Microfinance and the Rural Poor: Evidence from Thai Village Funds*

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Abstract

This research examines the financial performance of Village and Urban Community Funds (VFs). The study also explores the beneficial effects of the biggest microfinance programs in the world in the lower and lowest income provinces; specifically, whether VFs change household economic status or not. The data is collected uniquely from the village funds in four provinces of each region in Thailand which considerably reflect the government achievement. Accordingly, several financial ratios have been applied to evaluate the financial efficiency of the village funds, and the ordered logit model has been used to estimate the impact on economic variables of the poor. The findings show that the village funds do not improve the savings, income, consumption, and asset of VFs' members, although such funds have a higher financial performance. Furthermore, the VFs are a good substitute compared to the Bank for Agriculture and Agricultural Cooperatives (BAAC) credit because the cross-price elasticity of quantity of demand for such loans is positive. In particular, the loans from village funds are insignificantly correlated with the debt, income, asset, and economic status of VF members. This implies that Thai Village Funds do not alleviate definitely the serious problem about the financial situation in rural provinces. Thus, this microfinance does not change the economic well-being of the poor.

Keywords: Microfinance, Village Fund, Financial Ratio, Economic Status, Poor

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1. Introduction

In 2001, the Thai government launched the revolving loan fund program which was called Village and Urban Community Fund or village funds (VFs). This fund continues

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to operate, almost 20 years later. Initially, the government injected one million Baht, or about 33,333 US$[1] at the present exchange rate, to each of the 77,000 villages in Thailand as working capital for locally rotating credit of rural market. This scheme was one of the largest microfinance programs in the world. The VFs initially operated with a fund of 77,000 million Baht (2,566.67 million US$); however, it gradually raised new capital for poverty reduction from the government budget. Eventually, these state subsidies grew to over 201 billion Baht (6,700 million US$) in 2016 as in Table 1. Prior to that, the Thai government provided a significant budget in 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, and 2016 which equaled 13,158.00 (438.60 million US$), 11,300.00 (376.67 million US$), 9,950.00 (331.67 million US$), 200.00 (6.67 million US$), 228.55 (7.62 million US$), 38,522.6342 (1,284.088 million US$), 67,969.9399 (2,265.665 million US$), 6,007.48 (200.2493 million US$), 35,000.00 (1,166.67 million US$), 19,559.20 million Baht (651.97 million US$), respectively.

Surprisingly, all members of village funds had the self-managed organization in terms of board committee so that they had absolute authority to give villagers new revolving loans. In particular, the Thai government hoped that all VFs

would provide informal loans to those types of borrowers at a range of 20,000-50,000 Baht (666.67–1,666.67 US$) with annual interest rates of 3–6 percent, as a revolving fund for investing in their job development be range 20,000–50,000 Baht in order to 1) การประชุมทางไลน์ ห้ามประชาชนรวมตัวกันน่าง ชัดเจน จึงมีมติเลือก บริษัท วารณะหรือประโยชน์มหา, increasing income and decreasing expenses; promoting and developing to create social security and welfare, other social benefits of villages and urban communities. The VFs should also be revolving funds for alleviating the current suffering of villages or urban communities. Moreover, such revolving funds should replace other informal loans that allow households easier access than the formal financial services. See Table 1 below.

In addition, the Thai government launched the Pracharath policy to stimulate the grassroots economy through VFs. The budgets of 35 billion Baht (1,166.67 million US$) were allocated to 79,556 village funds that were limited to 500,000 Baht (16,666.67 million US$). The objectives of this policy were to promote the participation process in village and community problem solving, to promote and support the strength of grassroots economy following the Pracharath method, to reinforce and promote the infrastructure development in order to promote and support job creation, career building, income generation in villages

Table 1: Government Budget Allocated to VFs

Budget Year	Budget Allocation: Million Baht (Million US$)
2550 (2007)	13,158.00 (438.60)
2551 (2008)	11,300.00 (376.67)
2552 (2009)	9,950.00 (331.67)
2552 (2009) (Loans within Emergency Decree Authorizing The Ministry of Finance to Raise a Loan for the Restoration and Reinforcement of Economic Stability 2009)	19,559.20 (9651.97)
2554 (2011)	228.55 (7.62)
2555 (2012)	38,522.6342 (1,284.088)
2556 (2013)	67,969.9399 (2,265.665)
2557 (2014)	6,007.48 (200.2493)
2559 (2015)	35,000.00 (1,166.67)
Total	201,895.8041 (6,729.8601)

Source: 1) Sirikwan Vicheanlert. (2015). *The study report of village and urban community funds*. Bangkok: Secretariat of the House of Representatives. 2) National Village and Urban Community fund Office (2016). *The Method of Strength Escalating Project of Grass Root Economy following Pracharat Scheme*.

and communities, and potential expansion of career and well-being of villagers and communities.

Even though the Thai government provided a huge budget for twenty years to these funds, the effect of VFs on the economic well-being of the poor is still unclear. That is, whether VFs attained the main results of the government's high expectations to alleviate the poverty of rural lives. In more detail, the Comptroller General's Department of Thailand evaluated the performance of village funds in 2013. The findings showed that the average total performance score was 2.4982 which was lower than the ones of the previous year. What's more, the stakeholder response scores were lowest at 1.7163. Equally important, the management operation scores, of working capital development, and finance were 2.1886, 2.7507 and 4.6974, respectively. Moreover, the Office of the National Economics and Social Development Council of Thailand discovered that the capability of loan repayment to village funds was 77.30 percent. This meant that borrowers who did not make the regular payments at the contract time equaled 22.70 percent. Such results were also consistent with the report of an internal audit of the Office of the Auditor General of Thailand in 2015. It stated that VFs faced the outstanding debt problems and problems with lack of financial accounting, so that these funds had to stop operating because of financial problems. It especially resulted from the seriously unmanageable situation of board of committee and lack of internal control. Furthermore, those community financial institutions became lacking in potential and operational skills to manage the organizations following the government objectives. As a result, they had to submit precise rehabilitation plans according to the government conditions.

More importantly, VFs not only offered the possibility of changing the household status in rural areas, but also regularly affected the other sources of funds such as Bank for Agriculture and Agricultural Cooperatives (BAAC). er source of funds status in rural, it ls. internal control ย หายแก่ผู้หนึ่งผู้ใด รวจตรีชิดชอบ ดังนั้นร้อยกรมตำรวจ จึงละเว้ นการป This significant impact might strongly influence income, expenses, assets, and debts of households. In fact, the VFs could either be substituted or compounded with other formal and informal lending. As a consequence, if VFs obviously reached their objectives, they could have the ability to lessen the poverty in Thailand, especially the poor suffering in lower income provinces. These areas of Thailand were suited for evaluation of the performance of VFs because the mean household income of such provinces was lowest within each region of Thailand in 2015. In other words, Chiangrai province had the lowest mean income per household in the Northern region. Supanburi province had the lowest mean income per household in the Central region. Kalasin province had the lowest mean income per household in the Northeast. Phatthalung province had the fourth lowest average of income per household in Southern

Thailand. Therefore, VFs should improve the economic status of household well-being in these provinces following its objectives, i.e. expanding income, reducing expenditure and welfare provision.

The rest of this paper is organized as follows: Section 2 shows the closely-related studies concerning the impact of village funds on the economic status of the poor. Section 3 examines the research methods and materials procedure for applying such a model. The empirical results and discussion of important contribution are described in section 4. Section 5 concludes the key findings, discusses the empirical results, and the policy implication as well.

2. Literature Review

The Village and the Urban Community fund has many specific objectives such as revolving loan for occupation development; income generation and expenditure reduction, relieving the problem of villagers; and promoting and developing the social welfare and well-being in all villages. In fact, the Thai government is very much confident that VFs could relieve the current poverty problem of villagers on what they could enter into the rotating fund for the working capital of their business. On the contrary, it is not clear whether the previous evidence did obviously support the government objectives or not. Adams and Pischke (1992) asserted that the debt was not an effective tool for helping the poor through improving their economic condition. The poor are poor due to many reasons, but it was not through lack of access to credit. Similarly, Coleman (1999) presented results on the impact of a women's village bank group-lending program in Northeast Thailand. The estimated impact described that self-selection and endogenous program placement had an insignificant effect on physical assets, savings, production, sales, productive expenses, labor time, and most measures of expenditure on health care and education.

Moreover, Chandoevwit and Ashakul (2008) found that the VFs do not have a positive impact on alleviating the country's poverty. The noticeably insignificant impact on income and expenditure was found; that is, VFs expanded only farm income in the central region and non-consumption expenditure in the northern and southern regions. What the non-consumption expenditure increase indicated was that the participating households did not spend their money on investment activities. Equally importantly, the positive raising of farm income was not adequate for relieving the low total household income. That was why VFs had no impact on incidence of the poor of rural households. In addition, Promkotwong. and Ariyaarpakamon (2018) described the impacts of the village funds on the rural household welfare in terms of income and wealth in four Thai provinces: Chachoengsao, Lop Buri, Buri Ram, and Si Saket. The results displayed a positive and statistically

significant impact of current and past village fund debt on current household income level. Conversely, current village fund debt had a negative effect on current asset-debt ratio. Moreover, there was a strong positive short-run effect of village fund debt on household income. Still, the long-term impact on household well-being was not found. Boonperm et al. (2012) and Haughton et al. (2014), equally importantly, stated that most Village Funds were social rather than financial intermediaries because they allocated loans to the poor at the beginning of the year and collected the payment back with interest at the end of year. Even though the Thai economy had grown since 2002, such funds did not escalate commensurately which explained why VF lending had not kept pace with the growth of the Thai economy.

In contrast, Kaboski and Townsend (2005) discovered that women's groups and cash-lending institutions had positive impacts on asset growth, consumption smoothing, and occupational mobility in microfinance institutions in rural Thailand. Such institutions did not contact money lender reliance. Consistent with Boonperm et al. (2013), this study demonstrated that the Village Fund had a moderately positive impact on current expenditures, income, and durable goods ownership in the early years of the VF's operation. This paper also found that there are complementarities between loans from the VFs and loans from the Bank for Agriculture and Agricultural Cooperatives (BAAC). The VFs' borrowing affected household consumption, but BAAC loans raised the income of villagers. Menkhoff and Rungruxsirivorn (2011) also described that the village funds helped to reduce credit constraints. Furthermore, Coleman (2006) illustrated the impact of two microfinance programs in Thailand; that the wealthier villagers were significantly more likely to participate than the poor. It meant that the village funds had a statistically positive effect on the household welfare for committee members, and it was larger than the effect on household welfare for the rank-and-file members. In fact, it had a positive and significant impact on measures of wealth, savings, income, productive expenses, and labor time.

Also, Kaboski and Townsend (2012) confirmed the short-and longer-term impact of village funds in Thailand. This study found that the VFs had a positive effect on total short-term credit, consumption, agricultural investment, and income growth, and a negative effect on overall asset growth. In addition, the findings showed a positive impact on wages. Consistently, Handastya (2018) showed that there was an increase of long-run multiplier across sixteen villages in the sample. Furthermore, Mago (2014) presented microfinance enhanced poverty alleviation. Ahamad et al. (2021) also displayed that the amount of loan received from microfinance institutions and time duration with them was the most significant role-playing factor for borrower's sustainable well-being. Mia (2016) explained that the non-governmental-organization microfinance institutions

performed better than other types of microfinance institutions. This implied that there appeared to be strong evidence of financial alleviation due to the provision of microcredit programs.

3. Research Methodology

This paper particularly concentrates only on whether the borrowing of money from village funds actually alleviates the problems of the poor, especially poverty. It seeks to explore an empirical finding about how the economic status of VFs' members absolutely has changed after they borrow the revolving loans from the village funds. Therefore, there are many important methods as follows. Firstly, a simple method to collect primary data is the survey research. The questionnaire is designed to examine all the normal characteristics of village fund members in terms of gender, age, education level, occupation, marital status, income, expenditure, debt, assets, etc. More importantly, the data is collected from the lower and lowest income provinces in each region of Thailand in 2015. In fact, there are four such provinces: Chiangrai, the lowest income province in northern region; Supanburi, the lowest income province in central region; Kalasin, the lowest income province in northeastern region; and Phatthalung, the lower income province in the southern region. In addition, the clustering sampling method is applied to the survey in each province where the lowest income district and the lowest income sub-district are chosen. As a result, twenty members of village fund from five villages are finally selected in such sub-districts. Hence, there were 423 members of VFs who were heterogeneously selected as the research samples.

Equally important, according to a measuring performance of village funds, several financial ratios are applied to evaluate the financial efficiency of village funds. In other words, there are ten ratios: return on assets (ROA), counterpart fund on assets (COA), return on equity (ROE), counterpart fund on equity (COE), interest on equity (IOE), return on credit (ROC), net profit margin (NP), net profit margin per member (NPM), profit growth (PG), and equity growth (EG).

The return on assets ratio is calculated by dividing the net profit of the village funds by the total amount of the fund's assets. Regarding the available balance sheet, this financial ratio reflects the value of investment in assets of such funds. Furthermore, this ratio uses as the noticeable performance indicator of an ability to manage the assets of the village funds. In other words, how many of the available assets are required to generate the profits of village funds can be explained through the following formula.

$$ROA = \frac{\text{Net Profit}}{\text{Total Assets}} \qquad (1)$$

The counterpart fund on assets ratio is calculated by dividing the portion of the income that has been allocated

to the hedge and contribution fund by the total assets as they appear in the financial statements. In particular, this ratio is an essential evaluation that village fund has the ability to bring the fund to generate income which results to the contribution capital. The formula is as follows:

$$COA = \frac{\text{Counterpart Fund}}{\text{Assets}} \qquad (2)$$

The return on equity ratio is computed as the net profit divided by total equity. This financial ratio represents the return on government-funded investments and savings of members. Specifically, if such a ratio has a positive value, the investment of the government and its members are profitable. In contrast, if this ratio is a negative value, it shows the loss of investment. The formula of ROE is as follows:

$$ROE = \frac{\text{Net Profit}}{\text{Equity}} \qquad (3)$$

The interest on equity is a measure of the asset quality of village funds. In other words, this reflects the good quality of the loan or the debtor's rural fund, which can obviously generate an income from the village fund. Most of the income comes from loan interest, but some comes from bank interest. If the interest rate is high, it indicates the high-quality loans to the village members owing to bringing a lot of money. Conversely, if the ratio is low, it indicates the bad loans. Thus, this formula is the following equation 4.

$$IOE = \frac{\text{Interest}}{\text{Equity}} \qquad (4)$$

The rate of return on the loan, which is calculated by the loan income divided by the total credit, is called the return on credit. This financial ratio represents the exact quality of credit that can finally be converted into income. That is, the village fund's loan income comes from interest on loans. If this ratio is high, it means that the credit given to the members has a good quality for generating income. If this ratio is low; on the contrary, this indicates that there are many non-performing loans which do not generate income. The equation is as follows:

$$ROC = \frac{\text{Net Profit}}{\text{Credit}} \qquad (5)$$

The net profit margin is the ratio of an operating income of the village fund minus the operating costs to the income from the operation of the village fund. This formula indicates that the net profit rate reflects the village funds'

profitability compared with the operating income. If the ratio is high, it shows that the profit margin of rural fund is high. If this is low then it means that the profit margin of rural fund is low. This implies that the village fund certainly has the low profit potential. Thus, the net profit margin can be calculated as follows:

$$NP = \frac{\text{Operating Income} - \text{Operating Cost}}{\text{Operating Income}} \qquad (6)$$

The NPM is computed as dividing the net profit by the number of members. This financial ratio demonstrates the average profit per member. Specifically, if the proportion is high, it means that a member will benefit a lot from it. Therefore, it indicates the sustainability of village fund. The formula is

$$NPM = \frac{\text{Net profit}}{\text{Members}} \qquad (7)$$

The net profit growth rate is the ratio of net profit at time t minus the net profit at time $t-1$ to the net profit at time $t-1$. In other words, the financial ratio indicates the competitiveness of the fund. If the ratio is high, it indicates that the village fund has a high competitiveness. It also implies that the village fund has obvious sustainability. If this ratio is low; nevertheless, it means that the village has a low competitiveness. Thus, such a formula is computed as follows:

$$PG = \frac{\text{Profit}_t - \text{Profit}_{t-1}}{\text{Profit}_{t-1}} \qquad (8)$$

The equity growth rate is calculated by the amount of the village funds in the current year minus the previous year's village funds and divides it by the previous year's village funds. More importantly, this ratio reflects an increase in the long-term capital when it is high. This means that the high growth rate of capital indicates their good performance and a good source of funding.

$$EG = \frac{\text{Equity}_t - \text{Equity}_{t-1}}{\text{Equity}_{t-1}} \qquad (9)$$

Moreover, the cross-price elasticity of demand is applied for measurement of the responsiveness of the quantity of borrowing demand from village fund to the interest rate of borrowing from BAAC, given other things being constant. In fact, the measurement is calculated by taking the percentage change in the quantity of VFs borrowing demand and dividing it by the percentage change in the interest rate of BAAC borrowing. That is,

$$\varepsilon = \frac{\%\Delta Q^d_{\text{VF}}}{\%\Delta P_{\text{BAAC}}} \qquad (10)$$

where ε represents the cross-price elasticity of borrowing demand from village fund to the interest rate of borrowing from BAAC. $\%\Delta Q^d_{\text{VF}}$ stands for the percentage change in the quantity of VFs borrowing demand. $\%\Delta P_{\text{BAAC}}$ expresses the percentage change in the interest rate of BAAC borrowing.

Finally, such data for studying comes precisely from carrying out a survey to estimate the coefficients of independent variables in terms of the econometric model. The conceptual framework actually used for finding out whether the loan from VFs relieved poverty problem is the ordered logistic regression following Boonperm et al. (2013). This model consists of financial variables taking as outcomes: debt, income, savings, consumption, assets; and non-financial variables also taking as outcomes: the economic status and health status. The explanatory variables are the village funds and BAAC loans. Let y_{it} be the dependent variables for VFs member i at time t, x_{it} be a set of regressors for VFs member i at time t. The regression equation is

$$y_{it} = \alpha_i + x'_{it}\beta + T_{it}\gamma + \varepsilon_{it} \qquad (11)$$

where y_{it} is the explained variables which indicate the economic improvement of the village fund members. x'_{it} stands for the vector of explanatory variables which are the particular factors affecting the economic status such as loan from VFs and BAAC. T_{it} represents a measure of the treatment which is defined as borrowing from the VFs.

4. Results and Discussion

4.1. Characteristic of VFs Members

The findings from a sample size taken from four provinces, 243 VFs' members in total after definitely cutting off the outliers, are shown in Table 2, there are male members with a percentage of 34.75% and females consisted of the remaining 66.25%. The percentage of educational levels in the samples of VFs members received were: primary education at 63.36%, high school education at 13.24%, and secondary education at 11.11%. It is also known that percentage of VFs members who do rice farming are 76.54%, those who sell consumer products are 7.11%, and rest are employees with a percentage of 6.40%. In addition, most of them are married at 72.58%, single at 16.78%, and divorce

Table 2: Summary Statistics for the Characteristic of VFs Members

		Aggregate (Persons)	Frequency (%)
Gender	Male	147	34.75
	Female	276	66.25
Age	Less than 25	4	0.95
	26–50	105	24.82
	51–75	284	67.14
	More than 75	30	7.09
Educational level	No education	11	2.60
	Primary education	268	63.36
	Secondary education	47	11.11
	High school education	56	13.24
	Diploma	14	3.31
	Bachelor or higher	26	6.39
Occupation	No job	23	5.45
	Farmer	323	76.54
	Merchant	30	7.11
	Employee	27	6.40
	Official	16	3.79
	Housewife	3	0.71
Marriage status	Single	71	16.74
	Spouse	307	72.58
	Divorce	39	9.22
	Remarriage	6	1.42
Income per year (2012)	0–50,000 Baht (0–1,666.67 US$)	252	59.57
	50,001–100,000 Baht (1,666.7–3,333.33 US$)	68	16.08
	100,001–150,000 Baht(3,333.37–5,000 US$)	33	7.80
	More than 150,0001 Baht (5,000.03 US$)	70	16.55
Income per year (2017)	0–50,000 Baht (0–1,666.67 US$)	240	56.73
	50,001–100,000 Baht (1,666.7–3,333.33US$)	95	22.46
	100,001–150,000 Baht (3,333.37–5,000 US$)	26	6.15
	More than 150,0001 Baht (5,000.03 US$)	62	14.66
Expense per year (2012)	0–50,000 Baht (0–1,666.67 US$)	265	62.65
	50,001–100,000 Baht (1,666.7–3,333.33 US$)	58	13.71
	100,001–150,000 Baht (3,333.37–5,000 US$)	21	4.96
	More than 150,0001 Baht (5,000.03 US$)	79	18.67
Expense per year (2017)	0–50,000 Baht (0–1,666.67 US$)	265	62.65
	50,001–100,000 Baht (1,666.7–3,333.33 US$)	65	15.37
	100,001–150,000 Baht (3,333.37–5,000 US$)	26	6.15
	More than 150,0001 Baht (5,000.03 US$)	67	15.84

at 9.22%. More importantly, in the year 2012, 59.57% of samples basically generated income equal or less than 1,666.67 US$, 16.08% of samples earned annual income of between 1,666.7–3,333.33 US$, and just 7.80% of them have a regular income of between 3,333.37–5,000 US$. Moreover, 16.55% of such members have annual income of more than 5,000.03 US$. Not coincidentally, 56.74% of them had a current income of between 0–1,666.67 US$ in the year 2017 in that such proportion of VFs members slightly declined compared with the year 2012. Their earnings unexpectedly inflated to 1,666.7–3,333.33 US$ (22.46%), and reduced to more than 5,000.03 US$ (14.66%) in the year 2017. This implies that VFs members were capable of increasing their annual income five years later; in fact, the revolving loan from the village fund is beneficial to the VFs members who are not poor. However, in the year 2012, the annual individual expenses were quite high: 0–1,666.67 US$, with a proportion of 62.65%; 1,666.7–3,333.33 US$, with a proportion of 13.71%; 3,333.37–5,000 US$, with a proportion of 4.96%; and more than 5,000.03 US$, with a proportion of 18.67%. Compared with the annual expenses in 2017, the village fund members had higher costs of living than those in 2012 in that case of 1,666.7–3,333.33 US$ with a proportion of 15.37%, 3,333.37–5,000 US$ with proportion of 6.15%, and more than 5,000.03 US$ with proportion of 15.84%, respectively.

With respect to the effect of the village funds on savings, the village funds' members reply that their savings were greatly increased by 7.57%, some savings increased markedly by 35.70%, and savings were greatly reduced by 1.42%, their savings declined partially 9.69%, the savings remained noticeably unchanged at 39.01%. Such members also reply for the effect of the village funds on their income. In fact, their income increased greatly by 4.96%, some income increased by 50.35%, their income greatly decreased by 2.60%, their income decreased partially by 5.67%, their income remained unchanged at 31.91%. In addition, the members of village funds answer how VFs impact on their consumption which is as follows: consumption increased significantly by 5.91%, consumption increased partially by 22.93%, consumption was greatly reduced by 3.31%, partial consumption decreased substantially by 16.31%, and consumption was unchanged 43.97%. Due to the effect of the village funds on the property, such members gave their responses as follows: their assets greatly increased by 2.13%, some assets increased by 31.52%, their assets greatly decreased by 1.66%, some assets decreased by 5.92%, and assets remained unchanged at 48.82%. They also replied how the village funds have an influence on their economic status which is as follows: improved economic status 75.41%, unchanged economic status 18.20%, and worsening economic status 1.42%. In short, the remarkable facts form members of village funds indicate that the village funds do not considerably change their savings, consumption, income and assets.

4.2. Financial Efficiency of Village Funds

According to the village fund's financial efficiency, Table 3 showed that almost all ratios of financial performance of village funds in four provinces were positive

Table 3: Financial Ratio of Village Funds in Four Provinces

Financial Ratio	Chiangrai			Supanburi	Phatthalung			Kalasin		
	2012	2013	2014	2016	2015	2016	2017	2015	2016	2017
Return on Assets (ROA)	0.06	0.04	0.05	0.05	0.02	0.03	0.07	0.01	0.04	0.01
Counterpart fund on Assets (COA)	0.07	0.05	0.05	0.001	0.08	0.12	0.08	0.02	0.02	0.03
Return on Equity (ROE)	0.06	0.04	0.04	0.06	0.02	0.02	0.06	0.01	0.04	0.02
Counterpart fund on Equity (COE)	0.07	0.05	0.05	0.17	0.08	0.10	0.08	0.02	0.02	0.04
Interest on Equity (IOE)	0.07	0.05	0.05	0.07	0.03	0.03	0.06	0.01	0.04	0.02
Return on Credit (ROC)	0.08	0.08	0.07	0.06	0.04	0.20	0.42	0.02	0.04	0.02
Net Profit Margin (NP)	0.99	1.00	1.00	1.00	0.90	0.83	0.96	1.00	1.00	1.00
Net Profit Margin per Member (NPM)	568.23	660.87	676.94	NA						
Profit Growth (PG)	−0.02	0.26	0.02	NA	−0.42	0.10	3.25	−0.02	0.99	−0.49
Equity Growth (EG)	0.01	0.63	0.001		−0.04	0.06	0.67	0.31	−0.21	0.03

other than profit growth. That is, financial ratios of village funds in Mae Chan District, Chiang Rai Province, during 2012–2014, were as follows: return on assets tended to decrease slowly from 0.06 to 0.05, the counterpart fund on assets tended to decrease slightly with values between 0.05–0.07, rate of return on capital was a downward trend with values between 0.04–0.06, compound rate and hedging against capital risk tended to decrease slightly with values between 0.05–0.07 which was in the criteria of fair, interest income to equity ratio tended to decline slightly from 0.07 to 0.05, rate of return on credit tended to decrease slightly with values between 0.07–0.08 which was in the criteria of fair, net profit margin tended to increase with values between 0.99–1.00 which was in a good condition, net profit margin tended to increase with values between 568.23–676. 94 which was in good condition, profit growth rate tended to increase with a growth rate of −0.02 in 2012, 0.26 in 2013, and 0.02 in 2014 which was quite uncertain, equity growth rate depended on the capital increase of the government. Moreover, it was equal to 0.0052 in 2012, increased by 0.63 in 2013 and decreased to 0.001 in 2014.

The financial ratios of the village funds in Deem Bang Nang Buat District, Suphan Buri province in 2016, were modest, with the majority of the financial ratio being more than 1% except for the rate of contributions and hedging on assets with the value of 0.001. The return on asset was 0.05, return on equity was 0.06, equity and capital hedging rate was 0.17, interest income on equity ratio was 0.07, loan yield was 0.06, and net profit rate was equal to 1.0. The financial ratios of village funds in Phathayom district, Phatthalung province, during 2013–2017 exactly showed that most of the village funds' management efficiency were also higher than one percentage point other than profit growth and equity growth. Equally important they indicated the good efficiency of the village fund management. In other words, the return on assets was between 0.02–0.07, the counterpart fund on asset was between 0.07–0.12, the rate of return on capital increased slightly with values between 0.02–0.06, and the equity's risk insurance was between 0.08–0.10, the interest income on equity ratio expanded markedly with value between 0.03–0.06, loan yield was quite uncertain with values between 0.02–0.42, the net profit rate was between 0.83–0.96, the net profit growth enlarged greatly from −0.42 in 2015 to 3.25 in 2017, and the equity growth rate increased considerably from −0.04 in 2015 to 0.67 in 2017.

The financial efficiency of village funds in Khao Wong district, Kalasin province, during the years 2015–2017, were mostly greater than 1% except for the profit growth and equity growth rate. This meant that the financial management of such village funds was efficient. All significant ratios were as follows: the return on assets uncertainly changed between 0.01–0.04; the counterpart fund on assets expanded slightly with values between 0.02 and 0.03; the return on

equity was between 0.01 and 0.04; the rate of risk insurance of equity was between 0.02 and 0.04; the interest income to equity was between 0.01 and 0.04; the yield of the loan was between 0.02–0.04; all net profit margins equalled 1; the profit growth rate was quite uncertain which was −0.02 in 2015, 0.99 in 2016, and −0.49 in 2017; the growth rates of equity were 0.31 in 2015, −0.21 in 2016, and 0.03 in 2017.

4.3. Substitution Goods of VFs

The other empirical finding favorably showed the particular effect on the poverty problem; in fact, whether the borrowing from village fund is a substitute product for other funds in rural market or not, especially BAAC. This means that if the interest rate from BAAC loan suddenly goes up, given other things being constant, the quantity of demand for BAAC loan will go down from the current level. Consequently, the quantity of demand for VFs loans will go up which implies that money from VFs loans has become a substitute for the one from BAAC. To take account of such a substitution, this study actually applies the multiple regression model to find the regression coefficient of explanatory variables in terms of logarithm, remarkably indicating the cross-price elasticity of demand quantity for borrowing from village funds. Table 4 shows the remarkable results that the interest rate of borrowing from BAAC is positively related to the money from VFs loans. The estimated coefficient on such interest rate is statistically significant at the 0.10 level. This means that a 1% change in interest rate of loan from BAAC influences a change in VFs loan of 0.0209%. Therefore, the cross-price elasticity of demand quantity for borrowing from village funds to the interest rate of borrowing from BAAC is positive for the fact that the VFs loans and BAAC loans are substitution goods.

4.4. Impact of VFs on the Poor

Table 5 reveals the ordered logistic regression model of village fund on independent variables. This describes that

Table 4: The Estimated Coefficients of Multiple Regression of The Loan of Village Fund

lnVF_loan	Coefficient	Std. Error	*t*-statisitc
VF_i	0.0376*	0.0209	1.80
BAAC_i	0.0209**	0.0113	1.86
Constant	9.9638***	0.1152	86.47

Note: lnVF_loan denotes the natural logarithm quantity of demand for loan from village fund in 2017. VF_i represents the interest rate of borrowing from village fund in 2017. BAAC_i represents the interest rate of loan from BAAC in 2017. *, **, *** denote 0.10, 0.05 and 0.01 significant levels respectively.

Table 5: The Marginal Effects of Ordered Logistic Regression Model of Village Fund on Explained Variables

Explained Variables	Coefficient	z-statistic
Debt	2.17×10^{-7}	1.56
Save	4.12×10^{-7}**	2.05
Income	5.11×10^{-8}	0.34
Consume	-1.38×10^{-6}*	-1.66
Asset	5.34×10^{-8}	0.859
Economic	1.37×10^{-7}	0.497

Notes: Debt denotes the quantity of VF members' debt in 2017. Save denotes the quantity of VFs members' saving in 2017. Income represents the income of VFs members in 2017. Consume is the amount of consumption of VFs members in 2017. Asset stands for the quantity of VFs members' asset in 2017. Economic stands for the economic status of VFs members in 2017. *, **, *** denote 0.10, 0.05 and 0.01 significant levels respectively.

there are only two explained variables which the village fund has a statistically significant impact, but the one has not any effect on other dependent variables. Not only the loan from village fund is positively related to VFs members' saving, but it is also negatively related to the consumption of VFs members. It means that a 1% higher change in loan from village fund is more likely to be 0.0000004% higher change in savings by the VFs members at 0.05 significance level. Furthermore, a 1% higher change in loan from village fund is more likely to be 0.00000138% less change in consumption of VFs members at 0.10 significance level. More importantly, borrowing from village fund does not have a significant impact on VFs members' debt, income, asset, and economic status as well. It is crucially implied that village fund does not take into account considerable economic variables for lessening the VFs members' suffering. Even though the borrowing from village fund is positively related with debt, income, asset, and economic status, it is statistically insignificant. As a result, money from village does not matter to alleviate poverty in the lowest income province.

5. Conclusion

This paper takes into account the fact that whether VFs can alleviate the poverty problem in rural area of Thailand. The Thai government had high hopes that such revolving loans did regularly solve the current suffering of the villagers and rural communities via investing for their career development, generating income, and reducing expense. That is why the lower and lowest income provinces in each region were chosen to collect data in that Supanburi, Changrai, Kalasin, and Phatthalung province. The results state that the VFs members' incomes explicitly expand to 1,666.7–3,333.33

US$ annually in the year 2017, but the proportions of them in other income ranges slightly decline compared with the year 2012. This implies that the loans from village funds are not exactly beneficial for the poor villagers because the ratio of them have distinctly gone up in the past five years. In contrast, the living cost of the poorer in villages had steadily inflated over the last five years (2012–2017). This evidence shows that the poor does not exactly gain the benefits from borrowing village funds owing to their lower income and higher expense. It is also consistent with the opinion of village funds' members that their savings, income, consumption, and assets remain considerably unchanged.

In contrast, the village funds have a good financial efficiency. Most ratios of financial performance were positive which mean that they have a strong financial status. In addition, the cross-price elasticity of quantity of demand for village fund to the interest rate of borrowing from BAAC is positive. Hence, loan from village fund is a substitution goods compared with the load from BAAC. What is noteworthy that the loan from village fund is insignificantly positively correlated with debt, income, asset and economic status of VFs members. Therefore, such funds are unable to relieve the economic problems of the poor in villages. That is why Thai government should essentially reconsider such a large fund to actually improve the well-being of the poor, especially the group lending. Then, Further researchers should try to study as to who obviously gain the most benefit from village fund in other provinces.

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Endnotes

[1]The exchange rate in this study between Thai Baht and US Dollar is 30 Baht/US$.