have different welfare due to other factors. Therefore, equation (3) can be rewritten in the form of equation (4), by taking into account selection bias, as below:

$$E[Y_{1i}|D_i = 1] - E[Y_{0i}|D_i = 0] = \{k + E[Y_{0i}|D_i = 1]\} - E[Y_{0i}|D_i = 0]$$

$$= k + \{E[Y_{0i}|D_i = 1] - E[Y_{0i}|D_i = 0]\} \quad (4)$$

where the coefficient k measures the average causal effect while the second term in equation (4), $\{E[Y_{0i}|D_i = 1] - E[Y_{0i}|D_i = 0]\}$ denotes the selection

bias; it implies that there is not only borrowing, there are still other external factors that affect the welfare of the poor.

Due to the selection bias which is also known as omitted variables bias in the estimation of causal effect, the regression-control strategy, other than methods in natural experiments, is one of the statistical techniques in the quasi experiment that estimates causal effect. We include the control variables as many as possible, that are correlated with the borrowing or welfare in the model. An unrestricted set of control variables is used for absorbing the conditional expectation of the error term because of the correlation among the independent variables. By including control variables, the estimates of borrowing become unbiased and purely depict the impacts of borrowing on welfares.

$$\{Y_{0i}, Y_{1i}\} \perp\!\!\!\perp D_i \,|\, X_i \qquad\qquad (5)$$

Besides, with appropriate number of control variables, X_i, it absorbs the effect of omitted variable bias. Therefore, equation (5) shows that borrowing, D_i, conditional on X_i, is independent of the potential outcomes, Y_{0i} and Y_{1i}.

After eliminating the selection bias, equation (4) can be rewritten as

$$E[Y_i|X_i, D_i = 1] - E[Y_i|X_i, D_i = 0] = E[Y_{1i}|X_i, D_i = 1] - E[Y_{0i}|D_i = 0] \quad (6)$$

where the difference between the average potential outcomes conditional on X_i and D_i measure the causal effect of borrowing on welfare.

3.2 Empirical Strategy

We use ordinary least squares (OLS) method to estimate the equation below:

$$Y_i = \propto_0 + \propto_1 D_i + \propto_2 X_i + \varepsilon_i \tag{7}$$

Where Y_i is the of welfare of the poor; D_i is a dummy variable that equals one if individual i borrows, and zero otherwise; X_i is a vector of control variables; and ε_i is the error term of the estimation equation.

We introduce the demographic background that may correlate with the welfare of the poor such as family with married parents may be better off than self-sufficiency. For example, the family with married parents can have better welfare than family with single parent as the financial status of married parents is more stable than the single parent. Besides, the purchasing power and spending of family with married parents are likely to be larger than single parents. Therefore, families with married parents has better welfare in the perspective of providing better education, living standard level, necessities (need and want) as well as life insurance.

We introduce household characteristics to ensure the likelihood of welfare of the poor as random as possible. For example, the size of family living together and has relationship to each other may also correlate to the welfare of the poor due to the bigger the size of members in a family, their welfare are tend to be lower. Therefore, there is p relationship between household members and welfare of the poor. If there is ample availability of productive asset such as agricultural farm lands, the household composition is positively correlated to the welfare.

We also introduce the occupation to control for possible differences between employment activity from wage, usual hours as well as industry. For example, the implementation of welfare recipient by policymakers of the country that is

based on the characteristic of targeted jobs such as higher-wage jobs, educational services industry as well as jobs in the hospitals. For example, those who work in hospital and those who work in educational field may easily acquire better welfare than other industry.

3.3 Data and variables

Data for this study is obtained from the Rural Area Household Annual Resurvey conducted in 2011, which is under the Townsend Thai Project. Under the guidance of Khun Sombat Sakuntasathhien and committed staff, the project was carried out in Thailand. The purpose of this project was to assess the role of formal and informal institutions in helping the welfare of individuals in rural areas of Thailand. Our sample consists of 1,200 households that took part in this survey where 852 households involved in borrowing and 348 households do not.[1]

In our research, we focus on whether borrowing affects the welfare of the poor in Thailand. Borrowing, the independent variable, measures whether a household owes money or goods to anyone such as commercial banks, moneylenders, government agency and etc. Besides, mortgaged land to others, sold crops in advance, and bought goods on credit also treated as part of the borrowing.

We measure welfare, the dependent variable, through few aspects such as expenditures, household assets, and agricultural assets. One, expenditure is the amount of household spent in a typical month such as expenses on food and beverage, tobacco, gasoline, house repairs, vehicle repairs, education fees and clothing. All expenses are measured in Thai Baht. Two, household assets are the assets owned by the household such as home appliances,

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[1] The data is available at
https://dataverse.harvard.edu/dataset.xhtml?persistentId=hdl%3A1902.1%2F20818

communication devices, and vehicles. We expect ownership of household assets reflect better welfare among the poor. Household assets are dummy variables that take the value of one if households own the assets, and zero otherwise. Three, agricultural assets normally are acquired by household that involved in agricultural activities such as walk tractor, crop storage buildings, and etc. Agricultural assets are dummy variables that take the value of one if households own the assets, and zero otherwise.

We include a few sets of control variables in equation (7) to make the poor more comparable. First, we include demographic background of respondent, including marital status, gender, age, and educational level of household. Marital status shows whether a household head is married or otherwise, it is a dummy variable as it takes the value of one if household head is married, and zero otherwise. Gender is also a dummy variable under this category, taking the value of one if an individual is male, and zero otherwise. Besides, age indicates how old a household member was since her last birthday and it is measured in years. For those household members who are below three years old are disqualified for this survey. The educational level shows each of the household members had completed which grade of school.

Another set of control variables that we included in equation (7) is household characteristics, it including relationship between respondent and household head, number of household members and hardship faced by household. The relationship of respondent to household head can be siblings, parents or others relation. Besides, anyone who is supported by household member likes lives in the house for at least 6 months out of 12 months or studying apart from home are counted as one of the household member. The hardship faced by household are the way they coped with it likes borrow money from relatives, moneylender, commercial banks ant etc.

The last set of control variables that we include in equation (7) is occupations and savings as well as gross income. Primary occupation shows the jobs that household experienced the most over the past 12 months; furthermore, savings is the money or crops that household has saved through banks, rice bank, storage for rice or other crops and etc. Savings take the value of one if

household have savings, and zero otherwise. Gross income is the value of income before deductions of income tax for each household over the past 12 months in 2011. All the gross incomes are measured in thousands of Thai Baht and it can come from farming, raising livestock, interest on savings and others.

3.4 Summary Statistics

Table 3.1 : Summary Statistics

Key variable	Unit	Mean		
		Borrow	Do not borrow	All
		(1)	(2)	(3)
A. Outcome Variables: Expenditures				
Rice grown	kg	20.343	8.437	16.890
		(23.385)	(18.378)	(22.695)
Rice bought	kg	1.362	2.006	1.548
		(7.517)	(8.012)	(7.666)
Grains	kg	0.026	0.075	0.040
		(0.273)	(0.666)	(0.426)
Milk	litre	2.755	2.331	2.632
		(12.476)	(11.087)	(12.087)
Alcohol		0.526	0.144	0.415
		(3.281)	(1.218)	(2.846)
Tobacco		0.267	0.218	0.253
		(2.027)	(2.051)	(2.033)
Gasoline		2.620	1.606	2.326
		(14.478)	(8.616)	(13.057)
House Repair	Baht	12805.000	8532.500	11566.000
		(56643.000)	(37142.000)	(51771.000)
Vehicle Repair	Baht	2634.400	1525.500	2312.500
		(6321.400)	(3696.700)	(5706.500)
Education Expenses	Baht	7967.600	4861.600	7066.900
		(12838.000)	(8722.500)	(11874.000)
Clothing Expenses	Baht	2510.300	1969.300	2353.400
		(2780.500)	(2459.500)	(2701.500)
Eating Outside Home	Baht	10276.000	4933.000	8724.900
		(12500.000)	(8206.000)	(11673.000)

Table 3.1 : Summary Statistics (continued)

Key variable	Unit	Mean		
		(1)	(2)	(3)
B. Outcome Variables: Household Assets				
Tv		0.994	0.951	0.982
		(0.076)	(0.216)	(0.134)
Vcr		0.000	0.003	0.001
		(0.000)	(0.054)	(0.029)
Aircond		0.004	0.003	0.003
		(0.059)	(0.054)	(0.058)
Regular phone		0.001	0.000	0.001
		(0.034)	(0.000)	(0.029)
Cellphone		0.020	0.017	0.019
		(0.140)	(0.130)	(0.137)
Fridge		0.016	0.023	0.018
		(0.127)	(0.150)	(0.134)
Motorcycle		0.027	0.017	0.024
		(0.162)	(0.130)	(0.154)
Wash Machine		0.015	0.011	0.014
		(0.123)	(0.107)	(0.118)
Stove		0.014	0.026	0.018
		(0.118)	(0.159)	(0.131)
Bicycle		0.019	0.026	0.021
		(0.136)	(0.159)	(0.143)
Stereo		0.005	0.009	0.006
		(0.068)	(0.093)	(0.076)
C. Outcome Variables: Agricultural Assets				
Walk Tractor		0.392	0.147	0.321
		(0.488)	(0.354)	(0.467)
Agricultural Machine		0.008	0.003	0.007
		(0.090)	(0.054)	(0.081)

Table 3.1 : Summary Statistics (continued)

Key variable	Unit	Mean		
		(1)	(2)	(3)
Crop Building		0.009	0.003	0.008
		(0.097)	(0.054)	(0.086)
Farm Asset		0.007	0.003	0.006
		(0.084)	(0.054)	(0.076)
D. Demographic of respondents				
Marital Status		0.771	0.560	0.697
		(0.420)	(0.497)	(0.460)
Gender		0.664	0.549	0.631
		(0.473)	(0.498)	(0.483)
Age		55.207	58.784	56.244
		(11.125)	(14.330)	(12.244)
Highest Education		19.324	18.977	19.223
		(9.488)	(10.821)	(9.890)
E. Household Characteristics				
Relationship to household head		2.080	1.730	1.978
		(1.960)	(1.773)	(1.914)
Number of household members		4.082	3.379	3.878
		(1.753)	(1.704)	(1.768)
Hardship		0.268	0.161	0.237
		(0.443)	(0.368)	(0.425)
F. Occupation and Savings				
Primary Occupation		53.948	63.305	56.662
		(50.852)	(47.299)	(50.009)
Savings		1.000	1.000	1.000
		(0.000)	(0.000)	(0.000)
Gross Income	Baht ('000)	391.720	265.170	355.020
		(670.430)	(427.990)	(612.640)
Number of Observations		852	348	1200

Note: Each column shows the mean value. The numbers in parentheses are standard error.

Table 1 presents the summary statistics of 1200 poor people who live in the rural area. Columns (1) and (2) show the average values of the variables for those who borrow loans and those who do not borrow loans, respectively.

Panel A shows that individuals who borrow credits appear to spend more in most products. For example, house repair, vehicle repair, education expenses, and clothing expenses, especially the house repair which people who borrow money spent over 4000 Baht, on average, more than people who do not borrow. Besides, they also consume more alcohol, tobacco, gasoline and outside food than those who do not borrow. Among these expenses, difference between those who do not borrow and those who borrow on outside food is the largest among all. People who borrow money, on average, spend double on eating outside compared to people who do not borrow. However, the amounts of those who borrow on purchasing food like rice and grains are slightly lower (around two third kilogram on average) compared to their counterpart. Meanwhile, the consumption amount of own rice grown of those who borrow are substantially higher than those who do not borrow, approximately 12 kilograms more.

In Panel B, these two groups show similar proposition of asset ownership. Most of the households have a television as the mean value is very high (99.4% for group who borrow; 95.1% for group who do not borrow). However, most households tend to own less other household assets: the mean value is very low, which is less than 5%; only 2.6% for group who borrow own a motorcycle.

Panel C illustrates the mean value of agricultural assets. In contrast to household assets, the mean value of owning agricultural assets of people who borrow are higher than those who do not borrow, almost a triple for every agricultural asset. Among the agricultural assets, walk tractor is the most notable one. The mean value of those who borrow is 39.2% compared to their counterpart which is only 14.7%. This means that for every 10 households, there will be around 4 households own the walk tractor.

In Panel D, those who borrow are more likely to be a married person (20% more compared to those who do not borrow). Furthermore, those who borrow

are younger age and better educated, on average, than those who do not borrow.

In term of household characteristics (Panel E), people who borrow tend to have more household members (approximately extra 1 person on average). In addition, there are more households who borrow a loan faced a hardship before compared to households who do not borrow.

3.5 Conclusion

In this chapter, all methods and variables that are used to examine the causal link between welfare and borrowing have been interpreted in detailed. The next chapter discusses the analysis and empirical findings for relationship between welfare and borrowing by using the regression-control strategy.

CHAPTER 4: DATA ANALYSIS

4.0   Introduction

To assess the relationship between welfare and borrowing, we use regression-control strategy in this report. Regression-control strategy is a regression by including control variables such as demographic background (marital status, age, gender, grade of school completed), household characteristics (relationship to head, total number of households and hardship) and occupations and savings (primary occupation, saving and income) to estimate the causal effect of borrowing. Table (4.1) shows the result on the relationship between household expenditures and borrowing; table (4.2) presents the result of the causal link between household assets and borrowing; table (4.3) shows the result between agriculture asset and borrowing while the result between household expenditures; and tables (4.4) and (4.5) are about the other forms of borrowing.

4.1   Inferential Analyses

Table (4.1) presents the basic result on the effect of borrowing on household expenditures in Thailand. Each column provides a different specification, estimated using OLS. Column (1) shows, in a regression without any control variables, the borrowing is statistically significant correlated with the household expenditures. Households consumed, on average, 20.343 kgs on own rice grown, 1.362 kgs on rice bought, 0.026 kgs on grains, 2.755 litres on milk, 0.526 units on alcohol, 0.266 units on

tobacco and 2.619 units on gasoline. With loans, households used, on average, 12805.30 Thai Baht to repair houses, 2643.37 Thai Baht to repair vehicles, 7967.62 Thai Baht for education, 2510.25 Thai Baht to buy clothes and 10275.60 Thai Baht for eating outside. The result shows a positive sign on all the estimate of household expenditures. It means that if there is borrowing, there are increasing expenditure on the consumption on daily food and beverages, and higher spending on repairing, education, clothing and eating outside home.

In column (2), after controlling for demographic background, including marital status, gender, age and the highest grade of school completed, only consumption on own rice grown and alcohol, spending on education, clothing and eating outside home remain statistically significant, the estimates are 13.05 kgs, 0.334 units, 2828.31 Thai Baht, 530.99 Thai Baht and 5270.60 Thai Baht respectively. On the other hand, consumption on rice bought and grains have negative estimates after the first set of control variable is added in. The estimate changes to only -0.557 kgs for rice bought and -0.037 kgs for grains.

After controlling for household characteristics (a set of indicators for relationship to head, total number of households and hardship), in column (3), consumption on own rice grown, alcohol and eating outside home remain statistically significant, the estimates are 11.333 kgs, 0.256 units and 3870.46 Thai Baht respectively. There is a negative sign for grains (-0.038 kgs) and rice bought (-1.013 kgs). When there is borrowing, the consumption of grains decreases by 0.038 kgs; the expenditure on rice bought decreases by 1.013 kgs.

In column (4), we control for occupation and savings in the regression. Consumption on own rice grown, alcohol, spending on education and eating outside remain statistically significant, which are 8.892 kgs, 0.28 units, 1155.71 Thai Baht and 4010.22 Thai Baht respectively. On the other hand, the consumption on rice bought and grains still remain negatively correlated with borrowing, with the estimates of -0.874 kgs and -0.050 kgs respectively.

Overall, there are only consumption on own rice grown, alcohol and spending on education remain statistically significant with or without control variables. This has met our research objective of borrowing increases welfare of the poor people in Thailand.

Table 4.1: The effects of borrowing on household expenditures

Dependent variable:	(1)	(2)	(3)	(4)
Rice grown	20.343***	13.045***	11.333***	8.891***
	(0.801)	(1.252)	(1.271)	(1.289)
Rice bought	1.362***	-0.557	-1.013*	-0.874*
	(0.257)	(0.523)	(0.535)	(0.516)
Grains	0.026***	-0.037	-0.038	-0.050
	(0.009)	(0.037)	(0.040)	(0.043)
Milk	2.755***	0.917	0.436	0.373
	(0.427)	(0.690)	(0.765)	(0.820)
Alcohol	0.526***	0.334***	0.256***	0.280**
	(0.112)	(0.104)	(0.094)	(0.110)
Tobacco	0.266***	0.026	0.020	0.041
	(0.069)	(0.145)	(0.143)	(0.141)
Gasoline	2.619***	0.768	0.775	0.644
	(0.496)	(0.697)	(0.689)	(0.654)
House Repair	12805.3***	2246.19	2293.98	2582.69
	(1940.24)	(2399.32)	(2624.14)	(2852.28)
Control variables				
Demographic background	-	yes	yes	yes
Household characteristics	-		yes	yes
Occupations and savings	-			yes

Table 4.1: The effects of borrowing on household expenditures (continued)

Dependent variable:	(1)	(2)	(3)	(4)
Vehicle Repair	2643.37***	840.22	430.47	387.495
	(216.66)	(270.77)	(274.18)	(259.098)
Education Expenses	7967.62***	2828.31***	806.32	1155.71*
	(439.75)	(614.60)	(590.32)	(634.753)
Clothing Expenses	2510.25***	530.989***	186.041	234.319
	(95.243)	(159.558)	(152.539)	(147.930)
Eating Outside Home	10275.60***	5279.60***	3870.46***	4010.22***
	(428.433)	(641.487)	(617.247)	(608.707)
Control variables				
Demographic background	-	yes	yes	yes
Household characteristics	-	-	yes	yes
Occupations and savings	-	-	-	yes

Note: Each column shows the estimate of borrowing for the regression of an expenditure on borrowing, with and without control variables. The numbers in parentheses are heteroscedastic robust standard error.

*** , ** , * show statistically significant estimate at level of significance of 1%, 5%, and 10%, respectively.

Table (4.2) presents the basic result on how borrowing influences the ownership of household assets in Thailand. Each column provides a different specification, estimated using OLS. Column (1) shows (in a regression without any control variables) that borrowing is statistically significant with most of the household assets, except VCR and regular phone. The estimated change of household assets associated with borrowing is relatively small, which falls between the range of 0.00 and 0.10. The estimate of VCR is 0.00, it can be explained that, even with loans, the poor in Thailand will not purchase a VCR. However, the estimate of TV is 0.994. It shows that 99.4% of the poor people choose to own a TV after borrowing.

In column (2), after controlling for a set of demographic background of households, only the estimate of TV remains statistically significant associated with borrowing, which is 0.13. With borrowing, 13% of the poor households choose to own a TV. However, the estimate of VCR, aircond, fridge, wash machine, stove, bicycle and stereo are negative, which is -0.003, -0.002, -0.005, -0.001, -0.10, -0.004 and -0.006 respectively, but statistically insignificant.

In column (3), after controlling for household characteristics, the estimate of TV remains statistically significant, even when there is a drop in the coefficient from 0.13 to 0.10. On the other hand, household assets such as VCR, aircond, fridge, wash machine, stove, bicycle and stereo still remain a negative relationship with borrowing with the estimates of -0.003, -0.001, -0.006, -0.003, -0.013, -0.009 and -0.006 respectively. For every borrowing, it decreases the ownership of the household assets which are mentioned on the above.

Column (4) shows the result of adding another set of control variables (occupations and savings). There is only TV remain statistically significant with the estimate of 0.03. It shows that 3% of those who borrow choose to own a TV. The estimate of VCR, fridge, stove, bicycle and stereo are negative. With loans, households are less likely to own VCR, fridge, stove, bicycle and stereo. The estimate of VCR remain the same after controlling

for variables as shown in column (2), column (3) and column (4) which is -0.003 while the estimate of regular phone remain the same with or without controlling variables, which is 0.01.

After controlling for variables, the coefficients of most of the household assets are negative, which indicates that these household assets are negatively correlated with borrowing. Although most of the household assets are negatively correlated with borrowing, however, they are statistically insignificant. In conclude, they do not bring big impact in decreasing the welfare of people.

Table 4.2: The effects of borrowing on household assets

Dependent variable:	(1)	(2)	(3)	(4)
TV	0.994***	0.127***	0.097***	0.032***
	(0.003)	(0.014)	(0.014)	(0.011)
VCR	0.000	-0.003	-0.003	-0.003
	(0.000)	(0.003)	(0.003)	(0.003)
Aircond	0.004*	-0.002	-0.001	0.001
	(0.002)	(0.003)	(0.004)	(0.004)
Regular Phone	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Cell Phone	0.019***	0.009	0.006	0.005
	(0.005)	(0.009)	(0.009)	(0.010)
Fridge	0.016***	-0.005	-0.006	-0.006
	(0.004)	(0.009)	(0.009)	(0.009)
Control variables				
Demographic background	-	yes	yes	yes
Household characteristics	-	-	yes	yes
Occupations and savings	-	-	-	yes

Table 4.2: The effects of borrowing on household assets (continued)

Dependent variable:	(1)	(2)	(3)	(4)
Motorcycle	0.027***	0.010	0.008	0.009
	(0.006)	(0.009)	(0.009)	(0.010)
Wash Machine	0.015***	-0.001	-0.003	0.002
	(0.004)	(0.001)	(0.007)	(0.007)
Stove	0.014***	-0.010	-0.013	-0.014
	(0.004)	(0.010)	(0.010)	(0.010)
Bicycle	0.019***	-0.004	-0.009	-0.010
	(0.005)	(0.009)	(0.009)	(0.010)
Stereo	0.005**	-0.006	-0.003	-0.004
	(0.002)	(0.005)	(0.004)	(0.005)
Control variables				
Demographic background	-	yes	yes	yes
Household characteristics	-	-	yes	yes
Occupations and savings	-	-	-	yes

Note: Each column shows the estimate of borrowing for the regression of an expenditure on borrowing, with and without control variables. The numbers in parentheses are heteroscedastic robust standard error.

***, **, * show statistically significant estimate at level of significance of 1%, 5%, and 10%, respectively.

Table (4.3) presents the basic result on how borrowing influences the ownership of agricultural assets in Thailand. Each column provides a different specification, estimated using OLS. Column (1) shows (in a regression without any control variables) that walk tractor, other tools, crop building and farm asset are statistically significant correlated with borrowing. Most of the poor in rural areas grow their own crop production, with loans, 40% of poor households choose to own a walk tractor (0.40), followed by crop building (0.009), other tools (0.008) and farm assets (0.007).

From column (2), a set of demographic background variable is included to investigate the relationship between the ownership of agricultural assets and borrowing. The estimate of walk tractor changes to 0.24, however it is still statistically significant. The figure implies that, with loans, 24% of those who borrow choose to own a walk tractor. The coefficient of crop building changes to 0.006, followed by other tools (0.004) and farm assets (0.003).

Column (3) shows the result after controlling for household characteristics. The walk tractor still remains statistically significant with an estimate of 0.205. The estimate of crop building changes to 0.008, followed by farm assets (0.002) and other tools (0.001).

Lastly, in column (4), another set of control variable is added – occupations and savings. Although the estimate of walk tractor drops from 0.205 to 0.181, it is still statistically significant correlated with borrowing. The estimate of crop building remains constant as in column 3 while the coefficients of farm assets and other tools are 0.003 and 0.002 respectively.

In sum, only walk tractor is statistically significant with or without control variables. It can be concluded that, with loans, poor households are more likely to own a walk tractor instead of other agricultural assets. Furthermore, the estimates of all the agricultural assets are in positive sign. So we can make a conclusion that, when the poor use their loans to invest in agricultural assets, their welfare will increase as argued by the Theory of Changes in Chapter 2.

Table 4.3: The effects of borrowing on agricultural assets

Dependent variable:	(1)	(2)	(3)	(4)
Walk Tractor	0.392***	0.243***	0.205***	0.181***
	(0.017)	(0.025)	(0.026)	(0.026)
Agricultural Machine	0.008***	0.004	0.001	0.002
	(0.003)	(0.004)	(0.004)	(0.005)
Crop Building	0.009***	0.006	0.008	0.008
	(0.003)	(0.005)	(0.005)	(0.005)
Farm Asset	0.007***	0.003	0.002	0.003
	(0.003)	(0.004)	(0.004)	(0.005)
Control variables				
Demographic background	-	yes	yes	yes
Household characteristics	-	-	yes	yes
Occupations and savings	-	-	-	yes

Note: Each column shows the estimate of borrowing for the regression of an expenditure on borrowing, with and without control variables. The numbers in parentheses are heteroscedastic robust standard error.

***, **, * show statistically significant estimate at level of significance of 1%, 5%, and 10%, respectively.

Table (4.4) presents the basic result on the effect of helping from relatives on household expenditures in Thailand. Each column provides a different specification, estimated using OLS. Column (1) shows (in a regression without any control variables) the household expenditures are statistically significant correlated to the helping from relatives in terms of money. Through helping from relatives, on average, households consume 15.857 kgs on own rice grown, 1.664 kgs on rice bought, 0.057 kgs on grains, 2.953 litres on milk, 0.428 units on alcohol, 0.233 units on tobacco, 2.589 units on gasoline. Households used, on average, 12467.40 Thai Baht to repair houses, 2455.73 Thai Baht to repair vehicles, 8799.35 Thai Baht for education, 2555.12 Thai Baht to buy clothes and 10226.60 Thai Baht for eating outside home. All the coefficients of the household expenditures are positive. It can be said that the household expenditures are positively correlated with borrowing.

According to the result shown in column (2) after controlling for demographic background, consumption on grains and milk, spending on education, clothing and eating outside home remain statistically significant. The estimates are 0.057 kgs, 1.147 litres, 3702.14 Thai Baht, 515.77 Thai Baht and 2912.42 Thai Baht respectively. However, the estimates of rice grown and alcohol turn into negative which are -1.616 kgs and -0.000 unit respectively. When there is a help from relatives, the households will less likely to consume on own rice grown by 1.62 kgs and zero consumption on alcohol.

After controlling for household characteristics, the result is shown in column (3). The consumption of grains, spending on education, clothing and eating outside home remain statistically significant with the estimates of 0.58 kgs, 2876.24 Thai Baht, 368.536 Thai Baht and 2263.36 Thai Baht. When there is helping from relatives in terms of money, households consume, on average, 0.58 kgs on grains, 2876.24 Thai Baht on education, 368.56 Thai Baht on clothing and 2263.36 Thai Baht on eating outside home. On the other hand, the consumption of own rice grown has a negative relationship with the helping from relatives. With the estimate of -2.673 kgs, it indicates that with loans, the households are less likely to

consume on own rice grown by 2.673 kgs. The alcohol and tobacco also have negative estimates of -0.037 units and -0.001 units respectively.

Column (4) shows the result after controlling for occupation and savings. The consumption of grains, education expenses, clothing expenses and eating outside home are statistically significant associated with helping from relatives in terms of money, with the estimates of 0.058 kgs, 2980.99 Thai Baht, 264.247 Thai Baht and 2002.99 Thai Baht respectively. The estimate of rice grown changes from -2.673 kgs to -3.584 kgs. The figure implies that, with loans, households are less likely to consume on own rice grown by 3.584 kgs. With loans, the consumption of alcohol and tobacco decrease by 0.085 units and 0.018 units respectively; they are also less likely to use the loans for vehicles repairing purpose with the estimate of -5.244 Thai Baht.

In sum, the consumption on grains, spending on education, clothing and eating outside home are statistically significant with or without control variables. From this, when poor people use their loans for consumption purpose, this could directly increase their welfare as well argued by the Theory of Changes in Chapter 2.

Table 4.4: The effects of helping from relatives on household expenditures

Dependent variable:	(1)	(2)	(3)	(4)
Rice grown	15.857***	-1.616	-2.673**	-3.584***
	(0.878)	(1.353)	(1.294)	(1.264)
Rice bought	1.664***	0.445	0.275	0.248
	(0.340)	(0.435)	(0.419)	(0.435)
Grains	0.057***	0.057***	0.058***	0.056***
	(0.017)	(0.020)	(0.021)	(0.020)
Control variables				
Demographic background	-	yes	yes	yes
Household characteristics	-	-	yes	yes
Occupations and savings	-	-	-	yes

Table 4.4: The effects of helping from relatives on household expenditures
(continued)

Dependent variable:	(1)	(2)	(3)	(4)
Milk	2.953***	1.147*	0.967	0.725
	(0.541)	(0.661)	(0.659)	(0.699)
Alcohol	0.428***	-0.000	-0.037	-0.085
	(0.119)	(0.175)	(0.175)	(0.178)
Tobacco	0.233***	0.003	-0.001	-0.018
	(0.066)	(0.108)	(0.112)	(0.117)
Gasoline	2.589***	0.573	0.581	0.561
	(0.625)	(0.803)	(0.815)	(0.767)
House Repair	12467.400***	381.774	364.253	50.793
	(2338.06)	(2988.50)	(3153.40)	(3200.35)
Vehicle Repair	2455.730***	424.979	250.827	-5.244
	(254.936)	(345.539)	(330.086)	(308.546)
Education Expenses	8799.350***	3702.140***	2876.240***	2980.99***
	(550.775)	(685.568)	(646.142)	(630.296)
Clothing Expenses	2555.120***	515.768***	368.536**	264.247*
	(119.642)	(158.418)	(149.568)	(145.317)
Eating Outside Home	10226.600***	2912.420***	2263.36***	2002.990***
	(462.689)	(687.271)	(659.584)	(670.546)
Control variables				
Demographic background	-	yes	yes	yes
Household characteristics	-	-	yes	yes
Occupations and savings	-	-	-	yes

Note: Each column shows the estimate of borrowing for the regression of an expenditure on borrowing, with and without control variables. The numbers in parentheses are heteroscedastic robust standard error.
***, **, * show statistically significant estimate at level of significance of 1%, 5%, and 10%, respectively.

Table (4.5) presents the basic result on the effect of helping from non-relatives on household expenditures in Thailand. Each column provides a different specification, estimated using OLS. Column (1) shows (in a regression without any control variables) the household expenditures are statistically significant correlated to the helping from non-relatives in terms of money. With loans, households consume 15.36 kgs on own rice grown, 1.40 kgs on rice bought, 0.08 kgs on grains, 2.876 litres on milk, 0.556 units on alcohol, 0.143 units on tobacco and 3.287 units on gasoline, on average. Moreover, with loans, households used 11819.80 Thai Baht on house repair, 2798.35 Thai Baht on vehicle repair, 8467.44 Thai Baht on education, 2760.61 Thai Baht on clothing and 9702.20 Thai Baht on eating outside home, on average. All the coefficients of household expenditures are positive; it indicates that household expenditures and helping from non-relatives are positively correlated.

After controlling for demographic background, the consumption on grains, vehicle repair expenses, education expenses, clothing expenses and eating outside home remain statistically significant with the estimates of 0.062 kgs, 707.32 Thai Baht, 2179.42 Thai Baht, 645.07 Thai Baht and 1661.71 Thai Baht respectively. However, with loans, households are less likely to consume on their own rice grown with estimate of -0.917 kgs. The negative estimates of rice bought (-0.163 kgs) and tobacco (-0.15 units) indicate that, with loans, households decrease their consumption on own rice grown and tobacco by 0.163 kgs and 0.15 units respectively.

Column (3) shows the result after controlling for household characteristics. Education expenses, clothing expenses and eating outside home remain statistically significant, with the estimates of 1470.81 Thai Baht, 499.31 Thai Baht and 1210.33 Thai Baht. With loans, households decrease their consumption on own rice grown by 2.289 kgs, rice bought by 0.291 kgs, tobacco by 0.143 units and house repair expenses by 18.228 Thai Baht.

Column (4) shows the result after controlling for occupation and savings. Education expenses and clothing expenses are statistically significant, with the estimate of 1505.26 Thai Baht and 423.414 Thai Baht. On the other

hand, with loans, the consumption on own rice grown, rice bought, tobacco and house repair expenses decrease with the estimates changes to negative, -3.242kgs, -0.281 kgs, -0.152 units and -252.22 Thai Baht respectively.

Overall, most of the coefficients of household expenditures are positive. It indicates that they are positively correlated with the helping from non-relatives. Through informal borrowing, the welfare of people could be increased in terms of consumption.

Table 4.5: The effects of helping from non-relatives on household expenditures

Dependent variable:	(1)	(2)	(3)	(4)
Rice grown	15.364***	-0.917	-2.289*	-3.242**
	(1.123)	(1.347)	(1.326)	(1.280)
Rice bought	1.399***	-0.163	-0.291	-0.281
	(0.359)	(0.451)	(0.466)	(0.455)
Grains	0.080**	0.062*	0.060	0.055
	(0.035)	(0.037)	(0.037)	(0.035)
Milk	2.876***	0.578	0.398	0.238
	(0.628)	(0.735)	(0.740)	(0.765)
Alcohol	0.556***	0.214	0.205	0.179
	(0.181)	(0.199)	(0.204)	(0.201)
Tobacco	0.143**	-0.150	-0.143	-0.152
	(0.066)	(0.105)	(0.103)	(0.100)
Gasoline	3.287***	1.392	1.340	1.296
	(0.999)	(1.060)	(1.048)	(1.005)
Control variables				
Demographic background	-	yes	yes	yes
Household characteristics	-	-	yes	yes
Occupations and savings	-	-	-	yes

Table 4.5: The effects of helping from non-relatives on household expenditures
(continued)

Dependent variable:	(1)	(2)	(3)	(4)
House Repair	11819.80***	214.830	-18.228	-252.223
	(3127.33)	(3430.11)	(3427.67)	(3604.18)
Vehicle Repair	2798.35***	707.322*	558.085	368.766
	(333.101)	(379.170)	(356.651)	(328.183)
Education Expenses	8467.44***	2179.42***	1470.81**	1505.26**
	(658.332)	(766.419)	(700.553)	(685.309)
Clothing Expenses	2760.61***	645.067***	499.306***	423.414***
	(167.955)	(186.553)	(171.157)	(163.408)
Eating Outside Home	9702.20***	1661.71**	1210.33*	975.998
	(622.648)	(737.536)	(702.568)	(696.144)
Control variables				
Demographic background	-	yes	yes	yes
Household characteristics	-	-	yes	yes
Occupations and savings	-	-	-	yes

Note: Each column shows the estimate of borrowing for the regression of an expenditure on borrowing, with and without control variables. The numbers in parentheses are heteroscedastic robust standard error.
*** , ** , * show statistically significant estimate at level of significance of 1%, 5%, and 10%, respectively.

4.2 Conclusion

In conclude, this chapter presents the result of the relationship between welfare and borrowing with or without control variables. In next chapter, we will suggest recommendation and policy implementation.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

This chapter presents the major findings of our research, policy implications, the summary, limitation, and recommendations of our report.

5.1 Summary of Statistical Analyses

Our summary statistics clearly show that the expenditures of those who borrow are higher than those who do not borrow. This suggests that Thai people have spent more money for their wants and better life after borrowing. On the other hand, the average values of ownership of household asset between these two groups do not differ widely. This statistics suggest that Thai people are less likely to borrow loans to purchase the household assets. There is a different story in agricultural assets. People who borrow a loan tend to have the agricultural assets than those who do not borrow. This may link to the government policies that promoting the agricultural activities (Moore & Donaldson, 2016). Thai people are encouraged to finance the agricultural assets with a loan to enhance their productivity, thereafter improve their living standard. In addition, the fact that most people who borrow a loan had faced a hardship, which implies that loan is a tool that used to cope with a hardship in Thailand.

5.2   Discussions of Major Findings

After controlling for demographic background, household characteristics, and occupation and saving, results show that borrowing in general, is statistically insignificant correlated to most of the expenditures (except alcohol and eating outside) of the poor in Thailand. These finding contrasts with Quach, Mullineux and Murinde (2005)'s work, which proposes both formal and informal loans are positively affect the welfare expenses. Nevertheless, consumption on own rice grown has significant positive relationship with the borrowing. Adding the fact that consumption on rice bought has less significant (only become statistically significant at 10% of significance level) decrease due to borrowing, we can conclude that Thai people who borrow a formal loan are more likely a self-dependence community. These findings indirectly prove that Thai people are borrowing a loan to finance their agricultural activities, result in improvement of their productivity, which is related to the investment side of Theory of Change. Except television remains slight relationship, all other household assets are statistically insignificant to borrowing after taking the demographic background of the respondents into account. Similar to agricultural assets, all agricultural assets except walk tractor (statistically significant at 1% significance level) are statistically insignificant to borrowing.

For informal borrowing from relatives, there are positive significant results for consumption on grains, education expenses, clothing expenses, and eating outside. The interesting thing is the consumption on own rice growth is negatively correlated with borrowing, which is opposite from the result of formal borrowing. Borrowing from non-relatives also has negative significant relationship with consumption on own rice grown. This is probably due to people who borrow informal loan have lower agricultural productivity on average, thus cannot apply loan through formal way. Furthermore, borrowing from non-relatives is significant positively correlated to education and clothing expenses only. This

indicates that Thai people tend to borrow from their relatives for more spending purposes. Overall, results suggest that informal borrowing is improving the welfare of the poor through consumption side of Theory of Change.

5.3   Implications of the Study

Throughout this research, we find come evidence of the poor people have limited access to credit, and their welfare could be improved if the financial constraints are alleviated. Thus, practitioners in developing countries as well as researchers could focus on reducing the financial barriers for the poor to improve the welfare of the poor.

5.3.1 Government and Policy Makers

Our empirical results show that borrowing can improve the welfare of the poor; the results may suggest that policy makers could improve the coverage of loans to reach more target group. For instance, Thailand government could refer to the policies in the Philippines such as using the National Household Targeting System for Poverty Reduction to select the beneficiaries of loans. This system is a data bank and information management system that can identify who and where the poor are. For example, the criteria for the beneficiaries of the loans are economic condition of households is below the provincial poverty threshold and have children below 18 years old, hence, this system will filter the data and select those households who meet those criteria as the beneficiary of loan. Hence, government and policy makers can ensure the loans are received by the poor by using this system.

Moreover, governments and policy makers could improve programmes likes the conditional cash transfer programmes (CCT) which will provide cash payments for the poor. They could refer to the CCT programs such as Pantawid Pamilyang Pilipino Programme (4Ps) in the Philippines that provides monetary support for poor families, and invest in education and health programmes that help the poor through schooling enrollment for children, health check-ups for children below 5 years old and etc. Therefore, this programme can improve the health of the poor and the children can get the opportunity to complete a higher level of education and acquire an employment opportunity with higher income.

5.3.2 Future researchers

Future researchers could study on whether giving low-interest-rate education loans help the welfare of the poor. Our results show that, in line with Theory of Change, borrowings increase spending on education. Therefore, future researchers can study on whether an education loan with affordable interest rate can be treated as a mechanism to improve average education level and hence the welfare of the poor.

5.4 Limitations of the Study

In our research, we only examine the causal relation between the welfare of the poor and borrowing in rural areas of Thailand. Hence, only data of Thai people who live in rural areas are included in this research. So, this research only useful for those reader who want to have a better

understanding on how borrowing improve welfare of the poor in rural areas of Thailand, because the results obtained from this research only reflect the situation in rural areas of Thailand but not the country as a whole.

Moreover, another limitation of this research is on the method we used to solve the selection bias problem. We used the regression control strategy to examine the causal relation between the welfare of the poor and borrowing, but may be some other external factors associated with welfare or borrowing, our strategy may not fully eliminate the selection bias. Furthermore, although included a number of control variables in our empirical model, we may not include all factors that associate with welfare and borrowing. Because of limited variable in the questionnaire, our empirical results may not reflect the full causal effect of borrowing.

Lastly, Theory of Change proposed that credit, saving, and service payment can lead to an improvement on welfare of the poor. But, we only study on how credit improves the welfare of the poor in rural areas of Thailand. Hence, our research only reflects the effects of one of the three mechanisms in the theory. The findings may only represent part of the change in welfare.

5.5   Recommendations for Future Research

As the welfare of households that borrow seems better, on average, it would be interesting to further investigate the welfare of the poor in urban areas, which could then be compared with the welfare of the poor in rural areas. Furthermore, a wider coverage of the analytical sample could provide a better picture of the average welfare.

In addition, it seems value enhancing to conduct random experiment to address the selection bias problem, because it is a process for which the assignment of treatment is random. Alternatively, instrumental variable approach also could be used to examine causal relationships. By using instrumental variable approach, the variable of borrowing is exogenous and independent from the effects of other factors and the error term.

Last but not least, we only study on how credit improves welfare of the poor, but Theory of Change proposed that saving and service payment also can lead to an improvement on welfare of the poor. Thus, it seems valuable to investigate how saving and service payment can improve the welfare of the poor.

5.6   Conclusion

Most of the Thai people are living in rural areas and fall in the poverty category. This is probably due to the less developed credit programs provided in rural areas. Tons of empirical studies have suggested that borrowing is a potential tool that can be used to alleviate poverty (see, e.g., Berhane & Gardebrokek, 2011; Giang, Wang, & Chien, 2015; Imai & Azam, 2012; Kyessi & Furaha, 2010; Li, Li, Huang, & Zhu, 2013; Miled & Rejeb, 2015). In Thailand, it seems like borrowing generally serves as an incentive for agricultural activities. The effect of borrowing is related to the investment side of Theory of Change, which improve the income of the poor through expansion in agricultural activities. Specifically, we find empirically informal loans have the capability to improve the welfare of the poor in term of consumption.

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