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1. Introduction

Microcredit is commonly thought to have enormous potential as a tool for poverty alleviation based upon the belief that the poor always hold a large demand for microcredit. However, recent evidence proves this belief to be controversial. A survey of 1,438 households in Indonesia (2002) shows that less than a quarter of the poor households, who were considered to be creditworthy, borrowed from any formal micro-lender in the past 3.5 years, despite the fact that almost all of the surveyed households were located reasonably close to such a provider (Johnston and Morduch, 2007). Another survey of 17,000 microenterprises in Ecuador found that only one out of six requested a loan in the past 12 months (Magill and Meyer, 2005). In addition, the surveys of household businesses in Ecuador, Guatemala, Nicaragua, Panama, and the Dominican Republic reviewed by Navajas and Tejerina (2006) show that only 20 percent of those businesses applied for a loan. The phenomenon of non-borrowing poor is prevailing throughout microcredit markets and is persuasive in showing the need to re-investigate the classical belief on credit demand for the poor.

If there is a precise confirmation that all categories of the poor can make good use of microcredit, or microcredit has a significant impact on the poor households, the problem of unmet demand should be an issue for Microcredit providers. However, microcredit's impacts have been an ongoing discussion in the literature. At first, microcredit is recognized as a tool to raise household consumption in the case of lending to women in Bangladesh (Pitt and Khandker, 1998). Khandker (2005) suggested microcredit has the ability to help the extremely poor more than helping the moderately poor. However, by using the same data set with Pitt and Khandker, Morduch (1999) found no impact on the consumption level of the borrowers. In 2009, a joint-study of Morduch and Roodman urged that the evidence of previous studies is weak as they obtained opposite results with Pitt and Khandker. In the same year, Banerjee and his team (2009) conducted a randomized evaluation of microcredit impact in India and also found no impact on the measure of health, education or women's decisions.

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While the researchers keep working on the Impact Studies, this paper turns to consider the role of microcredit in the livelihood of the poor. With the mentioned background, we suggest that there are alternative factors from the demand side (the poor households) that determine the microcredit market's outcome, and it is necessary to have a better understanding of credit demand of the poor. This might be a crucial explanation of why they do not borrow in spite having access to do so.

Numbers of studies have applied the credit demand function to examine the impacts of borrowing; however this paper precisely reviews the studies which focused on the determinants of credit demand. A study on credit demand and credit rationing in the informal financial sector in Uganda (F.N. OKURUT et al., 2005) found that credit worthiness of the households is a key determinant for increasing credit demand; the credit worthiness includes household characteristics such as age and education of household head; similar findings in Myanmar were advocated by Tomoko Kaino (2007). Jonston & Morduch (2007) also suggested the stock of fixed assets and holding property legal titles determine credit demand of Indonesian households. In general, credit worthiness is applied by the common lenders as a tool to ration the poor households from borrowing; it is the factor for evaluating the household's ability to pay back the loan, not what influences them to have demand for credit. However, it should be noted that the studies were conducted under conditions of a credit rationed market where information asymmetry prevailed and the poor households can not freely access credit due to lacking financial credibility.

In China, microcredit demand was studied by Enjiang Cheng (2006), who locates demand for microcredit as a determinant of microfinance outreach; after addressing the credit rationed issue in the field survey, Cheng found that farmers tend to have a demand for credit while the poor households with wage-income do not. Cheng advocated introducing Microfinance Plus such as vocational training and flexible financial services for the farmers; and improving off-farm opportunities and basic infrastructure might be able to reduce credit demand and keep local labor from migrating to other areas. On the other hand, Tomoko Kaino (2007) conducted a study on the segmentation of the credit market in rural Myanmar. Kaino showed that the formal lenders tend to provide credit to the farming sector while the semi-formal lenders serve multi-sectors and then concluded that those two lenders are complementary. As for credit demand, the estimation results in Myanmar showed a higher ratio of labor to total household members reduces the possibility to borrow. Literature in the cases of China and Myanmar illustrated that type of occupation and proportion of labor seemingly affects credit demand of the poor households, while they have access to credit.

As this paper intends to focus on poor households, we also review the previous discussions on the livelihood of the poor and how they manage and cope with income-risk (income and consumption smoothing). We recognize credit as a part of the risk coping mechanism for the poor households who reside in a less constrained credit market (see also Deaton 1991, Alderman & Paxson 1992, Morduch 1998, Dercon 2002). In other words, this paper treats credit as a tool for the poor to smooth their consumption and mitigate shocks. Alternatively, we bind the credit demand into the whole mechanism of risk managing and coping, and hypothesize that microcredit probably serves as a substitute to its alternative tools in the mechanism, in the condition of a less constrained credit market. In many cases, the study on the “Credit Demand Function” ended up obtaining determinants of “Credit Supply” because the studied areas were credit constrained or the sample households were rationed by the lenders. Thus, in this study, we pay particular attention to the “condition of the credit market” in the studied area and as a crucial assumption to identify the accurate determinants of microcredit demand.

This paper uses 2007 and 2008 household survey data collected in rural Laos to explore the determinants of credit demand of the poor who have access to any source of credit. Our goal is to explain the existence of non-borrowing poor, as well as to prove that the poor always hold a large demand for microcredit.

In considering determinants of credit demand, we prove that the poor households base their decision to borrow on availability of the alternative tools in risk managing and coping mechanism (*Income smoothing* and *Consumption smoothing*). Where income smoothing is represented by income diversification (*job diversification*) and income skewing (*non-farm paid job or less risky job*); and consumption smoothing consists of *credit*, *financial savings* and *risk sharing networks*. For the poor farmers who are assumed to be at risk of income shock, we advocate the greater creation of non-farm paid work, larger facilities for micro-savings and enhancing kin and social risk sharing networks to reduce the need for consumption credit. It also implies that improving the credit market in rural Laos will support households who engage in non-farm self employment. Academically, we show that only when less constrained, the credit market will exhibit the accurate credit demand of the poor, and in this condition our hypothesis works.

The rest of this paper is organized as follows. Section 2 develops the theoretical framework and empirical model. Section 3 briefly introduces Village Savings and Credit Group as a prominent microfinance model in Laos. Section 4 describes the survey data and investigates the validity of key assumptions used in this study. Section 5 discusses the estimation results on the determinants of credit demand for the poor households. Section 6 provides the conclusion and implications.

2. Theoretical Framework

2.1. Risk managing and coping mechanism

Where credit market is *less-constrained*, one of the primary motivations for borrowing in *agricultural society* is to stabilize *consumption* in the face of fluctuating incomes (Udry, 1994). We continue to assume the fluctuation of income is a type of *idiosyncratic risk* (individual risk) for the poor farmers and they commonly apply two main strategies to prevent that risk and to mitigate its consequences: (i) Income Smoothing and (ii) Consumption Smoothing.

Income Smoothing has been known as an ex-ante strategy (risk management), which includes income diversification and income skewing. The poor might be able to avoid income-shock by working in multi-occupations in order to diversify income-risk or by investing and working in low-risk occupations. While consumption smoothing is an ex-post strategy (risk coping), it is usually employed after the income-shock occurs. The poor farmers facing idiosyncratic shock can mitigate this shock by using their savings, selling their own assets, and borrowing money from their kinship and money lenders (Dercon, 2002). Combining ex-ante and ex-post strategies together as a mechanism, we can locate microcredit as a component of the ex-post part. In the less-constrained credit market (where the poor have access to credit), being successful in acquiring any alternative tools in the mechanism may lead the poor households to have less demand for credit.

2.2 Empirical Model

Holding assumptions of a less-constrained credit market, that the poor farmers are at risk of being income-shocked and they mostly borrow for smoothing consumption, following is the function of credit demand which consists of the demand-side factors influencing poor households to have a demand for credit:

$$DMC_i = F(X_i, INCS1_i, INCS2_i, CONS1_i, CONS2_i, V_j)$$

DMC_i stands for Demand for Microcredit represented by two proxies. In our Probit estimation, DMC_i is equal to 1 if the household i^{th} borrowed money at least once in the past three years and 0 if otherwise. In the Tobit estimation, DMC_i is the number of times that household i^{th} borrowed from a microfinance institution during the past three years. X_i is the vector of household characteristics which includes monthly income per average number of consumption units (includes the value of self produced and consumed rice), the adult illiteracy rate and the ratio of labor to household members (labor or adult refers to household members at age 15-64). $INCS1_i$ is income diversification which is represented by job diversification (number of occupation) and $INCS2_i$ is income skewing which refers to the

low-risk non-farm occupation (non-farm wage/salary paid). $CONS1_i$ stands for consumption smoothing 1 which is the amount of quasi-financial savings per ANCU (this includes the estimated value of gold, live-stock, bank-deposits and deposits in VSCG). $CONS2_i$ or consumption smoothing 2 is presented in the form of risk sharing networks (M. Woolcock & D. Narayan, 2000), which includes two variables: (i) the number of people in the village expected to give them financial help when they have an emergency (bridging networks) and (ii) the dummy variable represents households which experienced financial transactions with their kinship neighbors and friends (bonding networks). V_j is the vector of villages fixed effects and village dummies.

In the regression, we are interested in $INCS1_i$, $INCS2_i$, $CONS1_i$ and $CONS2_i$, while X_i and V_j are used as control variables. As elaborated in section 3.1, the $INCS1_i$, $INCS2_i$, $CONS1_i$ and $CONS2_i$ are expected to have negative correlation with credit demand of the poor households. In other words, we determine whether the poor people who have access to credit (without constraints) will have less demand for credit if they are successful in using the alternative tools for smoothing income and consumptions ($INCS1_i$, $INCS2_i$, $CONS1_i$, and $CONS2_i$).

3. A Prominent Microfinance Model in Laos

According to a comprehensive study on Rural Finance in Laos which draws on the Household and Supplier Surveys conducted in 2004 (Coleman and Williams, 2006), three Microfinance Institutes have begun to demonstrate the potential of sustainably oriented microfinance in Laos. Those institutes are (i) Savings and Credit Unions (SCUs) and Credit Cooperatives, (ii) Village Savings and Credit Groups (VSCGs) and (iii) Village Revolving Funds (VRFs). The SCUs and Credit Cooperatives are operating under regulations of the Bank of Laos, while the VSCGs and VRFs (mostly in the form of multilateral, bilateral, and INGO projects) are typically implemented through local partners and the most frequent local partner was Lao Women's Union (LWU) followed by the Ministry of Agriculture and Forestry (MAF). However, Coleman and Williams claim most microfinance initiatives demonstrated weaknesses in financial reporting.

Based on the database of the Bank of Laos as of December 2009, legal licenses were granted to thirty Microfinance Institutions (MFIs) for operating micro-financial activities under the regulations of the Bank of Laos (BOL): six deposit-taking MFIs, eight non-deposit taking MFIs, twelve SCUs and Credit Cooperatives, one Fund, two workers' unions and a postal savings. It reported that total licensed-institutions served 63,213 clients/members, mobilized savings of USD 9.73 million and disbursed loans of USD 9.95 million. In which, the SCUs and Credit Cooperatives alone covered **9,604 members** with **USD 0.79 million of savings** and provided in total **USD 2.19 million of loans**. On the other hand, there are two bilateral

projects under LWU, which initiated the VSCG model (since the late 1990s) which are not under the BOL's regulation. The VSCGs have been spreading rapidly and widely. Until June 2007, there were at least 440 VSCGs that served micro-financial services to **71,539 beneficiaries** in five provinces throughout Laos. Those VSCGs mobilized savings deposits in total of **USD 6.10 million** and the outstanding loans of **USD 5.64 million**.

The VSCG model (noticed as a credit union model) is technically supported by two bilateral projects under the cooperation of Lao Women's Union (LWU) and two NGOs from Thailand, the Foundation for Integrated Agricultural and Environment (FIAM) and the Community Organization Development Institute (CODI). The VSCGs under two projects, the Small Rural Development Project for Women (SRDP) and the Women and Community's Empowering Project (WCEP), employs a similar model of Credit Union. Five to six members of LWU in each village were elected by the members to be VSCG's management committees, therefore, to provide financial services to all members within the village. The management committees are supposed to be closely monitored by advisory committees (village institutions and indigenous groups). Due to the advantages of the strong administrative and local authorities, mass organizations, and village and township leaders, the VSCGs have been rapidly developed.

According to the available data and in terms of wide-outreach and rapid growth, we consider the VSCGs to be a prominent microfinance model in Laos. As an outreach type of microfinance, VSCGs do not concentrate on a mechanism to screen-out or discriminate clients, therefore the villagers can freely access the savings and credit services with a lower cost, more flexible procedures and at a convenient place and time (all VSCG's members are considered to be eligible to borrow, except the members below age 18). We believe that the results obtained from studying the financial behavior of households served by VSCGs will respond to our research questions and hypothesis.

4. Survey Data

4.1. Surveyed Villages

In the empirical research, we examine household data from Laos. Two times of surveys conducted in Fall 2007 and Summer 2008, cover 684 rural households in four villages. A semi-structure questionnaire and interview method were used to collect information from the respondents of almost all households in each village. Our enumerators are the students from faculty of economics in the University of Laos who were well trained on questionnaire structure and practiced how to conduct the interviews prior to starting the survey. As for the sample villages, the research's team selected the ones with Village Savings and Credit Groups (VSCGs) residing in rural the Mekong area outside the city of Vientiane (please refer

to the map in Annex 1). Table 1 shows the basic information of four villages: Natan, PhonNgam, Thanasa and DonNeau. The first two villages are located in the site of SRDP; while the latter two villages are in the area of WCEP. Geographically, Thanasa and DonNeau are located near the Mekong River which has good conditions for agricultural production. Among the four VSCGs, Ban DonNeau's group seems to have the greatest performance with USD 94,532 of total funds, average savings of USD 132.4 per account and USD 542.8 per loan respectively. This is probably because it has the longest vintage of operation. However, comparing VSCGs in Natan and Thanasa, which were established in the same year (2003), Thanasa's VSCG seems to perform better in outreach and financial terms. Thus, there might be other factors than the vintage of operation influencing the performance of the VSCGs that we should be aware of in order to avoid a biased analysis.

Table 1: Basic information of surveyed villages and their VSCGs

	SRDP ^a		WCEP ^a	
	B.Natan	B.PhonNgam	B.Thanasa	B.Donneau
1.1. Village information				
District in Vientiane Municipality	Xaythany	Xaythany	Sangthong	PakNgum
Distance from town by motorcycle (hrs)	3.5	1	2.2	2
Population (Households) ^b	177	179	204	159
1.2. VSCGs information^c				
Year of Establishment	2003	2001	2003	2000
Total funds (USD)	13,830	8,042	18,519	94,532
Avg. Savings per account (USD)	47.6	33.3	71.1	132.4
Avg. Loan per contract (USD)	133.4	87.5	244.8	542.8

^a SRDP: Small Rural Development Project for Women, WCEP: Women and Community's Empowering Project

^b Source: National Statistic Center (NSC), 2007

^c Sources: SRDP and WCEP as of December 2007.

4.1.1. Investigating Validity of Key Assumptions

Before proceeding to the empirical section, we review whether the assumptions for the studied areas are held. Firstly, the assumption of "agrarian society" where the poor farmers tend to be at risk of income-shock because farm earning is seasonally fluctuated, credit might be a part of their risk coping mechanism. However, Figures 1.a and 1.b clearly show that most of the households in the two areas (90-92% of total households and 91-94% of the poor households respectively) are working in the agricultural sector. Interestingly, the households in SRDP are more likely to be employed in non-farm sectors (besides farming). Household data show the annual agricultural income per ANCU is USD 231 for WCEP and only USD 122 for SRDP. The lower farm earning must be a reason for households in SRDP to diversify their occupation to non-farm sectors. Regarding income share (Figure 1.c), the households in SRDP are unlikely to depend on farm earning (only 29% of household income), while 50% of

household income in WCEP comes from farming. Consequently, the assumption of agrarian society may be held only for the WCEP area.

Figure 1.a: Occupation of Households in studied Areas (% of households)

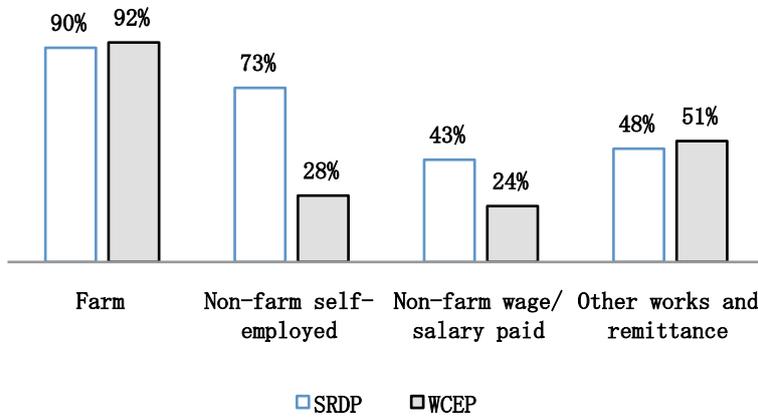


Figure 1.b: Occupation of the Poor in studied Areas (% of poor households)

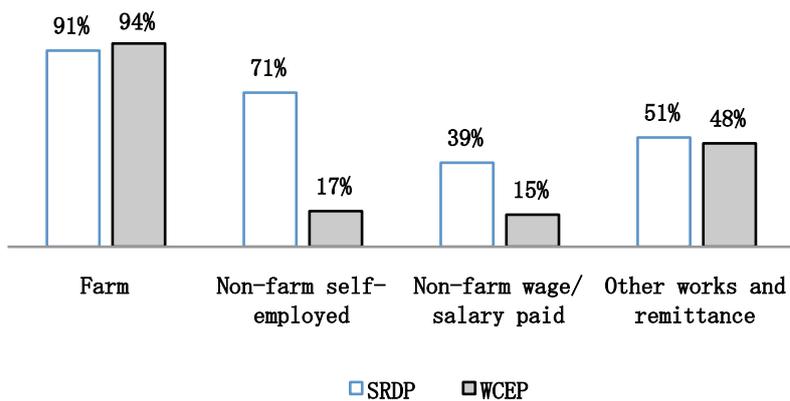
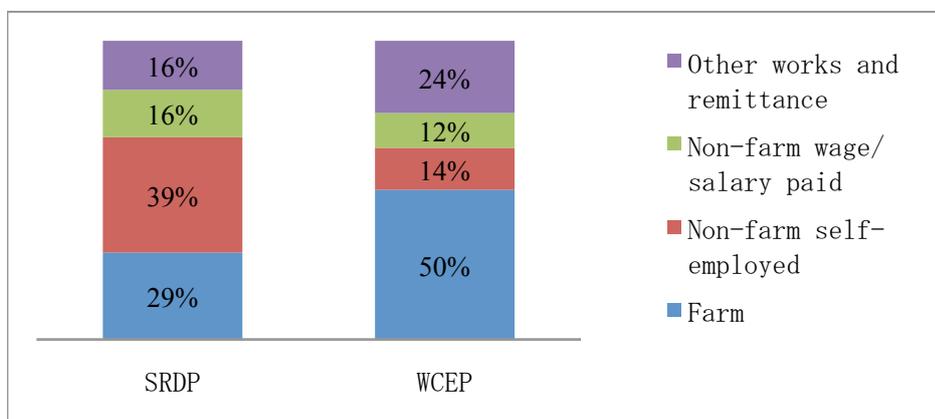


Figure 1.c: Income share by occupation of households in studied areas



The second assumption is a “*less constrained credit market*”; a market where everyone can have access to credit at competitive prices, allows us to see credit demand and its determinants accurately. Based on Jappelli (see Annex 2), we estimate the optimum consumption of each household and designate them as having desire for borrowing if the optimum consumption is higher than the available assets. The Loan-desired will then be considered as credit constrained if the households do not obtain any loans to finance their financial needs or if the loans they were provided are less than what was supposed to be demanded. The estimation presented in Table 2 shows 76 households in SRDP had a desire to borrow, but only 28 were able to obtain loans (3 households obtained loans from Banks, 22 from VSCGs and 7 from informal lenders). We find the higher rate of estimated credit constrained in SRDP (21.22% of total households) than the rate in WCEP (11.47%). We also observe the sizes and prices of loans provided by the accessible lenders in the two studied areas. Reported data in Table 3 shows the households in SRDP obtained smaller sizes of loans at comparatively high interest rates. The monthly interest rates of 4-6% reveal the excess demand for credit in SRDP, while it is unlikely in the WCEP area (about 2-3% per month). Therefore, the households in SRDP are seemingly more credit constrained; in other words, we cannot hold the assumption of a less-constrained credit market for SRDP. However, we then check the validity of the next assumption.

Table 2: Loan-desired and credit constrained households in two studied areas (Pool data in each area)

	SRDP	WCEP
5.1. Loan-Desired (Households)	76	49
5.2. Be able to get loans from all sources	28	33
% of the loan-desired	[36.84]	[67.34]
5.3. Constrained (Households)	73	39
% of the loan-desired	[96.05]	[79.59]
% of total households	[21.22]	[11.47]

Remark: It should be noted that this calculation might be overestimated. Some villagers may be not rationed by the VSCGs, they are probably averse to debt (have no willing to borrow) even they are loan-desired, in fact.

Table 3: Loan sizes and interest rates in studied areas (Pool data in each area)

Credit Providers	Project area	Avg. Loan Size (USD)	Avg. Monthly Interest (%)
Bank	SRDP	263	3.56
	WCEP	288	1.52
Savings Group	SRDP	85	4.8
	WCEP	150	2.64
Informal	SRDP	121	6
	WCEP	241	1.62

The third and important assumption is “*credit for consumption smoothing*”, where credit is a part of the consumption smoothing mechanism and assumed to have correlation to other alternative tools in the mechanism (savings and risk sharing networks). We examine the main usages of loans by households in the past three years. Table 4 displays the number of households that borrowed from three types of lenders and the percentage of time that households spent the borrowing money for multiple usages (farming, non-farming, consumption and medical treatment, and household expenses). The number of households who had access to credit confirms the largest outreaches of VSCGs among the lenders, it also appears that the poor used loans from different sources differently. In SRDP, particularly the poor, only three households borrowed money from banks and about 67% of the time those loans were used for consumption and medical treatment, while the poor in WCEP mostly used the formal loans for agricultural production. However, formal loans provided in WCEP are possibly agricultural credit because 90% of the bank borrowers reported the lender was the Agricultural Promotion Bank (APB). We turn to consider the usages of loans taken from VSCGs and informal lenders, the data shows 100% of the time the borrowers made use of the VSCG loan for both agricultural and consumption purposes. Due to the limited credit supply, the informal lenders serve poor households in SRDP for multi-purposes, while none of the poor in WCEP used loans from informal sources for agricultural purposes. Finally, the assumption on credit for consumption smoothing is partly held under the broad definition of lenders.

Table 4: Main usages of loans

			Households	Farm	Non-farm	Consumption & Medical treatment	Household expenses (Education & ceremony)
Overall (Pool)	Banks	SRDP	9	33%	22%	22%	0%
		WCEP	71	87%	1%	1%	0%
	VSCGs	SRDP	101	100%	NA	100%	35%
		WCEP	185	100%	NA	100%	14%
	Informal	SRDP	31	19%	10%	35%	19%
		WCEP	43	12%	0%	35%	7%
Poor	Banks	SRDP	3	0%	0%	67%	0%
		WCEP	20	95%	0%	0%	0%
	VSCGs	SRDP	38	100%	NA	100%	26%
		WCEP	62	100%	NA	100%	13%
	Informal	SRDP	14	21%	7%	36%	14%
		WCEP	20	0%	0%	55%	0%

The investigation insists that the SRDP area is likely to be more credit-constrained and may not exhibit credit demand accurately, and more dependent on non-farm earning which is far from being at risk of idiosyncratic shock. We acknowledged that two of our assumptions are not held in the SRDP area and it is not possible for us to fix this problem in the field survey, we need to be aware of these facts when interpreting the empirical results for SRDP.

4.2. Studied VSCGs

In Table 5, we use household's monthly income per average number of consumption units (ANCU) to identify the poor households based on the Lao National Poverty Line, USD 22.57 per person per month (the Prime Minister's Decree on Poverty and Development Standard dated October 13th, 2009). The identification shows 40% of households in our sample were living under the Poverty Line, while Ban Natan is the poorest village, as 57% of the households were living with monthly income under USD 22.57 per ANCU. In terms of wide outreach, VSCG in Ban DonNeau achieved the largest coverage (99% of total households). A similar story can be applied for depth outreach when 98% of the poor in Ban DonNeau were able to access financial services provided by VSCG. The depth outreaches are lower for the rest of VSCGs, 68% of the poor in Thanasa, 50% in PhonNgam and 48% in Natan. In considering the rates of borrowing, the VSCGs under SRDP seem to have lower borrowing rates (27-34% of members) compared to the VSCGs (54-59% of members) in WCEP. In

terms of depth outreach, the poor members in Thanasa and DonNeau tend to borrow at higher rates as well (58-60% of the poor members).

Table 5: Participation and borrowing in surveyed VSCGs

		B.Natan	B.PhonNgam	B.Thanasa	B.Donneau	Total
2.1. Surveyed Households		175	169	202	138	684
- Poor ^a (Households)	C1+D1	100	54	77	44	275
(% of total households)		[57%]	[32%]	[38%]	[32%]	[40%]
- Monthly Income per ANCU ^b (USD)		23.1	42.9	41.6	50.1	38.8
2.2. VSCG's Wide Outreach						
- Members (Households)		83	76	157	137	453
(% of total households)		[47%]	[46%]	[78%]	[99%]	[66%]
2.3. VSCG's Depth Outreach						
- The poor members (Households)	C2+D2	48	27	52	43	170
(% of poor households)		[48%]	[50%]	[68%]	[98%]	[62%]
2.4. VSCG borrowers						
- Borrowers (Households)		28	21	92	74	215
(% of total members)		[34%]	[27%]	[59%]	[54%]	[47%]
- Poor borrowers (Households)	C2	14	5	30	26	75
(% of poor members)		[29%]	[19%]	[58%]	[60%]	[44%]

^a Poor: identified as the household below Lao National Poverty Line, 192.000 kip/person/month (USD22.57), based on Prime Minister Decree on Poverty and Development Standard, dated October 13th 2009. (USD 1= 8505 kip as of October 13th 2009 at BCEL bank).

^b ANCU= Average Number of Consumption Units: calculated as 1 for the first adult in the household, 0.9 for other adults, 0.4 for children below age 7 and 0.7 for children aged 7-15. And Adult is identified as a household member at age 15-64.

4.2.1 Investigating Credit Rationing in VSCGs

The comprehensive set of household data allows us to verify whether VSCGs in two project areas ration and discriminate in lending to their poor clients. The comparison of group means is applied to check the differences in wealth level of the borrowers and non-borrowers, and the indicator of wealth refers to four proxies: durables, gold, income and expenditures. In Table 6, M_b represents the mean of wealthy proxy for borrowers and M_{nb} stands for the mean of the non-borrowers; we also use the simple t-test to verify the significance of differences between the group's means (M_b and M_{nb}). The comparison and testing show that borrowers in SRDP seem to be richer than non-borrowers, and oppositely the borrowers in WCEP are poorer. This implies the poor members of VSCGs in SRDP must be credit rationed and screened out from borrowing. Again, the borrowing information obtained from surveyed households in SRDP is more likely to be supply-side information which may not reveal the real credit demand of the households. Thus, our assumption on less credit-constrained for SRDP is confirmed to be violated and our theoretical framework may not be able to

empirically proved by using data from SRDP. However, we will use SRDP as the reference for WCEP in our empirical section.

Table 6: Comparing group means of borrowers and non-borrowers of VSCGs (Pool data in each area)

		Difference ($M_b - M_{nb}$)	P-value
9.1. Durables (Items/capita)	SRDP	0.105	0.034
	WCEP	-0.104	0.053
9.2. Gold (Baht/household)	SRDP	2.293	0.150
	WCEP	-0.376	0.022
9.3. Income (kip/ancu/month)	SRDP	62,289	0.102
	WCEP	-96,475	0.078
9.4. Expenditure (\$PPP/ancu/day)	SRDP	0.172	0.097
	WCEP	-0.216	0.093

4.3. Sample Households

We firstly use the National Poverty Line (mentioned in section 4.1) to obtain two different groups: poor and non-poor in each village. Information of borrowing experiences (from Banks, VSCGs and Informal lenders) were reported during the survey; this permits us to form the group of non-borrowing poor, D1 and D2 in Figures 2.a and 2.b. In our empirical study, we will utilize household data from the group of (C1+D1) to examine the credit demand function for all sources (Banks, VSCGs and Informal lenders) and the data in the group of (C2+D2) to identify determinants of demand for credit from VSCGs.

Figure 2.a: Sample Households for Demand for Credit from All Sources (C1+D1)

		Sample Village	
		Borrowers (Banks, VSCG & Informal lenders)	Non-Borrowers (Banks, VSCG & Informal lenders)
Non-Poor		A1	B1
Poor		C1	D1

Figure 2.b: Sample Households for Demand for Credit from VSCGs (C2+D2)

		VSCG's Members		VSCG's Non-Members
		Borrowers	Non-borrowers	
Non-Poor		A2	B2	E2
Poor		C2	D2	F2

Since the sizes of (C1+D1) and (C2+D2) are too small (compare to the number of the variables) to separately run the regression in each village, we borrowed the findings in sections 4.1 and 4.2 to cluster two groups of samples for running our Probit and Tobit regressions: (i) the SRDP group which consists of the poor in Ban Natan and PhonNgam, and (ii) the WCEP group that includes the poor households in Ban Thanasa and DonNeau (see more in Annex 3). We expect to use the village dummies and village fixed effect to control for the differences in credit demand.

5. Credit Demand of the Poor

As stated in section 3.2, the demand for credit in this study is defined in two terms: (i) decision made to borrow and (ii) the frequency of borrowing in the past three years. While the lender is also defined in two terms: *the lender in broad terms* refers to banks, VSCGs and Informal lenders (relatives, friends, neighbors and money lenders); and *the lender in narrow terms* means the VSCGs. The description of variables used in the regressions will be presented in Annex 4.

5.1. Demand for Credit in General (Lender in Broad Terms)

From the surveyed data we can identify the poor households had borrowed money from banks, VSCGs and Informal lenders at least once in the past three years, and the number of loans taken. Based on a broad definition of lender, we firstly estimate the Probit and Tobit models of credit demand of the poor in SRDP and WCEP (Table 7 and Table 8). Apparently, the estimation results seem to be significant only for WCEP. A reason for the insignificant results of SRDP can be raised (without any surprise) that the data on borrowing we obtained from survey in this area is not represented as the accurate credit demand from the poor households, due to the poor households being more credit-constrained and rationed by their VSCGs.

In Table 7, the significantly negative coefficients for variables of monthly income per ANCU in both SRDP and WCEP reveal the common issue that the poorer households are more likely to borrow. Similar to the findings in previous studies, adult illiteracy seems to decrease the

likelihood of borrowing, while the ratio of labor to household members is less likely to have a correlation with credit demand. As for our interested variables, job diversification (*INCS1*) appears to have an insignificantly positive sign; and the estimated magnitude of this variable varied based on the classification of type of occupation. Oppositely, type of occupation tends to be more relevant in determining the probability to borrow. In WCEP, the poor who are non-farm self employed tend to borrow for financing their businesses and the ones who work in non-farm wage/salary paid sectors are less likely to have a demand for loans; this is probably because the income is regularly paid and less risky (*INCS2*). The significantly negative signs of quasi-financial savings and risk sharing networks (*CONSI and CONS2*) in WCEP indicate that a 1% increase in quasi-financial savings per ANCU will reduce the probability to borrow by 9%, and if the risk sharing networks increase by 1 person, the likelihood of taking a loan will decrease by 3%. As for village fixed effects, yeast making as the common non-farm activity in Ban DonNeau appears to be insignificant in our estimation. The results for WCEP shown in the Tobit model (Table 8) confirm similar findings found in the Probit model, credit demand (the frequency of borrowing) is determined by quasi-financial savings and the risk sharing network of the poor household. Additionally, type of occupation (non-farm wage/salary paid) appears to be relevant in influencing the poor households to have less demand on credit.

Table 7: Credit demand of the poor (credit from all sources: banks, VSCGs and Informal lenders): PROBIT

	SRDP				WCEP			
	[1]		[2]		[1]		[2]	
	Marginal	P-value	Marginal	P-value	Marginal	P-value	Marginal	P-value
Income	-2.00E-06	0.037 **	-2.00E-06	0.06 *	-2.00E-06	0.073 *	-2.00E-06	0.173
Adult illiteracy	-0.078	0.674	-0.073	0.687	-0.611	0.043 **	-0.71	0.024 **
Labor	0.031	0.881	0.088	0.695	0.364	0.24	-0.254	0.263
Job diversification	0.044	0.404			0.064	0.475		
Farm			0.124	0.403			0.181	0.326
Non-farm self-employed			0.119	0.582			0.322	0.052 *
Non-farm wage/salary paid			-0.005	0.955			-0.254	0.096 *
Other works and remittance			0.119	0.128			0.099	0.398
Quasi-financial savings	0.044	0.109	0.041	0.134	-0.091	0.016 **	-0.09	0.019 **
Risk sharing networks (bridging)	-0.01	0.509	-0.007	0.654	-0.033	0.022 **	-0.029	0.041 **
Weaving	0.097	0.273	0.143	0.21				
Yeast making					-0.047	0.87	-0.16	0.554
Natan	0.149	0.081 *	0.144	0.092 *				
DonNeau					-0.104	0.42	-0.1	0.48
Number of obs		147		147		105		105
LR chi2(8)		13.65		14.84		20.36		24.35
Prob > chi2		0.091		0.190		0.009		0.011
Pseudo R2		0.076		0.091		0.148		0.216
Log likelihood		-83.667		-82.3		-60.245		-55.41

Table 8: Credit demand of the poor
(credit from all sources: banks, VSCGs and Informal lenders): TOBIT

	SRDP		WCEP	
	Coef.	P-value	Coef.	P-value
Income	-9.00E-06	0.055 *	-3.00E-06	0.489
Adult illiteracy	-0.032	0.978	-1.183	0.182
Labor	0.714	0.575	0.178	0.859
Farm	0.752	0.402	0.649	0.442
Non-farm self-employed	-0.044	0.949	0.528	0.287
Non-farm wage/salary paid <i>INCS2</i>	-0.098	0.857	-1.134	0.036 **
Other works and remittance	0.447	0.314	-0.019	0.961
Quasi-financial savings <i>CONSI</i>	0.227	0.157	-0.26	0.032 **
Risk sharing networks (bridging) <i>CONS2</i>	-0.044	0.628	-0.132	0.023 **
Weaving	0.677	0.317		
Yeast making			-0.048	0.959
Natan	0.886	0.077 *		
DonNeau			-0.415	0.34
Constant	-5.711	0.027	4.386	0.017 **
Number of obs		147		105
LR chi2(8)		16.45		26.99
Prob > chi2		0.125		0.005
Pseudo R2		0.055		0.085
Log likelihood		-142.3		-144.89

5.2. Demand for Credit from VSCGs (Lender in Narrow Terms)

Previously we confirmed that determinants of credit demand for the poor are what we hypothesized, except for *INCSI* which may be because of taking an inappropriate proxy of job diversification. However, in this section we reduce the scope of the sample and definition of lender by focusing on demand for credit from VSCGs (only) to obtain clearer findings, and using the reduced-model identification (without *INCSI*).

The Probit and Tobit estimations in Table 9 provide confirmation on what we obtained in Table 7 and Table 8 with more significant results, that credit demand of the poor who are members of VSCGs in WCEP is determined by type of occupation (non-farm wage/salary paid), level of quasi-financial savings and risk sharing networks. On the other hand, the results for SRDP remain insignificant. In WCEP, the coefficients of VSCGs' credit demand are more significant and larger, especially for variables of non-farm self-employed and risk sharing networks. As for risk sharing networks, we replaced the number of people in the village expected to give them financial help when they face emergency expenses (bridging networks) by the dummy variable representing households which experienced financial transactions with their kinship neighbor and friends (bonding networks), therefore the interpretation for this variable will be slightly different. For example, interpreting the results of risk sharing networks in the Probit model, the poor households who experienced financial transactions (lending and borrowing) with the kin networks tend to have 49% less possibility of borrowing money from VSCGs compared to the poor who do not have any financial connection with their kinship. In comparing marginal effects among the alternative tools of VSCG's credit, social networks seem to be the greatest influence among the other tools (type of occupation and savings).

6. Conclusion and Implication

This paper has focused on the phenomena of non-borrowing poor in conditions where the poor already have access to credit; we aim to prove the common belief that the poor hold a large demand for credit. The determinants of credit demand were identified by setting credit as a tool in risk managing and coping mechanism, we hypothesized that being successful in using the alternative tools in the mechanism will induce the poor to have less demand for credit. This framework fixed our interested households to be under three main assumptions: *agrarian society, less constrained credit market and credit for consumption*. Before conducting the estimation, we investigated our survey data and found that the condition in the SRDP area violated the assumptions of agrarian society and a less constrained credit market. Therefore using the household data from SRDP may not be consistent with our assumptions and hypothesis, SRDP is treated as the reference for WCEP. The estimation results confirmed our hypothesis on determinants of credit demand is correct, as expected it is true only for WCEP (not for SRDP). The phenomena of non-borrowing poor can be explained in the way that the non-borrowing poor might be working in less risky sectors where income flows regularly, they may hold larger amounts of quasi-financial savings, and, importantly, their connection with kin and social networks seems to be stronger and wider; therefore they can rely on these options and less likely to have a demand for credit.

A new theoretical figure in the current paper is the comprehensive framework of credit-demand that takes account of the behavior of poor households. For consumption credit, our study confirmed the previous findings on the role of wage-income (China's case by Cheng, 2006) and household savings (Deaton, 1990) in stimulating less demand for credit, and it contributed a bullet point to acknowledge the social capital (bonding networks among kinship and bridging social networks) as an important factor for the poor to smooth their household consumption. For remote areas in developing countries where opportunities for non-farm work rarely exist and facilities for savings is underdeveloped, the strong and dense connection among kinship and social networks in a community is the most crucial option for the poor people to avoid taking consumption credit which is costly.

The discussion in this paper emphasizes the importance of the data treatment. We advocate that the studies on impact and outreach for any credit programs need to pay particular attention to the socio-economic condition and environment of a credit market in the studied area, as long as the credit demand (households) and supply (lenders) are concerned.

In Laos, the majority of the population works in the farming sector. For Lao farmers, consumption smoothing appears to be driven largely by microcredit, precautionary savings and common risk sharing networks. Creating opportunities for non-farm employment, promotion of a microfinance scheme which includes both savings and credit, and strengthening village communities seem to be the crucial needs.

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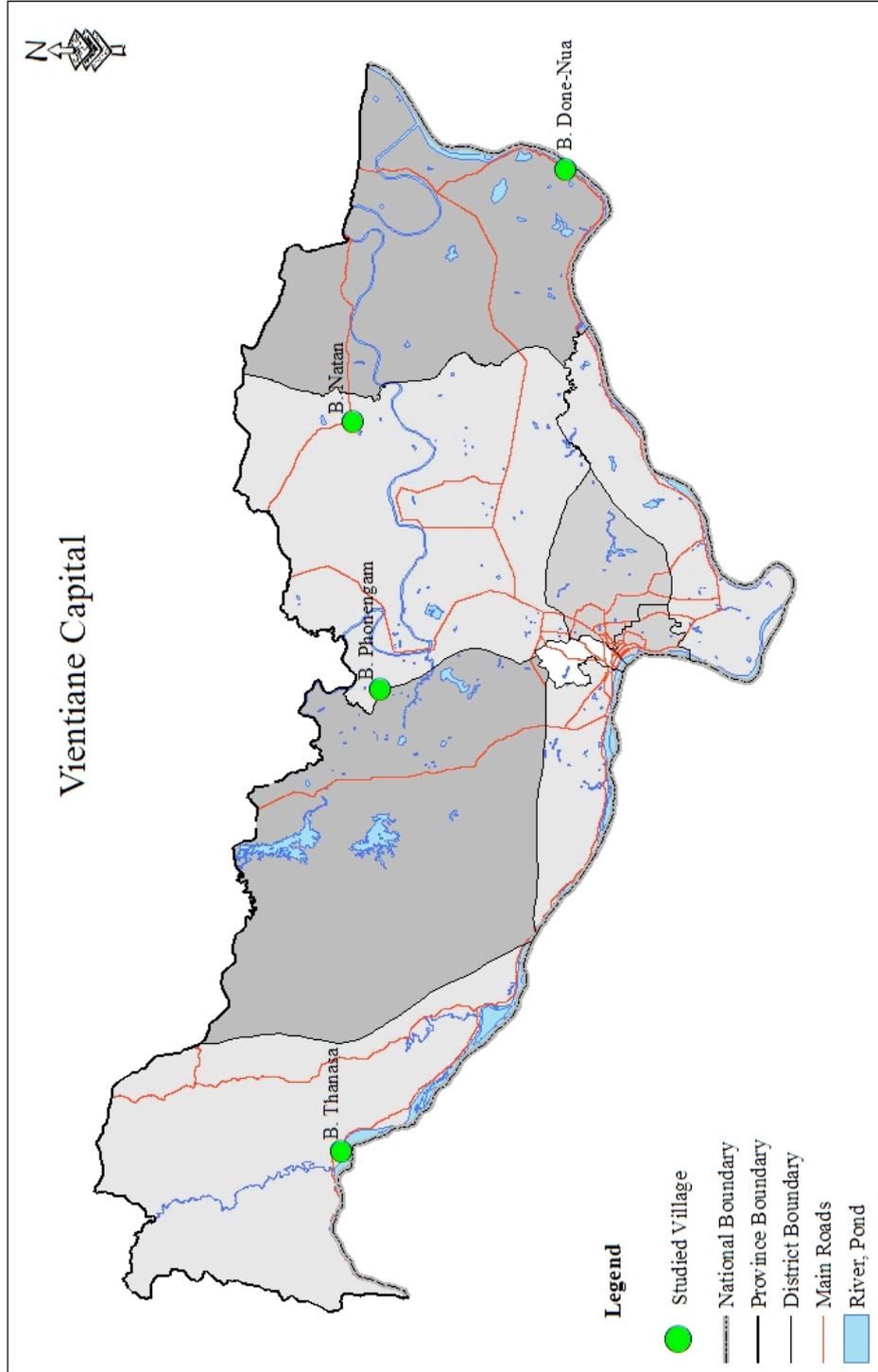
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ANNEXES

Annex 1: Map of Vientiane and the studied villages



Annex 2

Jappelli (1990)

Credit constrained: $C^ - Y - A*(1+r) > D$*

C=optimum household consumption, Y= household income, A= non-human wealth, r= real interest rate, D= loan offered from all sources in the past one year.*

Annex 3: Grouping sample of interest

	SRDP			WCEP		
	Natan	PhonNgam	Total	Thanasa	DonNeau	Total
C1+D1	100	54	154	77	44	121
C2+D2	48	27	75	52	43	95

Annex 4: Variable description

SRDP (Poor's group)		Obs	Mean	Std. Dev.	Min	Max
General credit demand (Probit)	<i>Dummy of households had borrowed from Banks VSCGs and Informal lenders in the past three years</i>	154	0.305	0.462	0	1
General credit demand (Tobit)	<i>Number of loans households had borrowed from Banks VSCGs and Informal lenders in the past three years</i>	154	0.474	0.872	0	5
VSCGs credit demand (Probit)	<i>Dummy of VSCGs' members who had borrowed from VSCGs in the past three years</i>	75	0.253	0.438	0	1
VSCGs credit demand (Tobit)	<i>Number of loans VSCGs' members had borrowed from VSCGs in the past three years</i>	75	0.360	0.799	0	4
Income	<i>Monthly income per average number of consumption units (USD)</i>	154	10.4	5.9	0.6	22.5
Education	<i>Adult illiteracy rate (ratio to all adult in household)</i>	154	0.129	0.203	0	1
Labor	<i>Ratio of labor to total household members</i>	154	0.764	0.212	0.286	1
Job diversification	<i>Number of type of occupation</i>	154	2.519	0.842	0	4
Farm	<i>Dummy</i>	154	0.909	0.288	0	1
Non-farm self-employed	<i>Dummy</i>	154	0.714	0.453	0	1
Non-farm wage/salary paid	<i>Dummy</i>	154	0.390	0.489	0	1
Other works and remittance	<i>Dummy</i>	154	0.506	0.502	0	1
Quasi-financial savings	<i>Quasi-financial savings per average number of consumption unit (USD)</i>	154	247	272	0	1387
Risk sharing networks (bonding)	<i>Dummy variable represents household which experienced financial transaction with their kinship</i>	154	0.435	0.497	0	1
Risk sharing networks (bridging)	<i>Number of people in the village expected to give them financial help when they have an in emergency</i>	154	2.253	2.586	0	20
Yeast making	<i>Dummy</i>	154	0	0	0	0
Weaving	<i>Dummy</i>	154	0.649	0.479	0	1
Natan	<i>Dummy</i>	154	0.649	0.479	0	1
DonNeau	<i>Dummy</i>	154	0	0	0	0

WCEP: (Poor's group)		Obs	Mean	Std. Dev.	Min	Max
General credit demand (Probit)	<i>Dummy of households had borrowed from Banks VSCGs and Informal lenders in the past three years</i>	121	0.620	0.487	0	1
General credit demand (Tobit)	<i>Number of loans households had borrowed from Banks VSCGs and Informal lenders in the past three years</i>	121	1.058	1.185	0	8
VSCGs credit demand (Probit)	<i>Dummy of VSCGs' members who had borrowed from VSCGs in the past three years</i>	95	0.589	0.495	0	1
VSCGs credit demand (Tobit)	<i>Number of loans VSCGs' members had borrowed from VSCGs in the past three years</i>	95	0.821	0.945	0	6
Income	<i>Monthly income per average number of consumption units (USD)</i>	121	13.1	5.8	2.1	22.1
Education	<i>Adult illiteracy rate (ratio to all adult in household)</i>	121	0.095	0.211	0	1
Labor	<i>Ratio of labor to total household members</i>	121	0.740	0.188	0.333	1
Job diversification	<i>Number of type of occupation</i>	121	1.736	0.602	1	3
Farm	<i>Dummy</i>	121	0.942	0.234	0	1
Non-farm self-employed	<i>Dummy</i>	121	0.165	0.373	0	1
Non-farm wage/salary paid	<i>Dummy</i>	121	0.149	0.357	0	1
Other works and remittance	<i>Dummy</i>	121	0.479	0.502	0	1
Quasi-financial savings	<i>Quasi-financial savings per average number of consumption unit (USD)</i>	121	192	246	0	1122
Risk sharing networks (2)	<i>Dummy variable represents household which experienced financial transaction with their kinship (bonding network)</i>	121	0.281	0.451	0	1
Risk sharing networks (1)	<i>Number of people in the village expected to give them financial help when they have an emergency (bridging network)</i>	121	3.273	3.483	0	20
Yeast making	<i>Dummy</i>	121	0.033	0.180	0	1
Weaving	<i>Dummy</i>	121	0.017	0.128	0	1
Natan	<i>Dummy</i>	121	0	0	0	0
DonNeau	<i>Dummy</i>	121	0.364	0.483	0	1