The Impact of the Village Fund on Rural Households*

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1. INTRODUCTION

The Village and Urban Community Fund Project, widely known as the Village Fund (VF) program, was an outcome of the populist policies that had been put into effect almost immediately after the Thai Rak Thai Party won the election in 2001. The program allocates 1 million baht (approximately US$31,000) to each of the almost 75,000 villages nationwide. It became one of the most quickly implemented micro-credit programs in the world.

As a micro-credit program, VF provides borrowers who face difficulties in accessing the formal credit system with small, low-interest loans without collateral. The theory of micro-credit holds that an increase in credit accessibility helps to alleviate poverty by increasing investment opportunities, and this results in an increase in income and asset accumulation.

One of the most important factors that enables micro-credit to achieve poverty reduction goals is that borrowers must spend the money in an income-generating project. However, such spending is unlikely among low-income borrowers who always have urgent, necessary expenditures to make, such as expenditures on food, student uniforms, and home repairs. In addition, most low-income borrowers are risk-averse and have limited investment channels, and therefore limited opportunities to take advantage of such loans. In the face of these characteristics of low-income borrowers, micro-credit alone might be questionable as a means for fighting poverty.

VF has been in operation for almost eight years, yet the number of empirical assessments of the program's impacts has been small, despite its importance both in terms of the budgets spent and the number of people involved. Most studies on VF have been institutional assessments or simple participant and non-participant comparison evaluations. The results from some studies are mingled with selection bias, a problem that occurs when the program is specifically targeted at certain groups of people, which in this case is low-income households. When program participation is not random, the participant and non-participant characteristics, both observed and unobserved, are bound to be different, e.g., income and work effort. One solution for coping with this problem is to use experimental design evaluation, which randomly selects program participation. However, such an experiment would be out of the question for the VF program, which from its inception was aimed at achieving nationwide coverage as quickly as possible.

Evaluation of VF in this study utilizes a quasi-experimental evaluation technique, i.e., Propensity Score Matching (PSM), and double difference to measure its impact on household income, expenditures and the incidence of poverty. PSM is a useful tool for an impact evaluation. However, it cannot be generalized to every evaluation, particularly when the quality of data is low (Smith and Todd, 2005). This paper is divided into four sections. The second section describes the VF program in more detail, including program achievement. The third section covers methodology and data, and section 4 presents the results and conclusions.

* *An earlier version of this paper was presented at the 2007 TDRI Year-end Conference on "Tackling Poverty: Liberalism, Populism or the Welfare State," November 10-11, 2007, Ambassador City Hotel Jomtien, Chonburi, Thailand.*

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2. THE VILLAGE FUND PROGRAM

The VF program is the outcome of one of the public policies aimed at alleviating poverty through stimulation of the grass-roots economy. It is aimed at creating credit access for households in rural areas and urban communities by allocating 1 million baht to each village or community so that each of them can set up a revolving fund for its members. Its main objectives are (1) to create a financial source for such purposes as investment, career development, income-generation and job formation, and paying for emergencies and public utilities, (2) to develop capital management ability among the village and urban communities, and (3) to promote self-reliance, learning, and the taking of initiative as well as sustained economic development.

Administration

The central government appointed the Village and Urban Community Fund National Committee to administer the Fund at the national level, including functions such as creating strategic plans and allocating funds. Sub-committees then administrate it at the local level by monitoring the funds and coordinating with the district-level committee.

In order to establish the fund in a village, members of that community must set up a VF committee to operate the fund and draft regulations such as the interest rate to be charged and the repayment process to be followed in line with the guidelines of the Village Fund Act. The central regulations determine only that the term of a loan should be one year and the amount approved should not exceed 20,000 baht per person, although it can be extended to 50,000 baht in certain cases. Every village fund member is eligible to apply for a loan.

After a village fund has been established, the committee registers the fund with the Government Savings Bank (GSB) or Bank for Agriculture and Agricultural Cooperatives (BAAC) (see Figure 1). After VF passes capacity evaluation, the bank transfers 1 million baht to the VF account within 30 days. A village that fails its evaluation can seek assistance from a neighboring village. In such cases, the village usually ends up copying regulations from the other village and re-submitting the application.

Although VF intends to improve the quality of life of people at the grass-roots level, the project evidently is a tool of a political party used to augment its popularity. As a result, the administrators of the fund at the central and local levels might not have any incentive either to disapprove an application lacking a potential investment plan or to monitor whether the funds loaned to members have been spent in accordance with the purpose stated in the application. Approving loans regardless of the borrower's potential to repay and his or her needs could create a debt burden and jeopardize the borrower's financial standing when the debt is due.

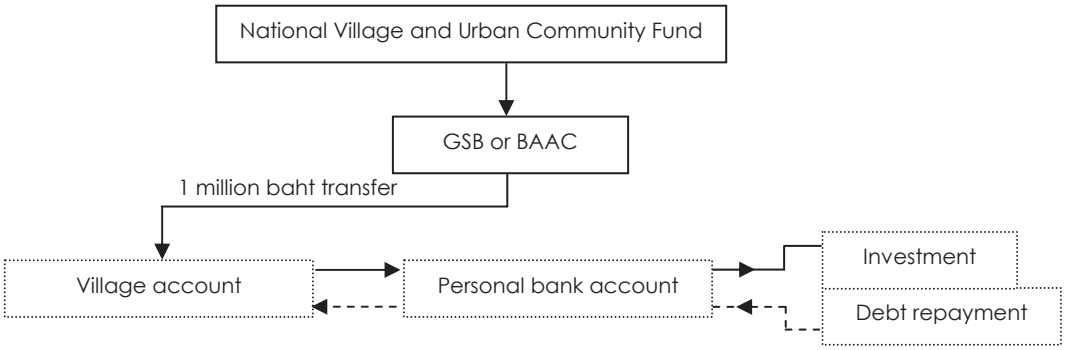
Target and Accomplishment

The VF program has had a high degree of accomplishment in establishing funds and distributing loans to villages. This is, somehow, not a surprise as the villagers consider the 1 million baht fund to be a windfall. The cost of forming a VF committee and following other regulations is not high among low-income households. The initial target in 2001 was to provide loans to 74,881 communities: 71,508 villages and 3,377 urban communities. By the end of 2001, 99 percent of the target communities had already set up funds and 98 of them received 1 million baht each. In 2004, the target was extended to 78,829 communities. Again, it was not a surprise that the funds could be transferred to the new VF so quickly.

Program Participation

Around 90 percent of the participants, i.e., those who get loans, live in rural areas and around half the participants live in the northeastern region of Thailand (Table 1). About 70 percent of the participants have a lower monthly income and level of consumption and a slightly larger household size than the others. The heads of the participating households tend to have spent less than six years in school.

Figure 1 The Village Fund Circle



Source: National Village and Urban Community Fund.

Table 1 Comparison of Participants and Non-participants

		2002		2004	
		Participants	Non-participants	Participants	Non-participants
Community type (%)	Urban	9.7	44.0	13.3	46.5
	Rural	90.3	56.0	86.8	53.5
Region (%)	Central	17.6	25.2	19.2	26.8
	North	22.5	18.3	23.3	18.6
	Northeast	49.9	25.2	46.9	23.2
	South	9.9	13.4	9.8	14.1
Income quintile (%)	First (poorest)	22.3	13.4	21.8	13.0
	Second	25.5	15.4	24.4	14.5
	Third	24.0	17.8	23.6	17.4
	Fourth	18.2	22.6	18.7	22.4
	Fifth	10.0	30.9	11.5	32.6
Monthly household income (baht)		2,672	5,238	3,222	6,054
Monthly household consumption (baht)		2,048	3,612	2,528	4,290
Household size (persons)		3.89	3.36	3.87	3.19
Education of household head (years)		4.95	6.59	5.11	6.90
Number of observations		7,243	27,542	10,268	24,575

Source: Data from Socio-Economic Survey, 2002 and 2004.

3. METHODOLOGY AND DATA

To evaluate the impact of VF, it is necessary to compare the outcome indicators of the participating households (treatment group) with the outcome indicators of the non-participating households (comparison group). In this paper, the outcome indicators are household income, household expenditure, and poverty headcount ratio. When program participation is not assigned randomly (such as VF participation), a simple comparison of the outcome indicators of participating and non-participating households (treatment and comparison groups) generates a biased result.[1] The comparison group should represent the participating households, if they were not participating. In other words, it should represent the counterfactual of the treatment group.

Practically, we do not observe counterfactual or average income (consumption or poverty headcount ratio) of participating households if they did not participate in the VF program. This problem can be overcome by using PSM, a method which selects the comparison group using propensity scores, P(Z), estimated from a set of exogenous control variables (Z) representing observable control variables.

By letting T = 1 represent VF program participation and T = 0 otherwise, propensity scores can be estimated from the following equation:

$$P(Z) = \Pr(T = 1 \mid Z) \;; 0 < P(Z) < 1 \qquad (1)$$

PSM is a conditional probability. Under an independent assumption,[2] matching the non-participants with similar P(Z) as the participating households could eliminate the selection bias. To what degree would depend upon how well is the matching. The perfect matching would ensure that the matched comparison group is similar to the participants, had the program not being executed. Equation (2) will be estimated using logit regression.

The average treatment effect, the average impact of VF or D in equation (2), can be calculated by comparing the outcome of the treatment group and its counterfactual:

$$D = E(Y^T \mid T = 1, Z) - E(Y^C \mid T = 0, Z) \qquad (2)$$

where Y^T is the conditional mean outcome of treatment and Y^C is the conditional mean outcome of the matched comparator.

However, the single difference in equation (2) contains a strong assumption on conditional mean independence, that is expected the counterfactual mean outcome is equal to the expected non-participant mean outcome, $E(Y^T \mid T = 1, Z) - E(Y^C \mid T = 0, Z)$. In this paper, equation (3) shows that double difference (DD), with a weaker assumption, is used. It is assumed that selection bias is either time-invariant or the outcome changes for non-participants are similar to the counterfactual outcome changes.

$$DD = E(Y_1^T - Y_0^C \mid T_1 = 1, Z) - E(Y_1^C - Y_0^C \mid T_1 = 0, Z) \qquad (3)$$

The above equation compares the average outcome of the treatment and comparison groups before and after VF intervention. Subscription 0 represents the time before VF intervention and 1 is for the time after VF intervention. Using DD is also expected to eliminate any bias caused by time-invariant unobserved variables that cannot be captured by Z.

The following section shows the results obtained from estimating equations (1) and (3). The data are from the Socio-Economic Survey (SES) conducted by the

National Statistical Office. The samples comprise rural households that were interviewed in quarters 2 and 3 in both 2002 and 2004. The 2002 SES is treated as a baseline survey for both non-participants and participants. The 2004 SES is a follow-up survey of both groups after intervention. The variables used and descriptive statistics are shown in Tables 2 and 3, respectively.

A total of 5,543 households were interviewed in both years, of which 1,097 households got loans from VF in 2004. Households in the northern part of Thailand have the smallest number of household members, but the highest proportion of household heads with the lowest level of education. In general, the average age of heads of rural households is quite high, above 50 years, and the average education level is quite low, less than four years. Most households own land or house and do not move to other districts for at least 10 years. Households in the central and southern part of the country have a higher proportion of wage income than the other two regions. More than 30 percent of households in the northeastern and southern regions earn farm income from their own land.

Table 2 Variables Used in the Propensity Score Model

Variable	Description
Household characteristics:	
Size	Number of household members
Earners	Number of income earners in the household
Members attending school	Number of members attending school
Type: One person	= 1 for a one-person household
Head and spouse	= 1 for a household with head and spouse only
One parent and unmarried child	= 1 for a household with single parent and unmarried children
Tenure	= 1 if household owns dwelling and/or land
No move	= 1 if living in the same district more than 10 years
Telephone	= 1 if having a fixed-line telephone
Motorcycle	Number of motorcycles in the household
Main source of household income:	
Farm operators on their own land	= 1 for farming on owned land
Farm operators on rented land	= 1 for farming on rented land
Entrepreneurs	= 1 for entrepreneurship
Professional	= 1 for professional careers
Labor	= 1 for farm/general workers
Other employees	= 1 for sales/service/production workers
Economically inactive	= 1 for economically inactive household
Household head's characteristics:	
Male	= 1 for male household head
Age	Age of head of household
Never married	= 1 for single head
Widowed/divorced/separated	= 1 for widowed/divorced/separated
Education: Below lower elementary	= 1 if highest education is below grade 4
Lower elementary	= 1 if highest education is lower primary
Upper elementary	= 1 if highest education is upper primary
Lower secondary	= 1 if highest education is lower secondary
Upper secondary	= 1 if highest education is upper secondary
Above secondary	= 1 if highest education is higher than upper secondary

Table 3 Descriptive Statistics 2004

Region	Central		North		Northeast		South	
Variables	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.
Household characteristics:								
Size (number of persons)	3.61	1.63	3.26	1.39	3.78	1.59	3.91	1.74
Earners (number of persons)	2.03	1.12	1.90	1.01	2.17	1.11	2.11	1.03
Members attending school (persons)	0.88	0.94	0.74	0.84	1.01	0.95	1.06	1.10
Type: One person	8%	0.27	9%	0.29	6%	0.23	7%	0.25
Head and spouse	66%	0.47	69%	0.46	72%	0.45	74%	0.44
One parent with unmarried child	12%	0.32	10%	0.30	10%	0.30	9%	0.29
Tenure	91%	0.28	96%	0.19	97%	0.16	94%	0.22
No move	58%	0.49	69%	0.46	71%	0.45	68%	0.47
Telephone	28%	0.45	17%	0.38	5%	0.22	15%	0.35
Motorcycle	1.03	0.83	1.00	0.79	0.93	0.72	1.27	0.88
Main source of household income:								
Farm operators on their own land	13%	0.34	21%	0.41	34%	0.47	32%	0.47
Farm operators on rented land	6.3%	0.24	1.0%	0.30	3.5%	0.18	1.7%	0.13
Entrepreneurs	18%	0.38	11%	0.32	10%	0.30	13%	0.34
Professional	9%	0.28	5%	0.21	5%	0.23	6%	0.24
Labor	10%	0.30	13%	0.34	6%	0.24	18%	0.38
Other employees	29%	0.45	19%	0.39	17%	0.37	18%	0.38
Economically inactive	14%	0.35	20%	0.40	24%	0.43	9%	0.29
Head of household characteristics:								
Male	64%	0.48	71%	0.46	76%	0.43	78%	0.41
Age	53.09	14.10	53.35	13.95	51.99	13.34	52.14	14.58
Never married	5%	0.21	3%	0.17	2%	0.15	2%	0.15
Widowed/divorced/separated	19%	0.39	22%	0.41	20%	0.40	20%	0.40
Education: Below lower elementary	12%	0.32	24%	0.43	7%	0.25	18%	0.38
Lower elementary	58%	0.49	55%	0.50	70%	0.46	48%	0.50
Upper elementary	12%	0.32	11%	0.31	13%	0.34	15%	0.36
Lower secondary	7%	0.26	5%	0.21	5%	0.21	7%	0.25
Upper secondary	4%	0.19	2%	0.14	2%	0.15	5%	0.21
Above secondary	8%	0.27	4%	0.19	3%	0.18	7%	0.25
Numbers of observations	1,707		1,482		1,343		1,011	
Get loan from VF	45%		47%		59%		36%	

4. EVALUATION OF THE IMPACTS OF THE VILLAGE FUND

Estimation of PSM is done separately for four regions of the country (Table 4). The reference cases in each region need not be similar depending upon how their propensity scores are best matched. Dummy variables representing provinces have been added to the estimation, but the value of the coefficients are not shown here. Every model passes the balancing tests.[3]

The results vary significantly across regions of the country. Household size does matter for VF participation in the central and southern regions. Central region rural households with a large household size are more like to participate in the VF program no matter what their occupation. However, northern rural households whose major income comes from labor are less likely to participate in the VF program. In the southern region, if the principal source of income is from professional occupation, the household would be less likely to participate in the VF program. The number of income earners is significant determinants of VF participation in northeastern and southern Thailand. In these regions, if the heads of households are never married, they are less likely to participate in the VF. Age of heads is a significant determinant of VF participation in the northern and southern Thailand. Only in the central region does the education level determine VF program participation.

The estimates in Table 4 are used to calculate propensity scores for each household. Non-participating households are matched with participants using the one-to-one nearest neighbor matching method.[4] Observations that find no match are dropped. Table 5 shows the results of the impact of VF on income, expenditure and incidence of poverty.

Table 4 Program Participation Estimates

Region	Central		North		Northeast		South	
Variables	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Numbers of provincial dummies	11		9		15		8	
Household characteristics:								
Size	0.151*	2.18	0.024	0.28	-	-	-0.242*	-2.30
Earners	-0.096	-1.11	0.196	1.83	0.102*	2.29	0.352*	2.57
Members attending school	-0.049	-0.53	0.083	0.75	-0.023	-0.30	0.266*	2.08
Type: One person	-0.536	-1.51	-1.410*	-3.25	-0.539	-1.18	-0.478	-0.90
Head and spouse	0.004	0.02	-0.472	-1.26	-0.062	-0.14	-0.653	-1.13
One parent with unmarried child	-0.455	-1.70	0.017	0.06	0.074	0.22	-0.986*	-2.09
Tenure	0.472	1.67	0.674	1.56	-0.187	-0.40	-	-
Mobility	0.222	1.66	0.020	0.13	0.029	0.17	-0.452*	-2.41
Telephone	-0.377*	-2.39	-0.304	-1.52	-	-	-0.509	-1.79
Motorcycle	0.271*	3.19	-0.174	-1.77	-0.181	-1.58	0.160	1.41
Main source of household income:								
Entrepreneurs	0.076	0.39	0.173	0.78	0.001	0.00	0.097	0.38
Professional	-0.467	-1.53	-0.196	-0.54	-0.242	-0.58	-0.930*	-1.96
Labor	-0.394	-1.60	-0.497*	-2.19	-0.279	-0.86	-	-
Other employees	-0.211	-1.17	-0.286	-1.47	-0.046	-0.22	0.078	0.33
Economically inactive	-0.250	-1.00	-0.313	-1.35	-0.003	-0.02	-0.905	-1.75
Head of household characteristics:								
Male	-0.243	-1.49	-0.085	-0.42	-0.420	-1.64	0.107	0.32
Age	0.000	-0.02	-0.015*	-2.27	-	-	-0.029*	-3.13
Never married	-0.218	-0.56	-0.413	-0.74	-1.940*	-1.97	-1.880*	-2.02
Widowed/divorced/separated	-	-	0.052	0.16	-0.516	-1.43	-0.002	0.00
Education: Below lower elementary	-	-	-0.450	-1.07	-	-	-0.526	-1.03
Lower elementary	-	-	-0.200	-0.51	-	-	-0.080	-0.20
Upper elementary	0.215	1.04	-0.488	-1.15	-	-	0.002	0.01
Lower secondary	-0.001	0.00	-0.169	-0.37	-0.179	-0.48	-0.060	-0.13
Upper secondary	0.720*	2.32	0.297	0.55	0.192	0.40	-0.161	-0.33
Above secondary	-0.061	-0.19	-	-	0.301	0.62	-	-
Numbers of observations	1,706		1,480		1,342		1,011	

* Statistically significant at the 5 percent level.

The results obtained from the DD comparison indicate that the VF program has had no impact on rural household income, except for households in the central region, where VF has increased per capita farm income in the region by 55 percent. As farm income comprises a small proportion of rural household income in the central region, the impact is not enough to increase total income. Furthermore, the data from SES 2004 show that 15 percent of the participants admitted that they had to borrow from other sources to repay VF debt. This corresponding evidence indicates that borrowing from VF did not generate enough income to enable the borrower to repay the loan.

The impact of VF on household expenditure shows that the program has impacts only on non-consumption expenditure in the rural parts of northern and southern Thailand. Non-consumption expenditure includes expenditure on taxes, gifts, insurance premiums, donations, gambling, and interest payments. Borrowing from VF increases non-consumption expenditure probably because the interest payment is included in this expenditure category. Nonetheless, this finding confirms that the borrowers have a low potential to spend the money on income-generating activities, since non-consumption expenditure contains no element related to investment.

A very important aspect of this evaluation is that the VF program shows no impact on the incidence of poverty of rural households.

This study evaluates the VF program using a quasi-experimental technique and DD comparison. The results obtained by our approach contradict the results of the National Economic and Social Development Board (2003). We find that the VF program does not have a positive impact on alleviating the country's poverty. The lack of such an effect on poverty is the product of its

Table 5 Impact of Village Fund on Income, Expenditure and Poverty

Household income (per capita)	Farm income	Non-farm income	Total income
Central region	0.551*	0.115	-0.031
t-stat	(2.12)	(0.43)	(-0.52)
Northern region	0.160	0.680	0.079
t-stat	(0.59)	(2.67)	(1.18)
Northeastern region	0.032	-0.251	0.079
t-stat	(0.08)	(-0.68)	(0.91)
Southern region	0.528	-0.100	-0.066
t-stat	(1.38)	(-0.25)	(-0.92)
Household expenditure (per capita)	**Consumption**	**Non-consumption**	**Total**
Central region	-0.007	0.032	0.012
t-stat	(-0.14)	(0.27)	(0.26)
Northern region	0.011	0.570*	-0.024
t-stat	(0.22)	(4.21)	(0.49)
Northeastern region	-0.012	0.050	-0.010
t-stat	(-0.20)	0.32	(0.16)
Southern region	0.079	0.371*	0.071
t-stat	(1.21)	(2.35)	(1.11)
Poverty	**Income**	**Consumption**	**Poverty gap**
Central region	-0.931	3.741	-0.003
t-stat	(-0.31)	(1.351)	(0.31)
Northern region	3.157	-4.217	0.025
t-stat	(0.65)	(-1.03)	(1.50)
Northeastern region	-4.633	-0.965	-0.007
t-stat	(-0.73)	(-0.16)	(0.36)
Southern region	0.125	-1.342	0.002
t-stat	(0.026)	(-0.33)	(0.14)

Note: Positive numbers mean that the outcomes of the program participants are better than those of non-participants, i.e., the borrowers benefit from the program.

* Statistically significant at the 5 percent level.

insignificant impacts on income and expenditure. The VF program increases only farm income in the central region and non-consumption expenditure in the northern and southern regions. The increase in non-consumption expenditure reflects the fact that the participating households did not spend their loans on investment activities. Moreover, the positive change in farm income is inadequate for improving total household income. This finding highlights the fact that micro-credit alone does not have enough power to alleviate the condition of poverty. Some other forces should also be at work, such as investment channels, risk management and technological know-how.

ENDNOTES

1 For a more detailed explanation of selection bias and techniques to mitigate the bias, see Ravallion (2006).

2 Outcomes are independent of participation, given Z. This assumption implies that outcomes are also independent of participation, given P(Z). See details in Ravallion (2006, p. 27).

3 Details of all coefficients and balancing test will be presented upon request.

4 Other matchings such as 5 and 10 nearest neighbor matching, and kernel are also used. However, the results are unchanged.

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