

# Appraising the Thailand Village Fund

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March 2012



## Abstract

The Thailand Village Fund is the second-largest microcredit scheme in the world. Nearly 80,000 elected local Village Fund committees administer loans that reach 30 percent of all households. The value of Village Fund loans has remained steady since 2006, even without new infusions of government funds, and loans go disproportionately to the poor. Based mainly on a custom-built survey of more than 3,000 Village Funds conducted in 2010, this paper evaluates the performance of Village Funds, which it argues are best modeled as altruistic, and do not appear to be subject to elite capture.

As expected, profit rates are difficult to model, but the

regression analysis shows that loan recovery rates, total lending, credit ratings, and the proportion of loans going to the poor are all higher when a Village Fund borrows additional funds from a formal bank and on-lends to households, as was done by one in five Village Funds. An economic analysis suggests that Village Fund benefits exceed the costs. Most Village Funds are social rather than financial intermediaries; they have little incentive to take risks or to innovate, which explains why Village Fund lending has not kept pace with the growth of the Thai economy.

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## **Keywords**

Village Fund; Thailand; microcredit; endogenous switching regression; cost-benefit analysis; fund performance.

## **Keywords**

JEL codes: O16 G21 I38

Note: The authors listed above are in alphabetical order. They would like to thank Sanonoi Buracharoen for her excellent help with collecting and understanding the data, and Rikke Nørding Christensen, Samad Husain, Saowaluck Imbumrung, Budsara Sangaroon, and Sorn for their help and comments. They are also indebted to Will Martin for very helpful suggestions. The Thai National Statistics Office was very helpful in supporting this work, and we also wish to thank the National Office of the Thailand Village Fund for discussing the issues with us. The views expressed in this paper are those of the authors, and not necessarily of the institutions with which they are affiliated.

## 1. Introduction

In 2001, the Government of Thailand launched the Thailand Village and Urban Revolving Fund (VF) program. This was an important component of the electoral platform of newly-elected Prime Minister Thaksin Shinawatra, and envisaged providing a million baht (about \$22,500 at the exchange rate of the time) to every village and urban community in Thailand as working capital for locally-run rotating credit associations.<sup>1</sup> The stated purpose of the fund was to “stimulate the rural economy,” with the stated intention of targeting “new activities such as processing and packaging” (Thaksinomics 2006). An element of the platform of the government elected in July 2011 is to add another million baht per village to the Village Funds.

The program was put in place rapidly; by the end of May 2005 the VF committees had lent a total of 259 billion baht (\$6.9 billion at an exchange rate of Baht 37.6/\$) to 17.8 million borrowers, some of whom had by then borrowed more than once (Arevart 2005). At the time, the Thailand Village Fund was the largest single microfinance scheme in the world.

The first purpose of this paper is to explain the performance of the Village Funds themselves. In this context we are interested in the extent to which they have maintained and/or expanded their lending capacity, their loan recovery and profit rates, and the extent to which their loans go to a wide swath of society (“outreach”). These are important if one is to assess the sustainability of the VF model of microcredit. The second goal of the paper is to weigh the costs and benefits of the Village Fund program, which may potentially serve as a guide to the desirability of expanding it further.

In the following sections, we first summarize the main features of Village Fund lending since 2004, using data from the Socio-Economic Surveys of 2004, 2009, and 2010, and show that the Village Fund remains important by any standard. We then describe how Village Funds, which are highly decentralized, actually operate at a practical level, drawing heavily on the findings of a survey of over 3,000 Village Funds undertaken in 2010. We then develop a model of Village Fund Behavior from which we derive a number of testable propositions. In a subsequent section we refine our measures of Village Fund performance, which we then try to explain using econometric models that are based on our theoretical discussion. The

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<sup>1</sup> The average exchange rate during 2001 was Bht44.51/\$, which implies that a million baht are equivalent to \$22,468. The exchange rate as of mid-October 2006 was Bht37.57/\$, which would value a million baht at \$26,617.

penultimate section develops a cost-benefit analysis of the Village Fund, and the concluding remarks address the issues of why the Village Fund has not grown (or substantially shrunk) over time, whether the benefits exceed the cost, and whether it is a true financial intermediary, or an instrument for channeling public funds to selected individuals.

## 2. The Village Fund in Comparative Perspective

In this section we ask a very basic question: How large, and how important to households, is the Village Fund?

A good starting point is to compare the size of the Thailand Village Fund with microfinance institutions in other countries. The relevant data are shown in Table 1, which is based on information reported to the Microfinance Information Exchange ([www.themix.org](http://www.themix.org)). The VF did not exist in 2001, and in that year the largest micro lender was Bank Rakyat Indonesia, with 2.8 million borrowers and gross loans of \$939 million. Three years later, when the VF was fully operational, it was lending to 7.5 million borrowers – almost twice as many as any other institution – and had a loan portfolio of \$3 billion. Five years on, in 2009, the VF had

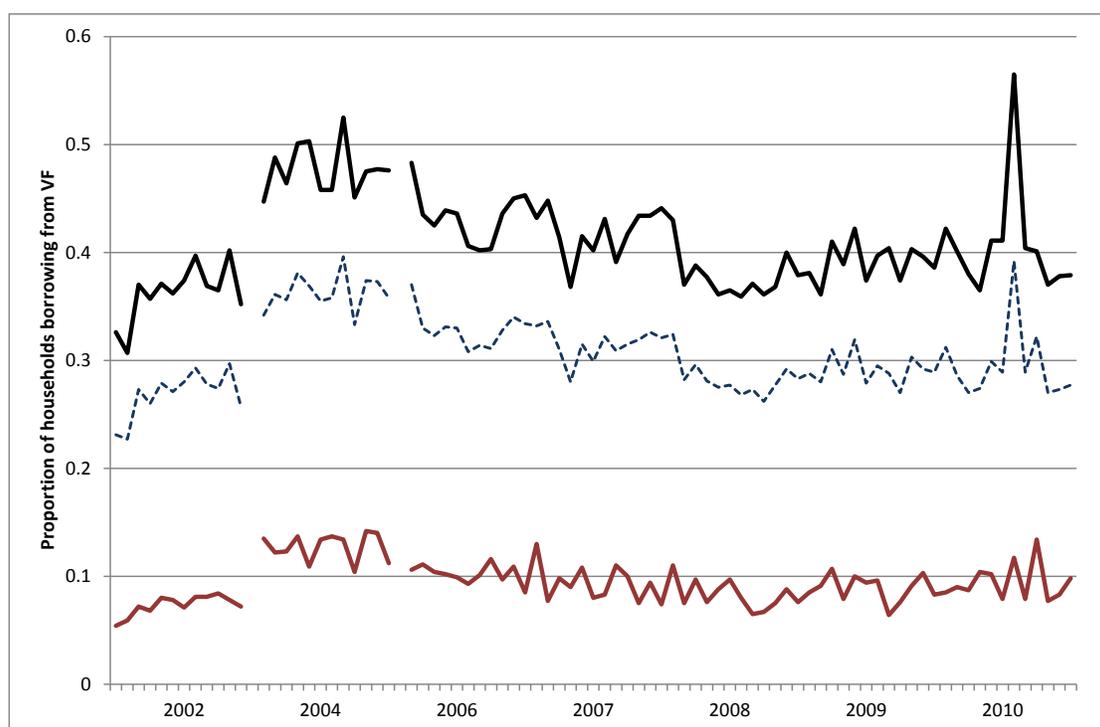
**Table 1. Thailand Village Fund in International Comparative Perspective**

Name	Country	Gross loan portfolio US\$m	Average loan balance per borrower, US\$	Average loan balance per borrower / GNI per capita	Number of active borrowers	Total women borrowers
<b>2001</b>						
Bank Rakyat Indonesia	Indonesia	939	337	46%	2,790,192	195,313
ASA	Bangladesh	91	64	18%	1,414,931	
<b>2004</b>						
<b>Village Fund</b>	<b>Thailand</b>	<b>3,003</b>	<b>402</b>	<b>16%</b>	<b>7,463,000</b>	<b>360,100</b>
Bank Rakyat Indonesia	Indonesia	2,045	637	57%	3,210,678	1,605,339
Vietnam Bank for Social Policy	Vietnam	855	229	42%	3,740,179	
Grameen Bank	Bangladesh	338	91	22%	3,700,000	3,540,000
BRAC	Bangladesh	243	61	15%	3,993,525	3,941,276
<b>2009</b>						
At least \$1 billion in assets						
Vietnam Bank for Social Policy	Vietnam	3,929	521	50%	7,536,960	
<b>Village Fund</b>	<b>Thailand</b>	<b>2,917</b>	<b>461</b>	<b>12%</b>	<b>6,334,516</b>	<b>3,050,965</b>
SKS	India	961	166	16%	5,795,028	5,795,028
Grameen Bank	Bangladesh	817	127	23%	6,430,000	6,223,597
Spandana	India	787	215	21%	3,662,846	3,368,115
BRAC	Bangladesh	636	102	18%	6,241,328	5,921,753
ASA	Bangladesh	456	114	20%	4,000,401	3,535,145
<b>Summary statistics</b>						
<b>Total/Average for 2009</b>		<b>64,770</b>	<b>1,405</b>	<b>64%</b>	<b>82,501</b>	<b>63,767</b>
Number reporting		1,110	1,103	1,099	1,109	982

Source: Microfinance Information Exchange. <http://www.mixmarket.org/mfi/indicators?page=1> [Accessed February 20, 2011.] For Thailand, 2004 data from Village Fund central office; 2009 data estimated based on Thailand Socio-Economic Survey. The comparator microfinance institutions shown here include the largest by gross lending, and by number of active borrowers, in each year, as well as a selection of other institutions of general interest.

shrunk slightly, to 6.3 million lenders, and although it remains very large, it no longer stands out, because most of the other major microfinance institutions have continued to expand. This raises a very basic question, which we return to below, which is why, unlike other microfinance institutions, the VF essentially stagnated after 2004.

A second measure of the importance of the Village Fund is by looking at the proportion of households for whom at least one member borrowed from it. The monthly time series is shown in Figure 1, and uses information from the Thailand Socio-Economic Surveys of 2002 (when the VF began to operate), 2004, and 2006-2010; there were no SES surveys in 2003 or 2005. Participation in the VF peaked in 2004, at about one household in three, and stabilized at approximately 30 percent of households thereafter. Participation is substantially higher in rural areas (roughly 40 percent) than in urban areas (about 10 percent).



**Figure 1. Proportion of Households Borrowing From Village Fund: Rural (top), National (dashed), and Urban (bottom).**

Source: Thailand Socio-Economic Surveys of 2002, 2004, and 2006 through 2010. Note: The outlier in mid-2010 is based on an unusually small sample, and cannot be considered to be representative.

Some further information on the evolution of the VF is provided in Table 2. Households appear to be serial borrowers from the Village Fund, with most of them borrowing year after year, just one in ten saying that they do not wish to borrow again, and about 95% reporting that they repaid their most recent VF loan in full.

For many borrowers, VF loans are just one source of credit; a third of VF borrowers also borrow from the Bank for Agriculture and Agricultural Cooperatives (BAAC), a more traditional agricultural development bank that extends relatively large loans, mainly to farmers, at comparatively low interest rates, and is sometimes held up as a model of a successful rural financial institution (Fitchett 1999).

About half of VF borrowers say that they did so in order to finance agricultural activities, and a third or more now borrow to pay for “daily expenses”, which may be thought of as consumer credit. About one in ten VF loans are devoted to non-farm businesses, a low proportion given the initial expectations (or hopes) that the Village Funds would promote non-traditional economic activity.

### 3. How Village Funds Operate

Before trying to explain the performance of Village Funds, we first need to provide some additional institutional details.

**Table 2. Use of Village Fund, 2004, 2009, and 2010**

	2004	2009	2010
Percentage of households borrowing from the Village Fund	36.3	29.4	29.3
<i>of which: borrowed from VF and BAAC</i>	<i>15</i>	<i>11</i>	<i>10</i>
<i>    borrowed from VF but not BAAC</i>	<i>23</i>	<i>16</i>	<i>19</i>
<i>Borrowed from the BAAC but not VF</i>	<i>6</i>	<i>10</i>	-
Did not borrow	34	39	n.a.
Number of Village Fund loans since 2002		5.0	5.9
<b>Amount borrowed from Village Fund (baht per loan)</b>			
All Thailand	16,183	15,790	16,905
Households in poorest expenditure/capita quintile	<i>17,312</i>	<i>14,080</i>	<i>15,953</i>
Rural households	<i>16,462</i>	<i>15,724</i>	<i>16,965</i>
Female borrowers	<i>15,322</i>	<i>15,497</i>	<i>16,830</i>
Memo: Expenditure per capita (baht per month)	3,398	3,941	4,980
Interest rate charged on VF loans (percent p.a.)	6.0	6.0	6.0
<b>Stated purpose of borrowing:</b>			
Agriculture (equipment, inputs, other)	50.9	46.7	46.8
Non-farm business	13.9	12.8	10.2
Health/Education	4.6	5.0	2.4
Repay debt	n.a.	5.9	1.8
Household daily expenses/other	30.8	29.8	38.8
Did loan raise income? % saying yes	71.1	71.3	69.5
<b>Repayment: % reporting</b>			
In full and on time	-	92.2	92.6
In full, but late	-	3.4	2.5
In part	-	2.4	2.1
Not yet repaid	-	2.1	2.8
Would you apply for a VF loan again? % saying no	-	11.1	10.1
Memo: Number of Observations (adults)	80,950	100,408	100,221

Source: Socio-Economic Surveys of 2004, 2009, and 2010. These each included a special module that asked

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about the Village Fund. “–” means not available.

Inaugurated in 2001, Village and Urban Community Fund Committees (henceforth “Village Fund Committees”) had been formed in 92% of the villages and urban communities in Thailand by 2001, and much of the money had been disbursed. By May 2005, 99.1% of all villages had a Village Fund in operation and 77.5 billion baht, representing 98.3% of the originally scheduled amount, had been distributed to Village Fund Committees (Arevart 2005).

The initial working capital came from the central government, and the central Village Fund Office issued a set of guidelines suggesting how villages might go about setting up their operations. However, the Thailand Village Fund is unusual in the extent to which it is decentralized and locally run. The local VF committees have some discretion in setting interest rates, maximum loan amounts, and the terms of loans. They process loan applications; households borrow and repay with interest; and the money is lent out again. Every Village Fund has an account at the Bank for Agriculture and Agricultural Cooperatives (BAAC), the Government Savings Bank (GSB), or the Krungthep Bank. The headquarters in Bangkok has limited information on the assets and liabilities, incomes and expenditure, of the individual village-level funds. This is apparently by design; the concept is rooted in the idea that villages and urban wards can and should make their own decisions, and this is antithetical to strong central direction or control.

There are five steps that must be taken in order for a Village Fund to become operational:

- (a) The village first sets up a local committee to run the fund and to determine the lending criteria (interest rate, loan duration, maximum loan size, and objectives).
- (b) The committee then opens an account at the BAAC (which has about 700 branches) or another "facilitator", and the government deposits a million baht into the account.
- (c) The local Fund committee sifts through loan applications and determines who may borrow and under what conditions (interest rate, duration, etc.).
- (d) The borrowers go to the BAAC (or other facilitator) to get access to the loans.
- (e) The borrower repays the loan with interest.

A number of rules and guidelines – drafted by the central government – govern the establishment and operating procedures of the committee: three quarters of the adults in the village must be present at the meeting where it is established; the committee are supposed to have about 15 members, half of them women; while there is some discretion about the amount lent per loan, it should not generally exceed 20,000 baht and should never exceed 50,000 baht; the loans must charge a positive interest rate; and it is recommended that loans have at least two guarantors. Modest amounts – typically more than 100,000 baht – of additional

funding were provided to some village funds in 2003 and 2004, and well-run funds were allowed to borrow up to a million baht more from the BAAC (or GSB or KTB).

#### *VF Management and Operation*

In this and subsequent sections we rely heavily on the results of a purpose-built questionnaire that was administered by the National Statistics Office in May 2010 to 3,091 village funds. Every village or urban area that was covered by the 2009 Socio-Economic Survey was included in the sample frame, and an attempt was made to gather information on the Village Fund in each of these localities by interviewing in person one of the Village Fund officers. In rural areas the villages and Village Funds apply to the same area, so the results of the survey can be matched village-to-village with those of the 2009 SES. However, in urban areas the areas covered by the Village Funds did not necessarily coincide with the enumeration areas used in the SES, and so the correspondence is imperfect: for each urban district covered by the SES, a Village Fund was interviewed, but the geographic coverage of the latter overlapped, but was not identical to, the urban enumeration area used by the SES.

The 2010 VF Survey shows that of the village fund committees that were in operation in 2009, 54% were established in 2002, and a further 36% in 2003 or 2004. By the end of 2005, 91% of villages had an operating VF committee, and almost all of the rest have set up their committees subsequently.

Villagers are not automatically “members” of the VF, but anyone aged 20 or older may join, typically by purchasing a share or making an initial deposit. The median number of VF members is 113 per village, of which slightly under half were men; this compares with a median number of households per village of 210, and population of 850 (see Table 3).

The village funds are run by local committees, with on average of eleven members, evenly split between men and women. There is some variation in committee size, as Table 4 shows; most committees have an odd number of members, with the most popular sizes being 9, 11, and 15. The original government guidelines recommended committees with 15 members, but most villages favor smaller committees, perhaps because of the difficulty of finding enough volunteers, or perhaps because larger committees are more difficult to run.

It is standard policy for VF committee members to serve for two-year terms – this is the case in 81% of the villages surveyed – but in practice many members serve more or less indefinitely: on average, 6.7 of the original members of the VF committee (out of an average of 11) were still serving as of 2010. There is

anecdotal evidence that some villages have difficulty recruiting committee members, and that some longer-serving officers are experiencing “volunteerism fatigue”.

**Table 3. Village Fund Membership and Number of Borrowers, 2010**

	Median	Mean
Number of VF members per village	113	132
<i>Of which:*</i>		
Men	50	57
Women	60	73
Number of VF borrowers per village	77	84
<i>Of which:*</i>		
Men	30	35
Women	43	48
<i>Memo items:</i>		
Number of households	210	314
Population	850	1,170

Note: \* The subtotals do not sum up to the total because the sample sizes differ; not all villages provided a breakdown of VF membership by gender.

Source: Village Fund Survey, 2010.

**Table 4. Size of Village Fund committees**

Size	<9	9	10	11	12	13	14	15	>15
% breakdown	3.5	39.9	8.8	14.2	5.7	7.2	4.3	15.4	1.0

Source: Village Fund Survey, 2010.

The VF committee is typically headed by a small group of officers – usually a President, Vice-President, Secretary, and Treasurer. These officers are normally elected directly by the VF membership; in 70% of villages, this is the only method used. In 14% of villages, the officers are elected by the VF committee; occasionally (1% of cases) the officers are selected by the village; and in the remaining 15% of cases some combination of these methods is used.

#### *Professional Background of VF Committee Members*

Most VF committee members have no more than a high school diploma, but on average about one committee member has a university degree, and another member has some higher education (see Table 5). It is not uncommon for VF committees to include school teachers, or retired army officers. However, 30% of committees have no member with any higher education.

On average, VF committees have 1.5 members with experience in accounting, 2.4 with managerial expertise, and 1.1 with “banking experience” (see Table 5). This helps equip many VFs with the knowhow to manage

funds and keep books, but it is noteworthy that 17% of VF committees had no member reporting any of these skills.

On average, VF committees meet 5.8 times annually, but there is considerable variation from village to village, as Table 6 shows; 27% of committees meet just once or twice a year, while 18% meet monthly. There is also a good deal of variation in the usual length of meetings; while the median length is 90 minutes, 49% last for an hour or less, and 38% last for two hours or more. Surprisingly, there is no association between the length and number of meetings: the correlation coefficient is 0.012 and is not statistically significant.

**Table 5. Educational and Professional Experience of Village Fund Committee Members**

	No. of VF committee members		# of VF reporting
	Full sample	Restricted sample	
<b>Educational level:</b>			
No diploma	8.3	8.8	2,472
Up to two years of university	0.8	2.0	1,084
Two or more years of higher education (but no degree)	1.2	2.0	1,507
University degree	0.1	1.2	286
Memo: Committees with no higher-educated member	30.2%		
<b>Professional experience:</b>			
.. in accounting	1.5	1.9	2,036
.. in management	2.4	3.8	1,660
.. in banking	1.1	2.3	1,280
.. other	0.7	2.4	488 / 213**
Memo: Committees with no member reporting professional expertise	16.5%		

Note: "Full sample" results assume that missing values mean that there is nobody with that skill or education on the committee; "Restricted sample" shows the means for cases that reported, with the sample size in the final column.

Source: Village Fund Survey, 2010.

**Table 6. Frequency and Length of Village Fund Meetings**

Number of VF committee meetings per year	% breakdown	Length of a typical VF committee meeting, minutes	% breakdown
1	7.6	About 30 [ $\leq 30$ ]	10.0
2	19.8	About 45 [ $>30, \leq 45$ ]	3.6
3	16.2	About 60 [ $> 45, \leq 60$ ]	25.2
4	12.4	About 90 [ $>60, \leq 90$ ]	12.6
5	6.4	About 120 [ $>90, \leq 120$ ]	24.8
6	8.0	About 180 [ $>120, \leq 180$ ]	10.9
7 – 11	7.7	About 240 [ $>180$ ]	2.5
12	18.1		
> 12	3.7		
Memo: mean	5.8	Memo: mean	91.8
Memo: median	4.0	Memo: median	90.0

Source: Village Fund Survey, 2010.

In most cases, some VF committee members participate in training courses or seminars. In 2009, an average of three members attended training sessions, which lasted for an average of two days. In addition to training

and meetings, the administration of a village fund takes time; collectively, VF committee members spent 4.6 hours on fund-related work in the week prior to the survey (or 2 hours, if the median value is used). Grossed up, this represents an annual effort of 239 hours per VF fund. Much of this is compensated by the honoraria that Village Fund committees pay themselves; these amount to 1.1% of the total value of lending, but in some cases the honoraria fall short of compensating committee members for the time they spend; we estimate the value of true volunteer time to be worth a further 0.4% of the value of lending.<sup>2</sup>

#### 4. Modeling Village Fund Behavior

With these basic institutional details in mind, we now need to address our central questions, which are how we might expect Village Funds to (i) behave, and (ii) perform. We first discuss the relevant theory, then define and present our measures of performance, and subsequently try to measure the determinants of that performance.

##### *Standardized Loans*

The first important “stylized fact” is that any given Village Fund offers a very standard loan contract. Of the VF loans extended in 2010, 96.8% were for 12-month terms, and just 2% were for shorter periods (mainly 1, 2, 3, or 6 months). Although interest rates vary somewhat from village to village, the rate charged by a given village is the same for almost all of its loans; the exception is the handful of “emergency” loans – constituting 5% of all lending – that are for smaller amounts and shorter terms, and often carry higher rates. Almost half (48%) of loans extended in 2009 charged an annual rate of 6.0%, and a further third charged rates of 3, 5, 7, or 8 percent, as Table 7 shows; we model these differences more formally in section 7 below.

**Table 7. Breakdown of VF loans by interest rate charged**

Interest rate	<3	3	4	5	6	7	8	9-11	12	>12
% breakdown	6.1	6.2	3.6	13.5	47.6	7.0	7.4	4.1	4.1	0.4

Note: Mean interest rate: 6.0% p.a.; standard deviation of interest rate, 2.3%.

Source: Thailand Socio-Economic Survey 2009

The amounts lent vary somewhat from one loan to the next; formally, the borrower requests an amount, and although there are informal norms, there is no set amount. The mean amount borrowed in 2009 was 15,790 baht, equivalent to about 8% of income, and 78% of VF loans in 2009 were between 10,000 and 20,000 baht, as Table 8 shows. In 71% of all village funds, the maximum loan is 20,000 baht; in 10% of cases the

<sup>2</sup> The average rural wage is about 300 baht per person per day. We define volunteer time as any time spent by VF committees that is not compensated, in the form of honoraria, at this rate, and then multiply the quantity of volunteer time by the average rural wage to get the value of volunteer time. The data come from the 2010 Village Fund survey.

maximum is lower than this (see Table 9). In a few cases (3% of the total) the maximum is greater than 50,000 baht, which is in excess of the upper limit established by the guidelines produced by the VF headquarters.

A modest amount of interest-rate flexibility may sometimes be possible. If every household in a village could borrow at some market interest rate  $i_0$ , and the VF lends at  $i_{V0} < i_0$ , then the benefit accruing to a borrower is  $(i_0 - i_{V0})L$ , where  $L$  is the value of the loan. Now suppose that from time to time households are hit by (unpredictable) shocks – a death, illness, crop failure – and need cash at these moments. If the cost of borrowing at such moments is  $i_1 > i_0$ , then an altruistic lender may want to keep some of its funds available to lend in such times of difficulty. Given that such loans have a shorter duration than standard loans, we might expect the VF to extend emergency loans at an interest rate  $i_{V1} > i_{V0}$ .

**Table 8. Breakdown of VF loans by size**

Loan amount (baht) in 2009	% breakdown
< 10,000	12.8
10,000	24.3
> 10,000 but < 15,000	8.5
15,000	12.1
> 15,000 but < 20,000	5.2
20,000	27.8
> 20,000 but < 30,000	2.6
30,000	3.2
> 30,000	3.6
Memo: Mean loan size (baht)	15,790
Memo: Standard deviation of loan size (baht)	8,335

Source: Thailand Socio-Economic Survey 2009

**Table 9. Maximum loan sizes for regular and emergency loans**

Maximum size for regular loan ('000 baht)	% breakdown	Maximum size for emergency loans ('000 baht)	% breakdown
< 20	9.9	<3	7.7
20	73.2	3	25.3
-30	8.8	-5	34.4
-40	2.4	-10	16.3
-50	5.2	-20	11.2
>50	0.5	>20	5.1
Sample size	2,811	Sample size	1,501
Mean interest rate	6.1	Mean interest rate	7.8

Note: \* This includes non-rounded amounts (such as 20,500, etc.). Source: Village Fund Survey, 2010

This is indeed what we observe. Many village funds distinguish between their ordinary loans, and emergency loans; the latter tend to be smaller, and represent a modest part of the portfolio, with relatively low minimum amounts, as Table 9 shows. The median number of emergency loans approved was 14 per village fund per

year, and the median value of total emergency fund lending came to 60,000 baht per village; thus emergency loans represent about 5% of total VF lending.

In short, VFs offer simple and relatively standardized loans. This is a common feature of microlending (Casini 2010), and distinguishes such loans from those from informal sources (which are highly tailored to individual circumstances), and formal bank lending (where the amounts and durations can vary widely). A virtue of standardized contracts is that they are relatively easy to administer, which is a useful feature when funds are managed by amateurs. On the other hand, Iqbal (2011) finds some evidence of innovation among competing microfinance institutions in Bangladesh, as they adjust their menu of loan offerings in response to changing conditions.

Not only are standardized terms pragmatic, but they may be perceived as fairer than loans tailored to each borrower, especially when the funds are seen as being for the common good. On the other hand, standardized loans can quickly constrain the total amount that can be lent safely.

#### *Motivation of Village Fund Committees*

Given the relatively standard loan contract, Village Funds have limited room for maneuver. If demand for loans is robust, they may try to mobilize more capital – by requiring deposits, selling shares, or borrowing from a bank such as the BAAC or Government Savings Bank (GSB). In 2010, 22% of Village Funds borrowed significant amounts in order to on-lend to villages; we return to this important issue below.

Even if the pool of loanable funds is fixed, Village Funds could choose to lend more to poor or rich households; or they could lend large amounts to a few, or small amounts to the many. What choices should we expect to see?

The answer will depend, at least to some extent, on whether Village Funds are best viewed as profit (or rent) maximizers, or as “altruistic” (at least in the sense of making choices for the good of the village as a whole, rather than in the narrow interests of the VF committee members).

Two features of the Thai Village Funds suggest that an altruistic model is, a priori, most plausible. First, the VF committees are, in principle, accountable to all the adult members of the village. And second, the VF committees themselves are relatively large: an 11-member committee can expect, collectively, to know essentially all the adults in a village personally, which would make it harder for a committee to operate in its own narrow self-interest. We return to this issue below.

Casini (2010) argues that if there is a single monopolistic microfinance lender, serving safe borrowers (who use the funds to obtain a return  $R_S$  with probability  $p_S$ , where the return includes principal and net return) and risky borrowers (who get a return  $R_R$  with probability  $p_R$ ,  $R_R > R_S$ ,  $p_S > p_R$ ), then an altruistic lender that aims to maximize the welfare of borrowers will always set a lending rate  $D$  (inclusive of principal) such that  $D \leq R_S$ , so both safe and risky borrowers will seek credit. On the other hand, a profit-maximizing lender will set  $R_S \leq D \leq R_R$ , and may target just the risky borrowers.

The assumptions underlying Casini's results are not, however, fully applicable to the VF case. First, he assumes a monopoly lender. In Thai villages, credit is already available to many households; for instance, in 2010, 61% of households borrowed; 50% of households said their main loan was from a source other than the Village Fund. Some of these are served by formal-sector lenders, most notably the BAAC. Others get credit from the informal sector, which includes profit-maximizing lenders (as well as households and friends).

The introduction of the Village Fund added a new institution to this mix, with substantial local knowledge but limited banking skills. Casini (2010) argues that an altruistic lender *may*, under certain circumstances, refocus its efforts on serving risky clients, if that allows enough profit for a new entrant to serve safe borrowers and add enough to the overall supply of credit in the market. Nevertheless, the more likely outcome in his model is that an altruistic lender will not limit lending to one or another group (as defined by risk class), but will instead ration the credit provided to each person.

Casini also assumes that a lender makes loans of a fixed size, and has more than enough funds to serve risky, or safe, borrowers, but will have to ration lending if it serves both. But Village Funds have some discretion in the amount they advance for each loan, and could lend a lot to the few, or a little to the many. This is an important point, because for a given amount of total lending, a lender always faces a tradeoff between extending large loans to a few, or small loans to the many. At the *supply* end, lenders such as the Village Fund that have extensive (if not deep) local knowledge may find it easier to lend a little to many; more-distant lenders will need to invest in generating information about lenders, and may be expected to extend fewer, but larger, loans.

Experience elsewhere shows that the costs of administering a small loan can be high, relative to the size of the loan. Banerjee and Duflo (2010) emphasize the importance of this, and argue that the recent explosion of microcredit is based in large measure on finding clever ways to bring down these costs. Village Funds have small cash costs, and so may be well-adapted to managing large numbers of small loans, at least relative to other lenders in a given area.

This is where local *demand* – an understudied aspect of microfinance (Cheng 2006) – may play a role. Consider a VF that wants to lend a total of  $\$T$  to  $B$  borrowers. It could lend  $\$T/B$  annually to every borrower, or  $\$2T/B$  to half the borrowers in each year. The latter would be cheaper to administer. But a case can be made that most borrowers would prefer  $\$T/B$  annually to  $\$2T/B$  every other year. Abstracting from possible issues of commitment, if borrowers plan to use the loan for consumption purposes, smaller loans may help constrain “temptation” purchases – likely if there is hyperbolic discounting – and in addition utility is less diminished at the margin; and if they plan to use the loan for production, there may be a less-diminished marginal product of capital. Only if capital or consumption purchases are lumpy would this argument be reversed.

### *A Model of Village Fund Lending*

We are now in a position to develop our central theoretical argument. We begin by assuming that any given Village Fund (VF) committee is motivated by altruism. It lends funds using a standardized contract, so the same amount is lent to each borrower at the same interest rate and same repayment terms, but the amount itself is a decision variable. VF committees cannot directly evaluate a borrower’s creditworthiness, but they have good knowledge about a borrower’s income (or assets); in the event of an unforeseen shock, a borrower with a higher income (or assets) is more likely to repay.

For modeling purposes, we divide the population into low- and high-income groups; this is a common simplification (Bardhan and Udry 1999). Poor villagers are likely to get more value from borrowing than the rich; they have a higher marginal (social) utility from borrowing. Schematically:

	Low-income	High-income	Notes
Proportion of village population desiring to borrow	$\alpha$	$1-\alpha$	
Fixed probability of repaying a loan to the VF	$p^L$	$p^H$	$p^L < p^H$
Marginal utility from borrowing	$MU^L$	$MU^H$	$MU^L > MU^H$

The question we now ask is whether an altruistic VF, with a fixed amount  $\bar{L}$  of loanable funds, will lend just to poor households, just to rich households, or to both.

A plausible objective function for this VF is to maximize  $\sum_{i=1}^N U_i$ , where utility is added up over the  $N$  adults in the village. Ignoring administrative costs for now, the maximization is subject to a non-bankruptcy constraint whereby the VF will maintain the (nominal) value of its loanable funds over time. The constraint is given by

$$\sum_{i=1}^N p_i D L_i \geq \bar{L}, L_i \geq 0,$$

where  $p_i$  is the probability that borrower  $i$  will repay, and  $D$  is the price of the loan, including both interest and the repayment of principal (i.e.  $D = 1+r$ , if  $r$  is the interest rate charged). Note the contrast here with a profit-maximizing VF, which would presumably set  $D$  to maximize profit, given by  $\sum_{i=1}^N p_i D L_i \geq \bar{C}\bar{L}$ , where  $\bar{C}$  is the opportunity cost of the funds lent (and again, we are ignoring administrative costs). There are now three possibilities:

- If the VF lends to low-income villagers only, the loan per borrower will be  $L_L = \bar{L}/(\alpha N)$ , and it will seek to maximize

$$\sum_{i=1}^{\alpha N} \Delta U_i = \alpha N p_i^L (R^L - D_L) L_L,$$

where  $R^L$  is the net marginal product of the loan for a low-income borrower. This will be subject to

$$\sum_{i=1}^{\alpha N} p_i^L D_L \left( \frac{\bar{L}}{\alpha N} \right) \geq \bar{L},$$

which requires  $D_L \geq 1/p^L$ .

- If the VF lends to high-income villagers only,  $L_H = \bar{L}/((1-\alpha)N)$ , and it maximizes

$$\sum_{(1-\alpha)N}^N \Delta U_i = \left( \frac{MU^H}{MU^L} \right) (1-\alpha) N p_i^H (R^H - D_H) L_H,$$

subject to  $D_H \geq 1/p^H$ . We define  $\gamma \equiv \frac{MU^H}{MU^L}$ .

- If the VF lends to both rich and poor (“all”),  $L_A = \frac{\bar{L}}{N} = \frac{\bar{L}}{\alpha p^L + (1-\alpha)p^H} \equiv \frac{\bar{L}}{\delta}$ , so the average loan will be smaller. Now the VF maximizes

$$\sum_{i=1}^N \Delta U_i = \alpha N p^L (R^L - D_A) L_A + (1-\alpha) N \gamma p^H (R^H - D_A) L_A,$$

subject to  $D_A \geq 1/\delta$ . Note that if the constraints are binding, as we typically expect,  $D_L > D_A > D_H$ .

Each VF has to choose a loan price  $D_b$  and the group (poor, rich, both), to which it will lend. If the constraints bind, then we have the following:

$$\sum \Delta U_i \Big|_{\text{poor only}} = \alpha N p^L \left( R^L - \frac{1}{p^L} \right) L_L = (p^L R^L - 1) \bar{L}$$

$$\sum \Delta U_i \Big|_{\text{rich only}} = \gamma (1-\alpha) N p^H \left( R^H - \frac{1}{p^H} \right) L_H = \gamma (p^H R^H - 1) \bar{L}$$

$$\begin{aligned}
\sum \Delta U_i \Big|_{both} &= \alpha N p^L \left( R^L - \frac{1}{\delta} \right) L_A + \gamma (1 - \alpha) N p^H \left( R^H - \frac{1}{\delta} \right) L_A \\
&= \bar{L} \left\{ \alpha p^L R^L + (1 - \alpha) \gamma p^H R^H - \frac{\alpha p^L + (1 - \alpha) p^H \gamma}{\alpha p^L + (1 - \alpha) p^H} \right\} \\
&= \alpha \sum \Delta U_i \Big|_{poor\ only} + (1 - \alpha) \sum \Delta U_i \Big|_{rich\ only} + \bar{L} \left\{ \alpha + (1 - \alpha) \gamma - \frac{\alpha + (1 - \alpha) \gamma \mu}{\alpha + (1 - \alpha) \mu} \right\},
\end{aligned}$$

where  $\mu \equiv p^H/p^L$ . We are interested in the sign of the  $\{ \}$  term here. It factors to

$$\{ \} = (1 - \mu)(1 - \gamma)\alpha(1 - \alpha).$$

Since  $\alpha \in (0,1)$ , and  $\mu > 1$  because the repayment rate is higher by the rich than the poor, and  $\gamma < 1$  because the marginal utility of the loan is lower for the rich than the poor, we have that  $\{ \} > 0$ .

We may interpret this result as follows. Set the proportion of poor,  $\alpha$ , such that  $\sum \Delta U_i \Big|_{poor\ only} = \sum \Delta U_i \Big|_{rich\ only}$ . This proportion could be quite low if poor borrowers get a high payoff from borrowing, or if the marginal utility of loans to the rich diminishes rapidly.

Given this cutoff between rich and poor, it will be in the interest of an altruistic VF to lend both to the rich and poor, and not only to the rich or the poor, because the improvement in utility from lending to everyone will be greater than from lending to one group alone. There is no similar presumption in the case of a profit-maximizing lender. On the other hand if the value of  $\alpha$  is pre-determined, then there will be cases when a VF may want to lend only to the poor – depending on preferences for equity ( $\gamma$ ), the relative repayment rates ( $\mu$ ), and the relative productivity of loans borrowed by the poor ( $R^L$ ) relative to those taken on by high-income individuals ( $R^H$ ).

There are at least three important implications from this analysis.

- First, whether a VF makes a profit (as opposed to breaking even) will be difficult to predict if it is not an objective in its own right; thus we expect an equation that tries to model profit rates to fit poorly.
- Second, we expect that Village Funds will try to maintain their capital over time, hewing to the non-bankruptcy constraint that keeps them relevant.
- Third, we expect “outreach” to be important, whether measured by the proportion of villagers who borrow, or the proportion of those borrowers who are “poor”. This leads us to expect many small loans, rather than a few larger loans targeted at low-risk borrowers.

With these conclusions in mind, we are now ready to turn to the practical measures of VF performance, and their empirical determinants.

## 5. VF Financial Information and Performance

The discussion of VF performance begins with an examination of the financial position of Village Funds, as reported in the 2010 survey and summarized in Table 10. Information relevant to the balance sheet is given in the first two panels, and income and expenditure data near the bottom of the table. The first two columns of numbers show the median and mean amounts per village fund, *for those reporting values for these variables*. The working assumption is that when values are not reported, they are really zeros; thus, for instance, while the mean donation received by the 50 village funds that got funding from NGOs was 101,000 baht, this represents an average of just 2,000 baht per village fund when averaged over all VFs.

By far the most important source of capital is the initial contribution of a million baht by the government, which mainly occurred in 2002-2004. In the first couple of years of the VF, some Village Funds received additional working capital from the government, which pushed the mean contribution up to 1.165 million baht (for those Village Funds reporting). Two other sources of funding are relatively important: the first is borrowing from banks such as the BAAC. Over one in five Village Funds have borrowed from the established banks, and the median amount borrowed by these VFs was a million baht. The other important source of capital is savings deposits by VF members, which averaged 161,000 baht, or about a tenth of total loanable funds.

Most capital is used to lend to VF members, although at the time of the survey – May 2010 – about three-tenths of all VF funds were held as deposits in the banking system. Some of this money was thus available for loans later in the year – for instance, for emergency purposes – and some of it remained idle, in the sense of not being lent to villagers, for the whole year.

The main source of a VF's revenue is interest on its loans; some of this revenue is used to pay interest to banks and savers, leaving an average reported "profit" of 77,000 baht per fund per year. A fraction of this is used to pay shareholders, a modest amount is distributed for welfare programs, on average a total of 12,000 baht (about \$400) is paid to members of the VF committees as honoraria, and the remainder is applied to building capital or replacing non-performing loans. By this measure, about one in eight Village Funds reported making a loss in 2009-2010, but as we discuss below, this is not a satisfactory measure of profit, and so we need to define and model profit more appropriately.

**Table 10. Financial Information on Village Funds, 2010**

		For VF reporting positive values			Average over all VFs
		Median	Mean	No. obs.	
		<i>in thousands of baht</i>			
<b>Sources of capital (Liabilities and Net Worth)</b>					
V4_8	Capital inflow from VF	1,000	1,165	2,751	1,165
V4_9	Loans received from institutions	1,000	929	651	220
V4_10	Savings deposits received from members	102	236	1,873	161
V4_11	Revenue from shares	13	71	921	24
V4_15	Donations from village organization	10	77	126	4
V4_16	Donations from NGOs	8	101	49	2
V4_17	Funds from other sources	3	86	255	8
	Balancing item: net worth				186
<b>Uses of capital (Assets)</b>					
V4_29	Amt held on deposit at BAAC/GSB/KTB/Oth banks	220	564	2,441	501
V4_18	Value of loans disbursed by VF	1,130	1,309	2,567	1,222
V4_22	Value of saving repaid to savers (excl. int.)	28	201	443	32
V4_23	Value of saving repaid to savers who quit/died	6	27	843	8
V4_25_1	Repayment of shares (baht)	8	17	1,233	8
V4_20	Value of principal repaid to institutions	1,000	971	530	187
<b>Memo item</b>					
V4_12	Total principal repaid by borrowers (on time)	1,059	1,068	2,363	917
<b>Revenue</b>					
V4_13	Total value of interest earned on loans	64	89	2,359	76
V4_14	Fees	2	22	633	5
<b>Expenditure</b>					
V4_19	Value of interest paid to institutions	50	56	537	11
V4_21	Value of interest paid to savers	12	22	921	7
V4_28_2	VF "profit"	60	89	2,393	77
<b>Uses of profit</b>					
V4_24	Payments to shareholders	6	12	1,889	8
V4_27	Payments for welfare programs	6	9	1,749	6
V4_26	Payments to VF committees	15	17	2,158	12
V4_25_2	Repayment of shares	1	5	465	1
V\$_28_1	Share of VF reporting profit (%)		92.3	2,631	

Source: Village Fund Survey, 2010. Totals do not always add up exactly, because the samples vary somewhat from item to item. Includes only those VFs that reported the amount of lending.

## 6. Measuring Village Fund Performance

Our main interest in this paper is in examining why some Village Funds perform better than others. For this we need a measure of performance (Yaron 1992). One approach is to measure the impact of VF borrowing on income or expenditure per capita, but this issue has already been examined elsewhere (Kaboski and Townsend 2005, 2009; Boonperm et al. 2011; Chandoevrit and Ashakul 2008; Sukantha 2008; Laohong 2005). An alternative approach, and the one we take here, is to measure the performance of a Village Fund in more immediate ways, by looking at the profit rate, the loan recovery rate, the credit rating earned by a VF, or the proportion of people (or poor people) who borrow from the fund. Summary statistics for these measures are shown in the top panel of Table 11, and we discuss each in more detail below, where we estimate their determinants with a series of regression models.

At this point a word is in order about the independent variables that we use. Most are derived from the 2010 VF survey, but we are able to match the areas covered in that survey with household data from the 2009 Socio-economic Survey, and, for rural areas, the 2009 Community Survey. Some of the variables reflect the supply side, including measures of initial injections of capital into the Village Fund, as well as whether the VF encourages, or requires, borrowers to first make deposits; Table 11 provides some summary statistics. The supply of VF credit may also be affected by the characteristics of the VF committee – the educational attainment and professional experience of committee members, the extent to which they feel a need for further training, the method by which officers are chosen, the degree of commitment to equity in lending, and the willingness to borrow from banks to extend VF lending.

The remaining variables pick up demand-side influences, including the size and remoteness of the village or ward, and characteristics of households, including their income, education, gender mix, and propensity to borrow. The complete list of variables that we use is given in Table 11. This is a subset of a much larger list, which we winnowed down by excluding variables that consistently had little or no explanatory power, or had many missing values, or were closely correlated with one of the included variables.

#### *Financial or Social Intermediaries?*

Before examining the determinants of VF performance, we first need to ask whether VFs act as proto-banks, or merely as conduits for allocating government funds to members of the public.

Our theoretical conclusions were predicated on the assumption that VFs have a fixed initial quantity of funds ( $\bar{L}$ ) available to lend. In practice, a soundly-run Village Fund can easily borrow a million baht from the BAAC or GSP, at a fairly modest interest rate (3.8%), effectively doubling the amount of funds that they can lend to villagers. In 2010, 24% of VFs undertook such borrowing for on-lending. On the other hand, 72% of VF committees reported that they could safely lend at least an additional million baht to their members. In other words, despite apparently strong effective demand for VF loans, most VFs do not choose to borrow to on-lend.

If VFs were profit maximizers, this behavior would be puzzling. But altruistic VFs are likely to be reluctant to take on more debt. This is because borrowing, for on-lending, exposes VF committee members to personal liability without much commensurate upside (in the form of profit, or honoraria, or larger loans). The VF committees also have limited formal ability to compel repayment. The implication here is that Village Funds will not grow much beyond the initial injection of working capital. Since their comparative

advantage – local knowledge – is unlikely to extend beyond the village (or ward) limits, there are also inherent limits to their growth.

**Table 11. Variable Definitions and Summary Statistics**

Label	Variable description	Observations	Mean	Std. Dev.
<b>Dependent variables: “performance”</b>				
lrr	Loan recovery rate* (if >0)	930	0.727	0.295
capavail	Capital available to lend ('000 baht)**	2,751	1,583	1,254
lending	Lending in 2009 (as of May), '000 baht	2,669	1,314	1,490
rprate3	Profit rate***	2,390	-0.135	7.485
lrate2	Proportion of individuals borrowing from VF (if <1)	2,687	0.111	0.235
soccon	Social contributions ('000 baht)	2,639	6.4	10.9
interest	Interest rate charged by VF on its main loans	2,855	6.00	2.91
v3_25	Credit rating: A	150	0.072	
	Credit rating: B	946	0.453	
	Credit rating: C	994	0.476	
btoonlend	VF borrows from BAAC or other, to on-lend (Yes=1)	3,091	0.224	
vfpoorr	VF loans to poorer half/VF loans to upper half, rural****	866	1.684	1.338
<b>Independent variables: fund capital</b>				
initVfK	Initial VF capital ('000 baht)	2,751	1,165	884
cansave	VF allows for saving	3,062	0.645	0.478
mustsave	VF requires members to save	3,035	0.556	0.497
<b>Independent variables: characteristics of VF committee</b>				
	Proportion of VF committee members who:			
somehed	have some higher education	3,091	0.068	0.252
praccexp	have accounting experience	2,974	0.075	0.048
needlev	need training in loan appraisal	3,061	0.634	0.482
computyes	VF accounts are computerized	3,091	0.321	0.467
vfnotel	VF officers chosen by committee or village head	3,074	0.155	0.362
equity	VF would cut loans equally if funds are short	3,038	0.355	0.479
<b>Independent variables: village size and organization</b>				
villhh	Number of households in village	2,867	317.8	402.2
villmkt	Village has a market	3,018	0.362	0.481
rural	Whether area is rural (=1) or not (=0)	3,091	0.462	0.499
<b>Independent variables: household characteristics</b>				
hhempsf	Proportion of households who have self-employed farmers	3,011	0.189	0.225
wagetoinc	Proportion of income generated by wages	3,011	0.361	0.188
somesech	Proportion of population with some secondary education	3,011	0.328	0.225
nlassets	Household assets (excluding land), m baht	3,011	0.839	0.678
bankborrow	Proportion who have a loan from a formal bank	3,011	0.266	0.199
prfemb	Proportion of borrowers who are women	2,744	0.590	0.148
a11	Expenditure per capita ('000 baht per month)	3,011	5.077	2.447
<b>Independent variables: loan terms and conditions</b>				
bormore	VF would borrow more if funds were short	3,038	0.123	0.328
safelend	VF could lend out another 1m baht safely	3,077	0.721	0.449
bmorebaac	VF wants to borrow more from the BAAC/GSB/KTB	3,058	0.248	0.432

\* 1 - value of loans not repaid as of end-December 2008/value of loans disbursed 2009

\*\* Capital from initial injection + loans in + deposits + shares + donations + other receipts

\*\*\* Reported profit - equity\*average borrowing cost - value of volunteer labor (price 300 baht/day)

\*\*\*\* Poorer half of villagers are those with expenditure per capita below the village median.

Source: Village Fund Survey, 2010

Given this, it is perhaps surprising that over one in five VFs *do* borrow to on-lend. The inherent reluctance may perhaps be overcome by ambitious local leadership, or a particularly strong (unmet) demand for credit – for instance, in large villages, or villages with low loan penetration by the BAAC. We would expect on-lending to be more common when the VF sets its lending rate high enough to cover the cost of borrowing from the BAAC or GSB, and we anticipate that honoraria to VF members will be larger when the committee takes on risk.

Lending is inherently risky, given that borrowers may not want, or be able, to repay. Indeed one might ask why a VF, if it is indeed altruistic, asks borrowers to repay: why not simply give away the windfall funds once and for all, and save itself the trouble of managing the rotating credit year after year?

One possibility is that other central government benefits that flow to a village may be, or be seen to be, linked to how well the VF is managed. In 2003 and 2004 some VFs were provided with modest additional working capital – typically about 100,000 baht – if they were well-run. The Yingluck administration elected in July 2011 has promised to provide an additional million baht per village; if this only goes to VFs that continue to operate, then VF insistence on loan repayment will have borne fruit.

The distinction between on-lenders and other VFs matters, as Table 12 makes clear. VFs that borrow to on-lend are able to lend more, have higher profit and loan recover rates, have better credit ratings, and lend relatively more to the poor.

Performance measures	Does Village Fund Borrow to On-lend?	
	No	Yes
Loan recovery rate, %	70.3	84.6
Capital available, millions of baht per fund	1.273	2.597
Lending, millions of baht per fund	1.103	1.970
Profit rate, %	-18.0	0.4
Adults borrowing from VF, %	10.4	13.1
Social contributions, thousands of baht	6.25	6.85
<b>Credit rating (totals to 100%)</b>		
None/Not known, %	36	17
A, %	5	3
AA, %	30	36
AAA, %	29	44
Loans to poor / loans to non-poor (rural areas only)	1.61	1.82

Source: Village Fund Survey 2010, and 2009 SES (for final row).

In an attempt to understand better the phenomenon of VF borrowing to on-lend, we used the data from the 2010 VF survey to estimate a logit model where the dependent variable is set to 1 if the VF borrows to on-

lend, and to zero otherwise. Each of the 2,203 observations represents one Village Fund; the independent variables may be grouped into those related to other sources of VF capital, objective characteristics of the VF committee, the size and organization of the village, characteristics of the households in the borrowing area, and the attitudes of VF committee themselves. The estimation results are shown in Table 13.

On the supply side, the only “objective” variable that matters is the size of the initial injection of government funds; when more funds were made available, VFs borrow *more* to on-lend, perhaps because they are seen as having more to lose (and hence being more bankable). On the other hand, VFs in larger villages, or rural areas, or with better-educated committee members, or with computerized accounts, are not more (or less) likely to borrow in order to on-lend.

On the demand side, areas with more bank borrowers have VFs that are more likely to borrow to on-lend, perhaps because these populations understand the nature of banking better. It is perhaps surprising that VFs in areas with more-affluent residents are *less* likely to borrow to on-lend; one possibility is that the need for VF-style credit is weaker in such areas, both because there are good alternatives, and because there are fewer credit-hungry farmers in these localities.

The variables that matter most strongly are the attitudes of VF committees. VFs that say they would borrow more if funds are short (rather than ration existing funds), that say they could safely lend another million baht, and/or that want to borrow more funds, are more likely to actually be on-lending.

This social entrepreneurship may be hard to relate to objective characteristics of VFs or villages, so we cannot tell how these attitudes arise, but there appears to be a virtuous circle whereby VFs borrow to on-lend, so they are more willing or able to borrow to on-lend, so they borrow to on-lend. It is possible that familiarity with borrowing to on-lend demystifies the process, and makes it easier to sustain. If so, encouraging VFs to borrow even modestly for on-lending may ultimately help nudge some to a “higher” equilibrium, moving them from social intermediaries to true financial intermediaries.

Despite the fact that one in five VFs borrow to on-lend, there is a strong reluctance to become a financial intermediary. Most village funds say they would like to lend more; in the 2010 survey of Village Funds, 75% said they want more funds to lend, and 72% said they could lend an additional million baht (about US\$29,000) safely. When asked to specify the ideal size of their loan portfolio, the median response was 2 million baht (compared to median actual lending of 1.14 million baht). On the other hand, only 13% would be willing to borrow more from the BAAC (or GSB or KTB) in order to expand their borrowing, despite

**Table 13. Estimation Results of Logit Model of the Determinants of On-Lending**

	Coefficient / s.e.
<b>Fund capital</b>	
Initial VF capital	0.318*** (0.102)
VF allows for saving	0.170 (0.147)
VF requires members to save	0.138 (0.137)
<b>Characteristics of VF committee</b>	
Proportion who have some higher education	0.060 (0.257)
Proportion who have accounting experience	-0.689 (1.280)
Need training in loan appraisal (yes=1)	-0.119 (0.121)
Accounts are computerized (yes=1)	0.101 (0.128)
VF officers are chosen, not elected (yes=1)	0.062 (0.162)
VF would cut loans equally if funds were short (yes=1)	-0.149 (0.130)
<b>Village size and organization</b>	
Number of households in village (thousands)	-0.209 (0.247)
Village has a market (yes=1)	0.102 (0.131)
Rural (yes=1)	-0.143 (0.157)
<b>Household characteristics</b>	
Proportion of households who are self-employed farmers	0.363 (0.358)
Proportion of income generated by wages	-0.518 (0.413)
Proportion of population with some secondary education	0.568 (0.459)
Household assets (excluding land)	0.065 (0.150)
Proportion who have a loan from a formal bank	0.772** (0.304)
Proportion of borrowers who are women	-0.288 (0.420)
Expenditure per capita	-0.219*** (0.049)
<b>Loan terms and conditions</b>	
VF would borrow more if funds were short	2.076*** (0.170)
VF could lend out another 1m baht safely	0.937*** (0.182)
VF wants to borrow more from BAAC, GSB, etc.	0.853*** (0.130)
<b>Memo items:</b>	
Number of observations	2,203
p-value for equation	0.00

Source: Village Fund Survey 2010 and Thailand SES 2009. 2,203 observations. Robust standard errors in parentheses. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001. Intercept not shown. Dependent variable is 1 if VF borrows to on-lend, 0 otherwise.

relatively low interest rates (a median borrowing rate of 3%, mean rate of 3.8%). This may reflect an unwillingness to take on risk; village funds want to lend from equity, not debt. And if loan demand were to exceed the available supply, 63% of VF committees say they would still lend to all qualified borrowers, but in a majority of these cases they would reduce loans equally, effectively sharing the pain (see Table 14). Faced with excess loan demand, about one VF in seven would refuse some loans; and about one in eight would try to borrow more from the BAAC or another bank in order to accommodate the demand.

<b>Table 14. Response of Village Funds to insufficient funds for lending</b>	
How does the VF respond if there are insufficient funds relative to loan demand?	% breakdown
Still lend to all	2.1
Lend to all, reducing loans equally	35.8
Lend to all, reducing some loans by more	24.8
Refuse some loans	13.6
Borrow more from BAAC/GSB/KTB	12.7
Other	11.0

Source: Village Fund Survey, 2010

Almost a third (32%) of village funds claim to have a AAA credit rating, and these funds are slightly more likely to want to borrow funds in order to lend more to their members. Most VF committees (91%) say they announce their financial results publicly.

### *Risk Mitigation*

Although every Village Fund needs to be concerned about managing risk, this is particularly true of VFs that borrow to on-lend. There are a number of possible ways in which risk may be reduced. An altruistic VF will try to minimize the burden of such provisions, consistent with some form of non-bankruptcy constraint. Informal mechanisms probably work better in small than large villages.

The first approach is to require borrowers to save, in the form of shares and deposits. Only members may apply for a loan, and 75% of VFs require members to buy at least one share, at a median cost of 20 baht (and mean cost of 44 baht). The median number of outstanding shares is 900, so the book value of total outstanding shares is roughly 18,000 baht (about US\$525) per village fund. Aggregated over 78,000 villages, this represents equity of approximately US\$41 million.

Fully 99% of villages reported that they then require a loan application fee, but the cost is modest: the median fee is 20 baht, and in 95% of cases the fee does not exceed 100 baht.

Almost two-thirds (65%) of village funds have a savings facility, and 55% of funds require borrowers to do some saving. The minimum deposit size averages 181 baht (or 70, if the median value is used), but 52% of funds require monthly deposits, which average 67 baht (50, using the median value). About two-fifths (41%) of funds do not pay interest on savings; for the others, the median interest paid is 5% p.a.

A second mechanism for mitigating risk is to require loan guarantees. VF borrowers are expected to have guarantors, typically two (in 78% of village funds) or three (in 16% of cases). The guarantors are rarely called upon to make good on a loan – certainly this was so in 90% of the villages surveyed – but in the remaining cases there was recourse to the guarantors, typically for one or two loans per village. Three percent of villages reported turning to guarantors to repay more than two loans.

It is also possible to reduce risk by requiring borrowers to repay in installments. About one VF in four expects borrowers to repay monthly, although for two-thirds of loans the payment is made at the end of the year (or the term of the loan), as Table 15 shows. Fully 84% of loans are repaid to the VF in cash and collected at the village prior to being deposited in the bank where the VF has an account – again probably a mechanism to help ensure timely repayment. An estimated 19% of loans are repaid directly to a bank (with the overlap representing loans that are repaid partly in cash and partly to a bank).

Table 15. Repayment Procedures	
Repayment period	% breakdown
Weekly	0.2
Monthly	28.1
Quarterly	1.6
Yearly	62.0
At end of term	6.1
Other	2.1

Source: Village Fund Survey, 2010.

The bulk (88%) of VFs have subcommittees, or designated committee members, to encourage loan repayment; nearly two-thirds (64%) allow overdue loans to be rescheduled; but just 6% are willing to consider further loans to individuals whose loans have been rescheduled.

VF officers and committees frequently complain that they do not get as much support as they would like from the regional or central office. Most say they would like help with bookkeeping (87%), management (83%), assessing the creditworthiness of borrowers (68%), or for other matters (98%). The need for maintaining and upgrading skills can easily be overlooked in such a highly decentralized organization.

### *Elite Capture*

One of the most frequently-raised concerns about locally-run organizations such as the Village Funds is that village elites might “capture” the million-baht windfall and help themselves to the proceeds (Lanjouw and Ravallion 1998; Bardhan and Mookherjee 2000). Well-connected villagers may stand for election to the VF committee, and once there, become self-serving. VF committee members might then pay lower interest rates, obtain larger loans, and/or be more casual about repayment. Alternatively, these benefits might flow disproportionately to the economically privileged, whether or not they serve on the VF management committees.

Despite the temptations, it is plausible that elite capture is unlikely because (i) better-off villagers already have good access to credit, and would not want to jeopardize their credit standing, (ii) if the elite were to appropriate the benefits of the VF, their social standing in the village would fall, (iii) the VF committee is, in principle, accountable to all the adults in the village, and (iv) there is a strong ethic of social solidarity.

The data marshaled in Tables 16 and 17, which are based on the 2010 Socio-Economic Survey, allow us to address the issue of elite capture directly. While just 10% of those in the poorest quintile (as measured by expenditure per capita) have served on a VF committee, 25% of those in the top quintile have done so.

On average, VF committee members paid 5.9% in interest on their VF loans, compared to 5.97% for those who never served. However, a more satisfactory measure is the difference between what a VF committee member in a given village pays (as reported by the individual), and the average interest paid in that village on VF loans. By this measure, VF committee members actually paid 0.015 percentage points *more* than their peers, although the difference is not statistically significant (p-value of Wald-test is 0.70). VF committee members borrowed 21% more per loan than others, but their on-time repayment rate was 1.5 percentage points higher. By these measures, VF committee members were not strongly self-serving.

An alternative view of elite capture is that favorable loans may flow disproportionately to the more affluent. The figures in Table 17 show that, compared to their peers, borrowers in the top quintile paid slightly lower interest rates (0.013 percentage points lower, not significant), borrowed larger loans (16% higher), and were slightly more likely to repay on time (0.2 percentage points higher). On the other hand, those in the top quintile only got an average of 0.13 loans per adult from the VF, compared to 0.48 loans per adult in the bottom quintile. Again, it is hard to see compelling evidence here of elite capture of the benefits of the VF loans.

**Table 16. Patterns of borrowing by Village Fund committee members**

	Serves on VF committee			Overall
	Currently	No longer	Never	
All VF borrowers	11.0	6.2	82.8	100.0
<i>Expenditure per capita quintile</i>				
1 (poorest)	6.9	3.1	90.0	100.0
2	9.6	5.2	85.2	100.0
3 (middle)	11.7	7.1	81.2	100.0
4	14.9	8.3	76.8	100.0
5 (richest)	15.0	9.7	75.3	100.0
<i>Interest rate paid on VF borrowing (% p.a.)</i>				
Average	5.93	5.88	5.97	5.96
Excess over village average	0.015	-0.004	-0.002	0.00
<i>Loan from VF (baht per loan per year)</i>				
Average	20,524	17,781	16,360	16,913
Excess over village average	2,366	749	-369	0
<i>Proportion repaying on time (%)</i>				
Average	94.3	92.8	92.3	92.7
Excess over village average	1.5	0.1	-0.3	0.0
<i>Expenditure per capita (baht per capita per month)</i>				
Average	4,115	4,696	3,507	3,647
Excess over village average	348	863	-129	-15

Source: Socio-economic Survey 2010.

**Table 17. Patterns of borrowing by expenditure per capita quintile**

	1 (poorest)	2	3 (middle)	4	5 (richest)
<i>Interest rate paid on VF borrowing (% p.a.)</i>					
Average	5.88	5.94	5.99	6.00	6.06
Excess over village average	0.014	-0.014	0.021	-0.019	-0.013
<i>Loan from VF (baht per loan per year)</i>					
Average	15,954	16,000	17,011	18,292	18,634
Excess over village average	-503	-425	187	588	740
<i>Proportion repaying on time (%)</i>					
Average	91.8	93.0	92.4	92.5	93.5
Excess over village average	-0.8	-0.1	0.1	0.9	0.2
<i>Memo:</i>					
VF loans per adult	0.48	0.47	0.38	0.28	0.13

Source: Socio-economic Survey 2010.

## 7. Assessing Village Fund Performance

We now turn to the estimation of the determinants of the various measures of VF performance, starting with profit, and then moving on to the loan recovery rate, and the amount of funds available for lending.

### *Profit*

The “profit rate” measures VF income (mainly interest) less actual outgoings (interest costs on loans, dividends paid on shares, honoraria to VF committee members, administrative expenses), the imputed cost of unpaid time donated by VF committee members, and the interest that the VF would have had to pay on its

equity, mainly the initial million baht, if it had to borrow the funds from the BAAC or equivalent institution, all divided by its total capital. By this measure, the average profit rate was -13.4%, but it should be emphasized that little of this loss represents an actual leakage of cash.

We argued above (section 4) that given the altruistic nature of VF committees, it is likely to be difficult to model the determinants of profit. The evidence bears this out. Table 18 presents the results of an endogenous switching model (Lokshin & Sajaia 2004; Dutoit 2007), where VFs first decide whether or not to borrow to on-lend, and then may set to earning a profit. The idea here is that the profit-generating process in VFs that borrow to on-lend may differ from that of the other VFs, and indeed a formal test shows this to be the case (bottom row of Table 18). The independent variables used here have already been discussed.

The first column in Table 18 shows the OLS estimates, with robust standard errors, of a model where any variables with a p-value below 0.2 have been excluded, one by one. Given that we do not have strong prior beliefs about which independent variables are essential, the main advantage of this approach is that it allows one to use a larger sample that would be possible if all the variables were included. In practice, in almost all cases, variables that are statistically significant with all the data are also statistically significant in the stripped-down regressions, so the story remains the same.

The most striking feature of the profit equation is the poor fit – the  $R^2$  is just 0.014 – which is what we would expect if VFs are altruistic, so profit is low and largely random. If anything, profit is lower in villages where households are more affluent – perhaps the demand for VF loans is lower – and the initial VF funding is greater (which may lower the incentive to need to generate equity internally).

Table 18 also shows the results of an endogenous switching regression. The idea here is that VFs that borrow to on-lend may be qualitatively different from those that do not; but that the decision to borrow to on-lend is itself endogenous – much as a wage rate cannot be dissociated from the decision to earn a wage in the first place. An initial probit model allocates observations models the allocation of observations to two groups, here VFs that do, and do not, borrow to on-lend; it then generates Mills ratios that are used in the second-stage equations to correct for potential selection bias. The p-value for the test of the appropriateness of endogeneity is 0.055, which helps justify taking this approach. While the switching component of the model is strong – the probit coefficients are shown in the right hand column of Table 18, and are strongly influenced by the variables that measure VF attitudes toward risk – the equations that try to explain profit are quite inconclusive. We also analyzed the model using TreeNet, but found little evidence of unsuspected non-linearities or interactions (TreeNet 2011). In short, we conclude that profit is difficult to explain, and we interpret this as evidence that profit maximization is not the objective of most VFs.

**Table 18. Estimation Results of Model of the Determinants of Net Profit**

	Robust OLS Full sample stepwise	Endogenous Switching Regression		
		Onlending	No onlending	Probit, switch
<b>Supply: Fund Capital</b>				
Initial VF capital	-0.056* (0.033)	-0.004 (0.008)	-0.174* (0.097)	0.284** (0.126)
VF allows for saving	-0.052 (0.037)	-0.002 (0.006)	-0.087 (0.060)	0.072 (0.086)
VF requires members to save	-0.026 (0.021)	-0.005 (0.012)	-0.031 (0.029)	0.057 (0.083)
<b>Supply: Characteristics of VF Committee</b>				
Proportion who have some higher education		0.003 (0.015)	0.269 (0.265)	0.090 (0.166)
Proportion who have accounting experience		0.006 (0.047)	-0.295 (0.246)	0.011 (0.822)
Need training in loan appraisal (yes=1)		-0.009** (0.004)	0.050 (0.038)	-0.028 (0.078)
Accounts are computerized (yes=1)		0.005 (0.006)	0.020 (0.063)	0.045 (0.076)
VF officers are chosen, not elected (yes=1)		-0.002 (0.006)	0.088 (0.092)	-0.013 (0.096)
VF would cut loans equally if funds were short (yes=1)	0.075* (0.039)	0.004 (0.039)	0.087* (0.047)	-0.085 (0.078)
<b>Demand: Village Size and Organization</b>				
Number of households in village	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Village has a market (yes=1)	-0.033 (0.022)	-0.001 (0.013)	-0.048 (0.035)	0.038 (0.081)
Rural (yes=1)	0.083 (0.056)	-0.001 (0.006)	0.106 (0.065)	-0.099 (0.094)
<b>Demand: Household Characteristics</b>				
Proportion of households who are self-employed farmers	-0.219 (0.149)	-0.005 (0.020)	-0.460 (0.297)	0.215 (0.224)
Proportion of income generated by wages		0.003 (0.014)	0.136 (0.193)	-0.343 (0.253)
Proportion of population with some secondary education		0.001 (0.017)	-0.214 (0.233)	0.374 (0.279)
Household assets (excluding land)	-0.022* (0.012)	-0.010 (0.013)	-0.009 (0.016)	0.050 (0.088)
Proportion who have a loan from a formal bank		0.011 (0.039)	0.332 (0.243)	0.388** (0.188)
Proportion of borrowers who are women		0.008 (0.016)	-0.242 (0.184)	-0.282 (0.251)
Expenditure per capita	-0.010* (0.005)	0.000 (0.008)	-0.013 (0.010)	-0.122*** (0.028)
<b>Loan terms and conditions</b>				
VF would borrow more if funds were short	-			1.217*** (0.104)
VF could lend out another 1m baht safely	-			0.572*** (0.193)
VF wants to borrow more from BAAC, GSB, etc.	-			0.464*** (0.154)
<b>Memo items:</b>				
Number of observations	2,143			1,963
R2	0.014			
p for endogeneity				0.055

Source: Village Fund Survey 2010 and SES 2009. Robust standard errors in parentheses. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001.

## Loan Recovery Rate

Another dimension of the performance of a Village Fund is the proportion of loans that are successfully repaid on time. The “loan recovery rate” as reported by VFs in the May 2010 survey was just 73%, but is only a weak approximation of the true rate, because it measures repayments as of December 2009 divided by the loans extended as of May 2010. Data collected from households in the socio-economic surveys of 2004, 2009, and 2010 show an on-time loan recovery rate of about 93% (see Table 2); when late payments are factored in, 97-98% of the principal lent appears to have been recovered.

**Table 19. Estimation Results of Model of the Determinants of Loan Recovery Rate**

	Robust OLS	Endogenous Switching Regression		
	Full sample	Onlending	No onlending	Probit, switch
<b>Supply: Fund Capital</b>				
Initial VF capital		-0.017 (0.091)	0.035 (0.026)	0.356*** (0.101)
<b>Supply: Characteristics of VF Committee</b>				
Accounts are computerized (yes=1)	0.070*** (0.022)	0.030 (0.067)	0.067** (0.027)	0.116 (0.121)
<b>Demand: Household Characteristics</b>				
Proportion of income generated by wages	-0.023 (0.073)			
Proportion of population with some secondary education	-0.250*** (0.073)	0.009 (0.209)	-0.292*** (0.080)	0.528 (0.370)
Proportion who have a loan from a formal bank	0.315*** (0.061)	0.182 (0.357)	0.300*** (0.075)	0.862*** (0.317)
Proportion of borrowers who are women		0.030 (0.230)	0.108 (0.092)	0.272 (0.416)
Expenditure per capita		-0.015 (0.044)	-0.001 (0.007)	-0.102*** (0.036)
<b>Loan terms and conditions</b>				
VF would borrow more if funds were short	-			1.232*** (0.282)
VF could lend out another 1m baht safely	-			0.584*** (0.152)
VF wants to borrow more from BAAC, GSB, etc.	-			0.356*** (0.128)
VF borrows to on-lend to members	0.146*** (0.026)			-
<b>Memo items:</b>				
Number of observations	888			885
R <sup>2</sup>	0.095			
p for endogeneity				0.032

Source: Village Fund Survey 2010 and SES 2009. Sample includes cases with loan recovery rate between 0% and 100%. Robust standard errors in parentheses. Variables included based on OLS backward stepwise with p=0.2 cutoff. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001.

The estimation results are shown in Table 19, and report only versions that have been stripped down using backward stepwise elimination. The results based on the full set of variables show comparable estimated coefficients for the variables shown here.

Village Funds that borrow to on-lend have a better loan recovery rate – they face pressure to repay the loans they have taken on from the BAAC or GSB – although the fit of the OLS model ( $R^2 = 0.095$ ) is fairly modest. In areas where more people have experience with bank loans, the loan recovery rate is higher; computerized accounting also helps, or is associated with some unobservable, such as good VF management. The endogenous switching equations show that these variables work via their effects on VFs that do *not* borrow to on-lend.

### ***Incremental Funds Available to Lend***

In our theoretical discussion we argued that Village Funds would try to maintain their capital over time to stay relevant. The summary statistics in Table 10 show that on average, VFs had 1.60 million baht available to lend, and as of May 2010 had actually lent out 1.37 million baht. “Available capital” includes initial VF equity, savings deposits, share purchases by members, loans from banks, contributions from other sources such as NGOs, and internally-generated equity. Here we examine the determinants of incremental available capital, by which we mean capital that is available to the VF over and above the initial injections of government working capital.

A formal test does not reject the hypothesis that the endogenous switching model is appropriate here, so in Table 20 we present these results, as well as an OLS model for comparison, in both cases confining the variables to those that proved to be statistically significant. The most obvious point to emerge from the linear equation is that VFs that borrow to on-lend have nearly a million baht more to lend to households than do the other VFs. Furthermore, VFs that allow members to save also have more available funds, and the switching model shows that this is true of all types of Village Fund. It also appears that VFs that are well managed, as reflected in computerization of their accounts, or a higher proportion of committee members with accounting experience, tend to have more funds available. On the demand side, it is clear that in villages where there is a high proportion of farmers, Village funds are prompted (i) to borrow to on-lend (as seen in the rightmost column in Table 20), and (ii) to make more credit available.

One other variable stands out. Village Funds that have more well-educated committee members have *less* money to lend. This is unexpected; perhaps better-educated members are more willing to take risks, or less insistent on loans being repaid, or expect higher honoraria.

Oddly enough, our model of actual lending (as opposed to capital available), shown in Table 21, is less informative. The fit is weaker, and a formal test rejects the appropriateness of the endogenous switching model, which means that the variables shown in Table 21 apply equally well to VFs that borrow to on-lend and those that do not. The fit is largely driven by two variables: VFs that received more initial capital also lend more, and VFs that borrow to on-lend actually do lend more. Lending is somewhat lower when a higher proportion of borrowers are women; a possible interpretation is that these are areas where loan demand is relatively low.

**Table 20. Estimation Results of Model of the Determinants of Additional Funds Available to Lend**

	Robust OLS	Endogenous Switching Regression		
	Full sample	Onlending	No onlending	Probit, switch
<b>Supply: Fund Capital</b>				
Initial VF capital	0.073** (0.033)	0.035 (0.038)	0.084** (0.038)	0.000*** (0.000)
VF allows for saving	154.421*** (22.075)	172.25** (86.675)	144.43*** (18.483)	0.157** (0.066)
<b>Supply: Characteristics of VF Committee</b>				
Proportion who have some higher education	-76.750** (32.747)	-213.362** (92.138)	-32.955 (29.318)	-0.007 (0.127)
Proportion who have accounting experience	301.128 (198.471)			
Accounts are computerized (yes=1)	118.218*** (28.933)	268.64*** (96.492)	81.022*** (23.519)	0.067 (0.065)
VF would cut loans equally if funds were short (yes=1)	-46.188* (23.865)	9.594 (114.351)	-44.255** (18.245)	-0.016 (0.067)
<b>Demand: Village Size and Organization</b>				
Village has a market (yes=1)	70.581** (29.269)	162.55* (89.593)	29.789 (25.654)	0.017 (0.064)
<b>Demand: Household Characteristics</b>				
Proportion of households who are self-employed farmers	251.015*** (80.795)	597.81** (280.65)	-20.972 (52.068)	0.746*** (0.133)
Expenditure per capita	11.171*** (4.023)			
<b>Loan terms and conditions</b>				
VF would borrow more if funds were short	-			1.239*** (0.092)
VF could lend out another 1m baht safely	-			0.538*** (0.086)
VF wants to borrow more from BAAC, GSB, etc.	-			0.529*** (0.067)
VF borrows to on-lend to members	927.096*** (40.860)			-
<b>Memo items:</b>				
Number of observations	2,528			2,593
R2	0.328			
p for endogeneity				0.088

Source: Village Fund Survey 2010 and SES 2009. Robust standard errors in parentheses. Variables included based on OLS backward stepwise with p=0.2 cutoff. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001.

**Table 21. Estimation Results of Model of the Determinants of Total Lending**

	OLS, all variables	OLS, stepwise
<b>Supply: Fund Capital</b>		
Initial VF capital	0.569*** (0.170)	0.574*** (0.165)
VF allows for saving	-22.907 (69.819)	
VF requires members to save	23.191 (56.698)	
<b>Supply: Characteristics of VF Committee</b>		
Proportion who have some higher education	-65.063 (58.501)	-84.864* (48.448)
Proportion who have accounting experience	57.488 (290.972)	
Need training in loan appraisal (yes=1)	40.378 (52.513)	
Accounts are computerized (yes=1)	119.385 (75.903)	105.390 (76.260)
VF officers are chosen, not elected (yes=1)	-65.155 (57.697)	
VF would cut loans equally if funds were short (yes=1)	-29.936 (39.927)	
<b>Demand: Village Size and Organization</b>		
Number of households in village	0.165 (0.170)	
Village has a market (yes=1)	-38.254 (92.823)	
Rural (yes=1)	-57.792 (67.160)	
<b>Demand: Household Characteristics</b>		
Proportion of households who are self-employed farmers	177.577 (143.539)	
Proportion of income generated by wages	57.048 (174.001)	
Proportion of population with some secondary education	-368.638 (226.790)	-351.317*** (80.353)
Household assets (excluding land)	4.421 (31.845)	
Proportion who have a loan from a formal bank	127.967 (199.043)	
Proportion of borrowers who are women	-272.871** (128.969)	-177.872** (89.424)
Expenditure per capita	2.761 (17.623)	
<b>Loan terms and conditions</b>		
VF borrows to on-lend to members	611.210*** (149.176)	584.225*** (114.571)
<b>Memo items</b>		
Number of observations	2,102	2,343
R2	0.164	0.160

Sources: Village Fund Survey 2010, and SES 2009. Robust standard errors in parentheses. Stepwise regression uses p=0.2 cutoff for dropping variables. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001.

**Credit Ratings**

Even if VFs are not driven by profit, they may seek to maintain a good credit rating – if only to keep open the option of being able to borrow (to on-lend) should the need arise. VFs are rated as A, AA, or AAA, by the development banks (such as the BAAC), although some VFs either do not know their credit rating, or have not been rated.

It is useful to ask what might drive credit ratings; we do this with a multinomial logit model, applied only to rated VFs, and where the omitted category is “A”. The most important results are summarized in Table 22, which reports a version of the model where only the statistically significant variables are retained. The results of estimating separate models for VFs that on-lend, and those that do not, using all the available variables, are shown in Appendix 1; the endogenous switching model is not warranted here, as the coefficients on the inverse Mills ratios in the second-state equations are not statistically significant.

<b>Table 22. Estimation Results of Multinomial Logit Model of the Determinants of Credit Ratings</b>		
	rating=AA	rating=AAA
<b>Supply: Fund Capital</b>		
VF requires members to save	0.083 (0.189)	0.274 (0.189)
Proportion who have accounting experience	4.973** (2.119)	3.524* (2.106)
Accounts are computerized (yes=1)	0.103 (0.208)	0.396* (0.207)
<b>Demand: Village Size and Organization</b>		
Village has a market (yes=1)	-0.196 (0.195)	-0.395** (0.195)
<b>Demand: Household Characteristics</b>		
Household assets (excluding land)	-0.150 (0.154)	-0.294* (0.155)
<b>Loan terms and conditions</b>		
VF borrows to on-lend to members	0.796*** (0.274)	0.961*** (0.273)
<b>Memo items:</b>		
Number of observations	1,919	
p-value for significance	0.00	

Source: Village Fund Survey 2010 and SES 2009. Robust standard errors in parentheses. Stepwise regression uses p=0.2 cutoff for dropping variables. For fuller regression, see Appendix 1. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001. Omitted rating is “A”.

Village Funds that borrow to on-lend have higher credit ratings. The effect is strong and also unsurprising, although the direction of causality is unclear: VFs may borrow because their ratings are good enough, but borrowing VFs are also likely to be careful to maintain good credit ratings. The credit ratings are stronger for

VFs where more committee members have accounting experience, and where the accounts are maintained on computers – both good indicators of managerial competence.

For on-lending VFs, those that require (rather than just allow) their members to save have higher credit ratings – see Appendix 1. VFs that would, if funds were short, cut the size of loans across the board, also had higher credit ratings. More surprising, perhaps, is the finding that when the committee has more members with some university education, the credit score is lower. This is surely related to our earlier result that links the higher education variable with lower capital availability (Table 20), holding other effects constant.

### ***Outreach***

Two other measures of performance are of importance. The first looks at the proportion of individuals in a village who borrow from the VF – a measure of outreach that we refer to as “lending density.” Theoretically, we expect altruistic village funds to favor a wide outreach. The second measures the number of loans going to the “poor” (defined as households with expenditure per capita below the village median) relative to the number of loans going to the non-poor. We expect, again theoretically, loans to go to both groups, but probably with a tilt toward the poor, and indeed this is what we find, with a ratio of 1.68 (poor borrowers per non-poor borrower) in rural Thailand. This latter measure was obtained by matching the 2009 SES data with the data from the 2010 VF survey and the 2009 Community Survey, which was possible only in rural areas.

A first cut at the data may be seen in Table 23, which uses household data from the socio-economic surveys of 2009 and 2010 to map VF borrowing by expenditure per capita quintile. Poorer households are more likely to borrow, pay lower interest rates, and get somewhat smaller loans than their richer neighbors. Table 24 breaks down VF borrowing by household (financial) assets, and shows that VF borrowing is particularly important for households with limited assets; for them, it is often their first source of borrowing, rather than a supplementary source of credit. The importance of VF loans for the poor is confirmed by the numbers in Table 25, which show that although VF loans are the main source of credit for 12% of households, this

**Table 23. Borrowing terms, by expenditure per capita quintile, 2009 and 2010**

Expenditure per capita quintile	Amount borrowed from Village Fund (baht/loan)		Times borrowed since 2002 (for those still borrowing)		Average interest rate paid (% p.a.)	
	2009	2010	2009	2010	2009	2010
1 (poorest)	14,080	15,954	5.1	5.9	5.9	5.9
2	15,398	16,000	5.0	6.0	5.9	5.9
3 (mid)	15,881	17,011	5.1	5.9	6.0	6.0
4	16,957	18,292	4.8	5.8	6.1	6.0
5 (richest)	17,781	18,634	4.8	5.7	6.0	6.1

Source: Thailand Socio-Economic Surveys of 2009 and 2010.

**Table 24. Debt and VF loans by household financial asset class, 2010**

Value of household financial assets ('000 baht)	Share of households	Household outstanding debt ('000 baht)	% of households indicating VF as source of first loan
None	<0.1	52	..
< 10	36.2	96	26
10 - 29.9	25.0	136	21
30 – 49.9	14.9	232	16
50 – 99.9	11.8	316	13
100 – 499.9	8.4	532	9
500 – 999.9	2.2	851	4
1,000 – 4,999.9	1.2	1,765	7
5,000 – 9,999.9	0.2	1,583	0
≥ 10 million baht	0.1	1,517	0

Source: Thailand Socio-Economic Survey 2010. Note: .. = sample size too small.

**Table 25. Main sources of borrowing, 2010**

Source of main loan	% breakdown for all households	Outstanding debt per household ('000 baht)	% breakdown for households in the poorest expenditure quintile
Commercial bank	3.5	839	0.6
BAAC	19.6	136	26.8
GSB	3.7	703	0.3
Other financial companies	11.7	185	4.6
Savings cooperatives / welfare orgs.	4.6	499	1.6
Village Fund	11.7	24	20.9
Persons outside the household	6.2	89	7.3
No loan	39.1		38.0
Memo: Overall (for those with debt)		221	

Source: Thailand Socio-Economic Survey 2010.

proportion rises to 21% for households in the poorest quintile. This is despite the fact that VF loans are, on average, far smaller than loans from all the other main sources of credit, and make at best a relatively modest contribution to the overall availability of credit in Thailand (Menkhoff and Rungruxsirivorn 2011).

The data reject the use of the endogenous switching model for lending density, so the results in Table 26 are based on a linear model where non-significant variables have been removed; the estimated coefficients based on using all the variables are very similar (not reported here).

The results are unsurprising. A higher proportion of households borrow from the VF if the fund received more initial capital, borrows to on-lend, or is well managed (as proxied by accounting experience on the committee). Lending density is lower when the village is larger, as one would expect, given that the initial injection of a million baht was given to each village and ward, irrespective of population. Demand plays a role too; when there are relatively more farmers, lending density is higher. Interestingly, in areas where

relatively more people have formal bank loans, VF lending is also more widespread; these are likely areas with a high demand for credit, and where the VF may complement, rather than supplant, other sources of funds.

Our next exercise tries to measure the determinants of the number of loans extended to ‘poor’ households for every loan extended to a non-poor household, for rural areas. The results are presented in Table 27, and here too an endogenous switching model was not warranted. The first column in Table 27 shows a stripped-down set of estimates; the right-hand column shows the full results of a model that also includes dummy variables for each province (coefficients not shown). This is one of the few sets of results where the inclusion of provincial (or regional) dummies had an appreciable effect on the fit.

**Table 26. Estimation Results of Model of the Determinants of Lending Density**

	Robust OLS, stepwise
<b>Supply: Fund Capital</b>	
Initial VF capital	0.007** (0.003)
<b>Supply: Characteristics of VF Committee</b>	
Proportion who have accounting experience	0.047* (0.026)
<b>Demand: Village Size and Organization</b>	
Number of households in village	-0.043*** (0.007)
<b>Demand: Household Characteristics</b>	
Proportion of households who are self-employed farmers	0.035*** (0.007)
Proportion who have a loan from a formal bank	0.036*** (0.006)
Proportion of borrowers who are women	-0.046*** (0.010)
Expenditure per capita	-0.002** (0.001)
<b>Loan terms and conditions</b>	
VF borrows to on-lend to members	0.017*** (0.003)
<b>Memos</b>	
Number of observations	2,237
R2	0.189

Source: Village Fund Survey 2010, and SES 2009. Robust standard errors in parentheses. Stepwise regression uses  $p=0.2$  cutoff for dropping variables.

\*  $p<0.05$ , \*\*  $p<0.01$ , \*\*\*  $p<0.001$ .

These results are interesting in that they hint at a tradeoff between equity and efficiency. Village Funds that have computerized their accounts – which we interpret as effective management – are relatively less likely to lend to the poor, other things being equal. Lending to the poor is relatively lower in large villages; one might imagine VFs in such areas funding that there is plenty of demand by low-risk non-poor households, so they are less obliged to serve the poor. Where farmers are common, lending to the poor is more widespread; this

**Table 27. Estimation Results of Model of the Determinants of Lending to the 'Poor', Rural Areas**

	Robust OLS, stepwise	Robust OLS, provinces
<b>Supply: Fund Capital</b>		
Initial VF capital		0.000 (0.000)
VF allows for saving	-0.140 (0.101)	-0.161 (0.156)
VF requires members to save		0.040 (0.139)
<b>Supply: Characteristics of VF Committee</b>		
Proportion who have some higher education		-0.264 (0.199)
Proportion who have accounting experience		0.136 (0.421)
Need training in loan appraisal (yes=1)		0.170 (0.120)
Accounts are computerized (yes=1)	-0.201** (0.100)	-0.270** (0.127)
VF officers are chosen, not elected (yes=1)		0.112 (0.158)
VF would cut loans equally if funds were short (yes=1)		-0.055 (0.111)
<b>Demand: Village Size and Organization</b>		
Number of households in village	-0.004*** (0.001)	-0.003** (0.001)
Village has a market (yes=1)		0.011 (0.147)
<b>Demand: Household Characteristics</b>		
Proportion of households who are self-employed farmers	0.620*** (0.209)	0.613* (0.313)
Proportion of income generated by wages		0.164 (0.392)
Proportion of population with some secondary education	0.593* (0.332)	0.532 (0.443)
Household assets (excluding land)		-0.000 (0.000)
Proportion who have a loan from a formal bank		0.016 (0.252)
Proportion of borrowers who are women		-0.440 (0.398)
Expenditure per capita	0.097** (0.039)	0.187*** (0.061)
<b>Loan terms and conditions</b>		
VF borrows to on-lend to members	0.187* (0.097)	0.157 (0.117)
<b>Memo items</b>		
Number of observations	808	661
R <sup>2</sup>	0.088	0.169

Source: Village Fund Survey 2010, and SES 2009. Robust standard errors in parentheses. Stepwise regression uses p=0.2 cutoff for dropping variables. Right-hand column includes provincial dummy variables (not shown).

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001.

is consistent with the idea that farmers themselves are both relatively poor, and have a high demand for credit and working capital. It is interesting that areas with a better-educated populace are *more* likely to lend to the poor, whether through social solidarity, or because better-educated households have less need for VF credit, is unclear.

### ***Interest Rates***

Although not strictly a measure of performance, we end this section with a discussion of the determinants of the interest rates that VFs set when lending; Christensen (2010) also has an extended discussion of this issue. Most Village Funds set their interest rate policies early on – i.e. when funds first began to flow to them in 2003 and 2004 – and have not adjusted them since. And as noted above, most rates vary only modestly around about 6% p.a. Thus we would not expect our model to fit well, and this is what we find: the linear model has an  $R^2$  of 0.04, although if provincial dummy variables are included, the  $R^2$  rises to 0.15, as Table 28 shows.

Interest rates are higher if VFs borrow to on-lend; they need to be able to charge enough to cover their borrowing costs. Interest rates are also higher in more-affluent areas, and when VF accounts are computerized. It might seem surprising that VFs that received more initial capital also charge *higher* interest rates; this is probably because those VFs established realistic interest rates early on, developed solid credit ratings, and became eligible for additional injections of capital. The interest rate charged is higher in larger villages, where the market is large enough to bear the higher price.

An endogenous switching model is appropriate in this case, and points to similar conclusions. It is interesting that VFs that borrow to on-lend, and say they need training in loan appraisal techniques, or have a more highly-educated committee, tend to charge lower interest rates. It is possible that these are VFs that had a hard-nosed approach to lending.

### ***Social Contributions***

Some argue that an important benefit of the Village Funds, and a way to judge their performance, is that they contribute to socially-important causes – for instance, by providing educational scholarships, or helping with funeral expenses. Such activities do occur – two thirds of Village Funds made such contributions – but the amounts are small, with a mean gift of 6,403 baht (about US\$210).

**Table 28. Estimation Results of Model of the Determinants of VF Interest Rates**

	Robust OLS		Endogenous Switching Regression		
	Stepwise	Full, with provinces	Onlending	No onlending	Probit, switch
<b>Supply: Fund Capital</b>					
Initial VF capital	0.228*** (0.074)	0.152** (0.074)	0.134*** (0.045)	0.676*** (0.237)	0.356*** (0.071)
VF allows for saving		-0.025 (0.149)	-0.066 (0.167)	-0.021 (0.201)	0.049 (0.082)
VF requires members to save		0.057 (0.144)	0.345** (0.147)	0.030 (0.187)	0.065 (0.077)
<b>Supply: Characteristics of VF Committee</b>					
Proportion who have some higher education	-0.527** (0.240)	-0.213 (0.252)	-0.479* (0.288)	-0.416 (0.340)	0.007 (0.149)
Proportion who have accounting experience		0.439 (1.238)	-1.286 (2.015)	0.506 (1.607)	-0.361 (0.706)
Need training in loan appraisal (yes=1)		-0.058 (0.124)	-0.519*** (0.159)	-0.033 (0.164)	-0.089 (0.067)
Accounts are computerized (yes=1)	0.457*** (0.123)	0.285** (0.129)	0.730*** (0.168)	0.431** (0.177)	0.032 (0.071)
VF officers are chosen, not elected (yes=1)	0.361** (0.157)	0.337** (0.160)	0.089 (0.166)	0.565** (0.221)	0.030 (0.089)
VF would cut loans equally if funds were short (yes=1)		-0.004 (0.125)	-0.082 (0.180)	-0.268 (0.203)	-0.082 (0.072)
<b>Demand: Village Size and Organization</b>					
Number of households in village	0.001*** (0.000)	0.001*** (0.000)	0.002*** (0.000)	0.001*** (0.000)	-0.000 (0.000)
Village has a market (yes=1)		-0.044 (0.134)	0.033 (0.175)	-0.276 (0.182)	0.054 (0.074)
Rural (yes=1)		-0.306* (0.161)	0.014 (0.188)	-0.223 (0.197)	-0.067 (0.088)
<b>Demand: Household Characteristics</b>					
Proportion of households who are self-employed farmers	-0.708** (0.338)	-0.101 (0.407)	0.145 (0.409)	-0.560 (0.487)	0.100 (0.212)
Proportion of income generated by wages	-0.658* (0.379)	-0.544 (0.430)	-0.049 (0.554)	-1.274** (0.538)	-0.515** (0.238)
Proportion of population with some secondary education		0.006 (0.459)	-1.184* (0.622)	0.303 (0.579)	0.419* (0.253)
Household assets (excluding land)	-0.224* (0.123)	-0.077 (0.134)	-0.171 (0.366)	-0.430** (0.202)	0.045 (0.082)
Proportion who have a loan from a formal bank		0.320 (0.351)	-0.017 (0.311)	0.857* (0.454)	0.531*** (0.192)
Proportion of borrowers who are women		0.166 (0.443)	0.841 (0.540)	-0.054 (0.575)	-0.241 (0.241)
Expenditure per capita	0.062* (0.036)	0.112** (0.046)	0.197** (0.086)	0.009 (0.072)	-0.165*** (0.039)
<b>Loan terms and conditions</b>					
VF would borrow more if funds were short					1.048*** (0.156)
VF could lend out another 1m baht safely					0.488*** (0.099)
VF wants to borrow more from BAAC, GSB, etc.					0.419*** (0.092)
VF borrows to on-lend to members	0.261* (0.140)	0.367** (0.149)			
<b>Memo items</b>					
Number of observations	2,425	2,136	2,128		
R <sup>2</sup>	0.040	0.153			

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Source: Village Fund Survey 2010 and SES 2009. Robust standard errors in parentheses. Variables in first column are included based on OLS backward stepwise with  $p=0.2$  cutoff. Regression in second column includes provincial dummy variables (not shown). \*  $p<0.05$ , \*\*  $p<0.01$ , \*\*\*  $p<0.001$ .

## 8. Cost-Benefit Analysis

Do the benefits of the Village Fund outweigh the costs, from an economic point of view? That is the issue we address in this section.

The costs of VF lending may be separated into administrative and financial components. The most important administrative cost is the time spend by VF committee members; to some extent this is compensated in the honoraria that committee members pay themselves, which comes to 1.1% of the value of loans disbursed, and may even be overly generous in some cases. It may be appropriate to add the imputed value of volunteering – time spent working for the VF that receives no, or below-market, compensation. We have valued this additional time at 300 baht/day, in line with the average rural wage in 2009, although a case can be made that since the time was freely offered, this adjustment might not be needed.

Village Funds also make social contributions, such as helping pay for funeral expenses, that represent 0.5% of lending; we treat this as a cost, viewing it as the price of ensuring local goodwill. Other costs at the village level – stationery, even use of a computer – are very small. We do not have information on the cost of running the VF headquarters or regional centers, but this appears to be a relatively modest operation; if it costs \$2 million annually, that would represent just 0.1% of the value of lending. Overall, administrative costs come to about 2% of total lending.

There is a cost involved in raising funds to lend to VF borrowers. Some of these costs are explicit – interest paid to the BAAC or GSP for loans, interest paid to households that make deposits in the VF, and dividends paid to those who buy VF shares. We assume that these capital costs are competitive with other financial institutions, and not excessive. It is possible that the interest and dividend payments to VF members are higher than necessary – a way of sharing the rent inherent in the VF – and so these numbers are likely to be upper bounds.

Local VFs were provided with an initial million baht, and in some cases additional amounts of 100,000 baht or more in subsequent years, without being required to pay an interest on these funds. A small number of Village Funds also received capital from NGOs. From an economic point of view, this capital does have an opportunity cost. We assume that the appropriate interest rate is the one that the BAAC or GSB charges

when lending to VFs, which averaged 4.13% annually. This may seem low, if the riskiness of lending to some VFs is taken into account; on the other hand, no adjustment is made here for interest paid to VFs on deposits held at the BAAC or GSB, which would reduce net capital costs.

The most difficult capital cost to measure is the proportion of loans that are not repaid and are not used productively. In the 2009 SES, 2.1% of VF borrowers said they had “not yet repaid” their VF loan, and a further 2.4% had repaid “in part”. If they were truly lost, the unreimbursed funds cannot be deployed elsewhere, and so represent an economic cost. On the other hand, if the funds remain in the hands of the borrower, and continue to be put to productive use, then the fact that they were not repaid to the VF does not represent an economic cost per se; the VF loss is offset by an equivalent gain to the borrower. The relatively high repayment rate suggests, however, that there is a strong “repayment ethic”, and so our working assumption is that non-reimbursed loans were essentially lost, and therefore do represent an economic cost in their entirety.

In this paper we do not measure the impact of VF lending, but for the purposes of our cost-benefit analysis we draw on the findings of Boonperm et al. (2001), who estimate that VF lending in 2004 raised expenditure per household by a statistically significant 3.5%, and income per household by 1.4% (although this number is not statistically significant). These are equivalent to returns, per baht borrowed, of 27-34% (using the consumption estimates for median and mean incomes), or 13-18% (using the income estimates); details are shown in Table 29. Given their standard errors, these estimates are not mutually inconsistent.

When borrowing leads to higher income, the economic benefit is easy to interpret, and so we begin here. Using mean costs (from the VF survey) and mean income (from the SES survey), Village Fund lending generates a net benefit of 8%; benefits are 18% of the loan, and costs are 10%. If instead we use the median values, which are less influenced by outliers, the net economic benefit is about 4%. An implicit assumption here is that the extra income did not require any additional effort on the part of the borrower; this is not entirely plausible, which would mean that the net benefits shown here may be overstated.

Although consumption is a more attractive measure of wellbeing than income, it is more difficult to interpret as a measure of benefit. If borrowing allows me to buy a sofa, my consumer spending may rise sharply, but the net contribution to economic wellbeing is likely to be more moderate – just some fraction of the total borrowing. Thus the net benefits based on the consumer spending impact – between 18% and 23% - are surely on the high side.

Although we find it plausible that the Thai Village Fund yields net benefits, we recognize that this result is fragile. If benefits are smaller than indicated here – Chandoevmit and Ashakul (2008) find no significant effects on income or expenditure – or if the costs are higher, especially loan losses, but also the opportunity costs of funds, then one could conclude that the VF fails the basic test of cost-benefit analysis.

Our analysis weighs all costs and benefits equally; if benefits accruing to poorer households are given more weight than benefits accruing to others, then the Village Fund is likely to look more attractive, because it is VF loans to the poor that appear to have the largest measurable impact (Boonperm et al. 2011).

**Table 29. Cost-Benefit Analysis of Village Fund Lending**

	Median	Mean	Comments
	<i>per 100 baht lent</i>		
<b>1. Costs</b>			
<i>Administrative:</i>			
Honoraria to committee members	1.1	1.1	Overly generous?
Imputed value of volunteering	0.0	0.4	May not be a true cost; volunteers get psychic income.
Value of social contributions (goodwill)	0.4	0.5	Possibly overstated; not all VFs make such subsidies.
Material costs (computer use, etc.)	0.0	0.0	Understated; does not include VF HQ, stationery.
<i>Capital costs:</i>			
Opportunity cost of capital provided	4.0	4.0	May be too low (not risk-adjusted).
Interest paid for BAAC/GSB loans	0.9	0.9	
Interest paid to village savers	0.4	0.6	
Dividends paid to villagers	0.4	0.7	May be too high; sharing VF rent within village?
Loan losses	2.1	2.1	
<b>Total costs</b>	<b>9.2</b>	<b>10.2</b>	
<b>2. Benefits</b>			
Return based on income	13.5	18.0	Plausible a priori, but estimates not robust.
Return based on consumption	27.2	33.7	Robust, but overstates economic contribution.
<b>3. Net return</b>			
Based on income	4.3	7.8	
Based on consumption	18.0	23.5	
<b>Memo items</b>			
Income per h'hold per month, baht	12,074	16,957	From 2009 SES.
VF return, 1.4% of income, baht/year	2,028	2,849	Return from Boonperm et al. (2011), Table 5
95% CI, income-based return, %	-21 to 48	-27 to 64	
Consumption per h'hold/month, baht	9,703	12,677	From 2009 SES.
VF return, 3.5% of consumption, baht/yr	4,075	5,324	Return from Boonperm et al. (2011), Table 5
95% CI, consumption-based return, %	4 to 50	5 to 62	
Average amount borrowed from VF	15,000	15,790	From 2009 SES.

## 9. Conclusions

The Thailand Village Fund was, for much of the past decade, the largest microcredit institution in the world, and it remains one of the biggest: 40% of rural, and 10% of urban, households borrow from the VF in a given year, proportions that have remained steady at least since 2006. The VF is unusual in the degree to which its operations have been devolved to Thailand's 80,000 villages and urban wards. Endowed with an initial working capital of a million baht, elected village-level committees manage and run their lending operations, with only limited guidance or oversight from the center.

Originally conceived mainly as a vehicle for boosting rural development, especially by providing credit for non-traditional activities, Village Funds in practice mainly lend to poorer, agricultural, households, and most of the money is used, ostensibly, for agricultural pursuits or as consumer credit. The average VF loan is equivalent to 8% of a household's income, and is much smaller than loans from other formal sources. VF loans are the main source of credit for about 10% of adults; 40% of adults do not borrow; and the remaining 50% borrow chiefly from other sources, especially the Bank for Agricultural and Agricultural Cooperatives.

How well does the VF model of locally-run rotating credit associations work? Some Village Funds have misused funds (Laohong 2005), or seen their initial working capital melt away; of the 3,011 village funds surveyed in 2010, 14% did not provide data on lending; in these areas, 22% of households reported borrowing from the VF, compared to 34% in areas where the VF reported full information. This means that there is some survivorship bias in our results, although given that most VFs did provide data, and clearly some of those that did not are functioning nonetheless, we believe that this problem is manageable.

In our view, the more important point is that the quantity and nominal value of VF loans have been maintained over time; moreover, this information comes from the SES surveys of households, who have no incentive to pad the numbers. The implication is that the VF model has proven, in the aggregate, to be sustainable. This is noteworthy, especially as the loans flow disproportionately to the poorest two-fifths of the population. The institutional arrangements work because VF committees apparently desire to stay relevant, and so work to maintain their capital resources and credit ratings – pitching interest rates low enough to be attractive, but high enough to replenish loans that are not repaid, and using their local knowledge to direct credit to bankable borrowers. Most VF committees appear to do their work conscientiously; we find little evidence of elite capture, and the honoraria that committee members pay themselves do not generally appear to be excessive.

Yet the Village Fund, unlike other financial institutions in Thailand, has shown no internally-driven “organic” growth. Although the economy has expanded since 2002, VF lending has not risen commensurately. Four out of five VFs do little more than allocate loans from their available pool of funds at the beginning of the year, and collect the money with interest at the end. This is a picture of social intermediation, but it does not represent true financial intermediation; most VFs would collapse or fade away if the initial injection of funding – the million baht – had to be repaid, or even serviced at a realistic interest rate.

One in five Village Funds borrow money from the BAAC or GSP and on-lend it to households. These are true financial intermediaries, especially when they also mobilize significant savings deposits. Yet even these more dynamic VFs are cautious; they rarely borrow more than a million baht, and their mobilization of savings, and services to would-be depositors, are very limited.

Why have VFs not expanded more vigorously? There are a number of explanations, not necessarily mutually exclusive. In a minority of cases the demand for VF loans is too small, although seven out of ten Village Funds say they could lend an extra million baht safely, and the median amount that they desire to lend is 2 million baht (compared to actual lending of 1.13 million baht).

The constraints are mainly on the supply side. Village Funds cannot operate across village lines, which is inherently limiting. More importantly, VF committee members are (understandably) cautious about borrowing to on-lend – only 13% actually want to borrow more from the BAAC or GSB in order to be able to lend more to households – probably because their legal liability in the case of a widespread default could be substantial, while the penalties for not recovering the “government’s money” – the initial capital injection – appear to be modest. This institutional framework makes it all but impossible for the VF model to expand from within, even while it creates a conduit for channeling funds to many households, especially those with lower incomes, who would not otherwise have access to formal sector credit.

More troubling is the lack of innovation shown by Village Funds; they are not competing for clients, or scrambling for profit, yet their very presence has helped thwart the development of a more vigorous microfinance sector in Thailand.

Village Fund committees know how to lend modest amounts of money on relatively standard terms to large numbers of their peers. This is very different from the sort of lending done by formal financial institutions, which lend highly-varying amounts to borrowers that are evaluated to be good credit risks. VFs are not well-suited to such lending; most have an egalitarian bent that leads them to spread credit around rather than focus

it on the most productive borrowers. It follows that institutions such as the BAAC cannot expect to farm out their lending to VF committees; the two types of credit appraisal are complementary, not substitutes.

Should the government funnel more money into the Village Funds? Our cost-benefit analysis suggests that on balance the benefits of the VF outweigh the costs, although this conclusion rests on fragile foundations, and anyway refers to the average costs and benefits, not the costs and benefits at the margin, which would be the appropriate reference point for incremental funding.

Suppose the government were to raise, say, 80 billion baht – another million baht per village – to spend on microfinance; the policy question of interest is whether channeling it to boost the capital of all VFs would be a good option. The answer is not obvious – and unanswerable without a full consideration of the alternatives – but if past experience is a guide, much of the increment will flow as credit to poorer households, and many of them, especially farmers, will be able to put the funds to productive use.

However, if funds are to be channeled into Village Funds, it may be more efficient to target any injections to Village Funds that are rural: the need for VF-style credit appears to be strongest there, and the borrowers are poorer. It would also make sense to only steer capital to VFs that are properly run, and can demonstrate that the initial VF capital was not simply siphoned off. We are reluctant to suggest that VFs should become profit maximizers – for instance, by introducing limited liability, or tying honoraria to performance; this is likely to undermine the essentially voluntary nature of the committees, and our theory implies that one result may well be less lending to poorer households.

The greatest asset of Village Fund committees is their local knowledge. It would be worth experimenting with ways in which this could be used more effectively; for instance, perhaps financial institutions – the BAAC, NGOs, microfinance institutions – could partner with VF committees, tapping their expertise about local credit risks in return for a fee and expanded lending. This would attenuate both the liability and incentive problems facing VF committees, while allowing new lenders to emerge and innovate.

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## Appendix 1. Estimation Results of Multinomial Logit Model of the Determinants of Credit Ratings

	VF not on-lending		VF on-lending	
	rating=AA	rating=AAA	rating=AA	rating=AAA
<b>Supply: Fund Capital</b>				
Initial VF capital	-0.425** <i>(0.199)</i>	-0.100 <i>(0.137)</i>	-0.039 <i>(0.157)</i>	-0.113 <i>(0.156)</i>
VF allows for saving	0.123 <i>(0.276)</i>	-0.104 <i>(0.273)</i>	-1.237** <i>(0.583)</i>	-1.103* <i>(0.586)</i>
VF requires members to save	-0.104 <i>(0.266)</i>	0.416 <i>(0.265)</i>	1.490** <i>(0.624)</i>	1.286** <i>(0.632)</i>
<b>Supply: Characteristics of VF Committee</b>				
Proportion who have some higher education	0.585 <i>(0.612)</i>	0.623 <i>(0.611)</i>	-1.940*** <i>(0.739)</i>	-2.391*** <i>(0.728)</i>
Proportion who have accounting experience	4.888* <i>(2.746)</i>	2.335 <i>(2.711)</i>	10.838* <i>(6.375)</i>	9.945 <i>(6.293)</i>
Need training in loan appraisal (yes=1)	-0.260 <i>(0.251)</i>	-0.231 <i>(0.251)</i>	0.511 <i>(0.513)</i>	0.481 <i>(0.511)</i>
Accounts are computerized (yes=1)	0.234 <i>(0.267)</i>	0.644** <i>(0.265)</i>	0.510 <i>(0.585)</i>	0.947 <i>(0.582)</i>
VF officers are chosen, not elected (yes=1)	0.548 <i>(0.388)</i>	0.666* <i>(0.387)</i>	0.307 <i>(0.786)</i>	0.399 <i>(0.773)</i>
VF would cut loans equally if funds were short (yes=1)	-0.155 <i>(0.249)</i>	-0.071 <i>(0.247)</i>	1.432** <i>(0.704)</i>	1.272* <i>(0.699)</i>
<b>Demand: Village Size and Organization</b>				
Number of households in village	-0.000 <i>(0.000)</i>	-0.000 <i>(0.000)</i>	0.002 <i>(0.002)</i>	0.001 <i>(0.002)</i>
Village has a market (yes=1)	-0.275 <i>(0.267)</i>	-0.495* <i>(0.267)</i>	0.151 <i>(0.696)</i>	-0.078 <i>(0.695)</i>
Rural (yes=1)	-0.143 <i>(0.318)</i>	-0.151 <i>(0.314)</i>	0.570 <i>(0.660)</i>	0.433 <i>(0.654)</i>
<b>Demand: Household Characteristics</b>				
Proportion of households who are self-employed farmers	-0.966 <i>(0.812)</i>	-1.108 <i>(0.817)</i>	0.222 <i>(1.287)</i>	1.005 <i>(1.287)</i>
Proportion of income generated by wages	0.186 <i>(0.850)</i>	-0.045 <i>(0.842)</i>	-1.837 <i>(1.891)</i>	-0.433 <i>(1.865)</i>
Proportion of population with some secondary education	-0.739 <i>(0.839)</i>	-0.574 <i>(0.851)</i>	1.039 <i>(2.405)</i>	0.018 <i>(2.389)</i>
Household assets (excluding land)	0.286 <i>(0.338)</i>	-0.005 <i>(0.332)</i>	-1.339*** <i>(0.490)</i>	-1.377*** <i>(0.440)</i>
Proportion who have a loan from a formal bank	0.356 <i>(0.619)</i>	0.440 <i>(0.611)</i>	0.540 <i>(1.159)</i>	0.681 <i>(1.148)</i>
Proportion of borrowers who are women	-0.595 <i>(0.887)</i>	-0.569 <i>(0.889)</i>	0.680 <i>(2.176)</i>	0.365 <i>(2.153)</i>
Expenditure per capita	-0.146* <i>(0.081)</i>	-0.106 <i>(0.079)</i>	0.333 <i>(0.332)</i>	0.272 <i>(0.331)</i>
<b>Loan terms and conditions</b>				
VF would borrow more if funds were short	1.237 <i>(0.785)</i>	0.903 <i>(0.797)</i>	1.658** <i>(0.784)</i>	1.695** <i>(0.786)</i>
VF could lend out another 1m baht safely	0.361 <i>(0.265)</i>	0.586** <i>(0.266)</i>	1.032 <i>(0.895)</i>	1.980** <i>(0.956)</i>
VF wants to borrow more from BAAC, GSB, etc.	-0.300 <i>(0.298)</i>	-0.435 <i>(0.302)</i>	-0.298 <i>(0.582)</i>	-0.161 <i>(0.574)</i>
<b>Memo items</b>				
Number of observations	1094		459	

Source: Village Fund Survey 2010 and SES 2009. Robust standard errors in parentheses. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001. Omitted rating is "A".