

# Has Behavior of Village Governments Toward Village Fund Management Changed as Regulation Treatment Takes Place?

(Evidence from North Sulawesi Province, Indonesia)

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**Abstract**—Since 2015 the Indonesian government had started Village Fund (VF) program to increase villagers' purchasing power and welfare, build infrastructure and increase employment. However, there was evidence that the results of the programs were not as expected. Instead, there were many management and accountability problems found in the program. This study investigates the factors that can possibly explain the problems using four dimensions, namely, Financial Management, Village Infra-structure, Society Empowerment, and Misappropriation. Using a survey, we choose the officers from fifteen villages in North Sulawesi Province. Using score indexing, we study changes in behaviors of village officers toward these dimensions due to a treatment that we make. The treatment is to make the officers aware of the regulations required for VF management. We also examine how the change in the VF management leads to change in economic growth rate. The findings suggest that there is an improvement in the VF management after the treatment. Additionally, due to improvement in VF management, the villages can potentially experience economic growth rates of between 3.44% and 3.98% contributed solely by the VF program.

**Keywords**—village fund; measure dimensions; management and usage; misappropriation

## I. INTRODUCTION

Urban-rural ratio of Indonesian population had shown an increasing trend. In 2012, 54% of population lived in urban areas while in 2010, there was only 49.8%. In city level, from 2010 to 2014, population of Manado city had grown 8% annually. While the birth rate could explain 0.5 to 1 percentage points, urbanization explained the rest. On the other hand, among other cities, Malang experienced the population growth rate of 1.58% which was due to an increase in number of new inhabitants. Manado and Malang were two of ninety-eight cities in Indonesia, which experienced urbanization.

Migration from rural to urban areas can create many problems, which among them are an increase in number of low-skilled population and unemployment rate. Since 2014, the Indonesian government has regulated a program to enhance the rural economy called village fund (VF) program.

This program has two-fold benefit regarding with urbanization. Firstly, 46% of rural people of Indonesia may actively participate in building the economy of their community and be more likely to stay in their communities than migrate to urban areas. Secondly, the urban density may decline. The VF program is regulated by Constitution which states that the government runs the program using Indonesian national budget to increase the authority over the rural economic development [12]. Among other expectations, the government expects that purchasing power may increase, the infrastructure improves and the employment rate increases. In contrast, the reality has shown many unpleasant facts.

A survey report conducted by National Survey on Social and Economy (Susenas), dated in March 2016, showed an increase in poverty rate to 14.11% from 14.09% in 2015. The Indonesian economy grew at rate of 4.79% in 2015 while in 2014 it grew at 5.02%. The village fund in 2015 was Rp. 20.7 trillion (i.e. equivalent to 0.18% of GDP), while the contribution to GDP was 0.09%. This showed that the economy experienced decreasing return to scale. These facts contradicted with the growing amount of village fund during the same period. Among others, abuse of the fund, administrative issues and lack of knowledge and understanding about the fund management were problems inhibiting the success of VF program. These problems called the needs of an evaluation on the fund management. Using Dimensions of Village Fund Management Measure (DVFMM) proposed by Lengkong and Tasik [2], this study seeks to examine how successful the fund management has been according to the government regulation [3] and how the regulation awareness can affect the behavior in managing the fund. The examination may shed light on what actions village governments need to take in improving the fund management in developing the villages.

## A. Theoretical Framework and Hypo-Theses

Village fund program has been a noteworthy topic in urban and public economics fields. Thailand and Indonesia are two countries among others in which VF program becomes a striking program to improve the economy of rural

communities. Thailand has implemented this program named Thailand Village and Urban Community Fund since 2001. Thailand's VF provides almost USD 2 billion, which is equivalent to 1 billion baht, for every village and district of 78,000 villages and districts. On the other hand, every village of more than 74,000 villages in Indonesia receives in average Rp. 1 billion. Thailand VF program is providing loan to the villages, while Indonesian VF program is providing grants to the villages.

Although the amount of VF is large, many studies have not come to an agreement yet that VF helps improve the economy of village. Some of them still believe that the program is not a pro-poor program. In Thailand's case, argue that VF helps not only low-income people but also middle-upper income people [4]. This program helps the farmers who are not land-owners but whose income is slightly above the poverty line. That said, this program also helps middle income people stay above the poverty line. On the other hand, show that VF associates to an increase in average spending of 3.5% and income of 1.4% [5]. They believe that the VF is a pro-poor program. In 2004, Thailand VF program was the largest microfinance scheme in the world preceding the largest scheme in Indonesia provided by Bank Rakyat Indonesia although in 2009, Vietnam Bank for Social Policy turned to be the largest microfinance provider [6].

The scheme carried by Thailand VF program made it significantly different from Indonesia that carried the VF program in forms of grants. This difference made the effect of VF programs on these countries different. The underlying differences lied on the premise of loan as opposed to grants, although there were still debates on the choice between loans and grants due to the advantages and disadvantages associated to these types of financing [7]. Boonperm et al. found that Thailand's village funds were social rather than financial intermediaries in which there was little incentive to innovate [6]. They argued that the social feature of the VF was the reason why VF lending had not kept pace with the growth of the Thai economy. On the other hand, summarized that grants might discourage domestic resource mobilization and were more likely to be wasted by corrupt elites [3].

In Indonesia, the program started in 2014 and was in effect in 2015. The real effect of this program was still in question. Despite the allocation of trillions of rupiah for the VF program, in the past years poverty rate had never improved. Law No. 6 of 2014 concerning Village Funds and Village Minister Regulation PD TT No 21 of 2015 [1,8] about the VF program had specified the purpose and the means to allocate the fund, there were still many problems [9,10].

Indonesian VF is funded by national budget transferred for villages through city and regency governments to finance the needs of the village based on proposals and village authorities. The transfer is gradually made in a year. By 2017, the amount of VF was 10% of and on top regional transfer allocated in the national budget. Village Minister Regulation PD TT No 21 of 2015 stated that 2016 VF aimed to finance the village development and the constituents' empowerment [8]. President Joko Widodo emphasized that the VF should finance

the basic infrastructure development and needed to absorb labors under the management of village management. The basic allocation of the VF accounted 90% that was fairly distributed to all villages, while proportional allocation that accounted 10% was allocated based on poverty rate, area, and geo-graphic difficulties.

In 2015, VF transfer required three stages, namely 40% in April, 40% in August, and 20% in October. This kind of transfer, however, slowed down the fund management process. To overcome this issue, Finance Minister issued a regulation called that stated that the realization of VF had to be made in two stages, namely, the 60% of VF was made in March 2016, and the 40% of VF was made in August 2016 [11]. Law No. 6 of 2014 concerning Village Funds stated that the VF is transferred to city and regency accounts before being transferred to the villages [1]. In managing the VF, Indonesian government had issued two regulations, Government Regulation Number 60 of 2014 concerning Village Funds sourced from the State Budget [12] and Fongthong and Suriya [4] ruling that:

Financing the village development and constituents' empowerment is the priority of the VF program and becomes the authority and responsibility of village government.

VF aims to finance activities that enhance the capacity of the village constituents in expanding entrepreneurship, income and economies of scale.

VF program provides services and supports to empower low-income people but not in free cash transfer.

VF aims to finance village needs not any single individual.

VF aims to develop the basic infrastructure to support transportation, irrigation, sanitation, food security, energy and economic development.

VF aims to develop the potentials, cultural and economic assets of the village.

Additionally, the regulations also restrict that the VF is only for:

- Transportation infrastructure such as village roads, bridges and boat's mooring.
- Economic infrastructure such as village market, intra-village market, online market, etc.
- Food security infrastructure such as village embungs, irrigation channels, fish pond, coastal fish cage, farm, farmers' path, etc.
- Basic infrastructure such as water supply, polindes and poskedes
- Environmental infrastructure: sanitation, bath-rooms, drainage, waste disposal, sewer, com-post management, etc.
- Village information system development and digital social map.
- Development of appropriate technology
- Development of local renewable energy
- Development and capital participation in BUMDesa or BUMADesa.

- Vegetable plantation movement.
- Development of art and culture development.
- Initiation of PAUD and Posyandu
- Village library and training centers.
- Development of traditional herbs

On the other hand, VF aims to support constituents' empowerment that includes:

- Developing or providing production equipment's for the village economic actors.
- Developing the capacity of BUMDesa officers through training and internship.
- Developing the capacity for the program and village food security.
- Organizing the constituents, facilitating and training the paralegals and village law sup-ports including establishing Village Constituents Empowerment Leaders (KPMDD) and developing capacity for the community centers.
- Promoting and educating healthy lives including managing health centers like Posyandu, Poskesdes and Polindes.
- Supporting village and communities' forest/coastal management activities.
- Enhancing the capacity of the constituents to manage renewable energy and environmental preservation such as through training and developing bio-fuel, compost, etc.
- Enhancing the capacity of the constituents to benefit from appropriate technology.

In contrast, VF is not allowed to finance the following:

- Developing or fixing the village office
- The operational of village government including office stationaries.
- Travel cost of the village government and the board of villagers.
- Village leaders' election cost
- SILTAP, salary, compensation of the village government
- Development activities that belong to city/regencies or higher level governments.
- Paying the BPJS and BPJS health insurance premium of village governments.
- Purchasing lands for village office
- Land provision and development of the prayers' temples.
- Religious activities expenditures.

- Scholarship for village officers.
- Civil servants' salary.

## II. METHOD

This study covers 15 villages from three regencies in North Sulawesi Province including Minahasa, North Minahasa, and South Minahasa that are located closest to Manado city, the capital city of North Sulawesi Province. There are 9 villages from Minahasa, 4 villages from North Sulawesi and 2 villages from South Minahasa. We choose the village government officers that directly deal with the VF to be our respondents. We choose the respondent based on its readiness and willingness to answer all the questions through self-administered questionnaire and interview. We have 12, 6 and 4 respondents from Minahasa, North Minahasa, and South Minahasa regencies respectively. The study follows inductive research approach based on [13]. This study aims to investigate and identify the ongoing and potential problems that inhibit the effectiveness of VF program using Dimensions of Village Fund Management Measure (DVFMM) introduced by Lengkon and Tasik [2]. Technically, we adopt the score of each dimension of each village (i.e. the result in [8]) and then introduce a treatment. The treatment is such that in every question, we remind the respondents that village government must comply with all regulations that regulate VF management including [3]. This treatment is to build the regulation awareness of the village officers. To find a single number of the score of each dimension after the treatment, we use the same score indexing as it is in [2]. Particularly, we make the score for each response, then sum the scores of all responses in a dimension over all respondents and take the average by both respondent and dimension. Then, we use Mean and Standard Deviations techniques to calculate the change of the scores from before treatment to after treatment and make a prediction on the village economic growth using the change in scores and the real GDP growth model of [14]. The change mirrors the behavior of the village government officers when they are aware of the regulations and how far the deviation of the initial behavior from the new behavior. We expect that the new behavior is approaching the regulation compliance.

As mentioned before, our sample consists of 15 villages from 3 regencies as listed in the following table.

TABLE I. LIST OF VILLAGES

No.	Village	Regency
1	Tumaluntung	Minahasa Utara
2	Kaasar	Minahasa Utara
3	Kolongan Tetempangan	Minahasa Utara
4	Watutumou Dua	Minahasa Utara
5	Matani Satu	Minahasa Selatan
6	Matani	Minahasa Selatan
7	Raringis	Minahasa
8	Raringis Selatan	Minahasa
9	Tolok	Minahasa
10	Liba	Minahasa
11	Sendangan	Minahasa
12	Pulutan	Minahasa
13	Warembungan	Minahasa

Table 1. Cont.

14	Pineleng Satu	Minahasa
15	Pineleng Dua	Minahasa

#### A. Maintaining the Integrity of the Specifications

From each village, we choose 1 or 2 respondents that represent the village government which include the village leader, village secretary or head of finance unit. We choose 22 respondents that meet our requirement such that the respondents are individuals who understand and have significant involvement in the VF management to develop their villages. This study focuses on four dimensions that become the base of assessment the VF management introduced by Hur [14]. The dimensions are Financial Management, Infrastructure Development, Society Empowerment, and Misappropriation.

To asses each dimension, this study creates quantitative scale in each response. We make the questions and the choice of responses based on the Government Regulation, and the regulation of Ministry of Village, Development of Disadvantaged Regions and Transmigration. According to Lengkon and Tasik, the following table describes the component of each dimension that becomes the focus of this study [2]. We make the component in forms of the following questions.

TABLE II. ASSESSMENT DIMENSIONS

<b>A. Financial Management</b> (max score = 24, min score = 6, max average = 4, min average = 1)			
<i>Co de</i>	<i>Questions</i>	<i>Responses</i>	<i>Sc ore</i>
A1	Proportion of VF for financing village needs and the constituents is:	> 95% (4) .90 - 95% (3), 85 - 89% (2), < 85% (1)*	4,3 ,2, 1
A2	Proportion of VF for village development (such as infrastructure) in supporting transportation, irrigation, sanitation, basic needs, food security, energy and economic development is:	61 - 70%, 51 - 60%, 41 - 50%, < 41%	4,3 ,2, 1
A3	Proportion of VF for people empowerment:	31 - 40%, 21-30%, 11-20%, <11%	4,3 ,2, 1
A4	Out of VF allocated for people empowerment, the proportion for enhancing the people capacity in entrepreneurship, income and economies of scale is:	41-50%, 31-40%, 21-30%, <21%	4,3 ,2, 1
A5	Out of VF allocated for people empowerment, the proportion for serving and empowering the poor is:	51-60%, 41-50%, 31-40%, <31%	4,3 ,2, 1
A6	Out of VF allocated for people empowerment, the proportion for developing village potentials and cultural assets that create economic values is:	1-5%, 6-10%, 11-15%, di atas 15% atau 0%	4,3 ,2, 1

Table 2. Cont.

<b>B. Village Infrastructure</b> (max score = 38, min score = 11, max average = 3,45, min average = 1)			
<i>Co de</i>	<i>Question</i>	<i>Response</i>	<i>Sc ore</i>
B1	VF for financing transportation infrastructure like district path, village road, unpaved village road, small bridge, culverts, boat mooring	At least 5 units, 3 or 4 units, 1 or 2 units, none to be financed.	4,3 ,2, 1
B2	VF for financing village market, inter-village market, online market, etc.	At least 3 units, 2 units, 1 unit, none to be financed.	4,3 ,2, 1
B3	VF for financing food security infrastructure like village embungs, irrigation channels, fish cultivating pond, karamba on the beach, integrated cages, road farming, etc.	At least 5-6 units, 3-4 units, 1-2 units, none to be financed.	4,3 ,2, 1
B4	VF for financing basic infrastructure (clean water, <i>polindes</i> , <i>poskedes</i> ) and environment (sanitation, MCK, drainage, waste disposal, ditch, compost processing, etc.).	At least 7-9 units, 4-6 units, 1-3 units, none to be financed.	4,3 ,2, 1
B5	VF for financing information and technology, social map, appropriate technology, and local renewable energy.	At least 3 units, 2 units, 1 unit, none to be financed.	4,3 ,2, 1
B6	VF availability for financing village-owned companies ( <i>BUMDesa</i> and <i>BUMADesa</i> ).	Yes, No.	3, 1
B7	VF availability for financing <i>PAUD</i> and <i>Posyandu</i> .	Yes, No.	3, 1
B8	VF availability for financing village library and study studio.	Yes, No.	3, 1
B9	VF availability for financing art and culture development.	Yes, No.	3, 1
B10	VF availability for financing plantation movement: vegetables, fruits, seeds, <i>palawija</i> , horticulture, hard plants, etc.	Yes, No.	3, 1
B11	VF availability for financing traditional herbs development.	Yes, No.	3, 1
<b>C. Society Empowerment</b> (max score = 32, min score = 8, max average = 4, min average = 1)			
<i>Co de</i>	<i>Question</i>	<i>Response</i>	<i>Sc ore</i>
C1	VF for developing or injecting production tools or capital for the business actors with in forms of revolving funds.	Yes with complete documentations, Yes but less complete documentations, Yes with incomplete documentations, No.	4,3 ,2, 1



Table 2. Cont.

C2	VF for enhancing capacity through training and internships for BUMDesa employees and village economic actors.	Yes with complete documentations, Yes but less complete documentations, Yes with incomplete documentations, No.	4,3 ,2, 1
C3	VF for enhancing capacity for enhancing capacity in food security programs.	Yes with complete documentations, Yes but less complete documentations, Yes with incomplete documentations, No.	4,3 ,2, 1
C4	VF for organizing society, facilitating, training paralegal and legal aid including Society Empowerment Cadre (KPM) and enhancing Community Centre.	Yes with complete documentations, Yes but less complete documentations, Yes with incomplete documentations, No.	4,3 ,2, 1
C5	VF for promoting and educating public health as well as hygiene and clean life, including enhancing the management capacity of <i>Posyandu</i> , <i>Poskesdes</i> , <i>Polindes</i> , and optimizing the role of village paramedics.	Yes with complete documentations, Yes but less complete documentations, Yes with incomplete documentations, No.	4,3 ,2, 1
C6	VF for supporting activities in managing forests, and beaches.	Yes with complete documentations, Yes but less complete documentations, Yes with incomplete documentations, No.	4,3 ,2, 1
C7	VF for enhancing capacity of society groups for renewable energy and environmental preservation, e.g. compost and biofuel development.	Yes with complete documentations, Yes but less complete documentations, Yes with incomplete documentations, No.	4,3 ,2, 1
C8	VF for enhancing capacity of society groups for utilizing the appropriate technology.	Yes with complete documentations, Yes but less complete documentations, Yes with incomplete documentations, No.	4,3 ,2, 1

Table 2. Cont.

<b>D. Misappropriation</b> (max score = 48, min score = 12, max average = 4, min average = 1)			
<i>Co de</i>	<i>Question</i>	<i>Responses</i>	<i>Sc ore</i>
<b>D1</b>	<b><i>VF is used for developing or fixing village offices.</i></b>	<b><i>Yes, No</i></b>	<b><i>4, 1</i></b>
D2	VF is used for financing the operational of village government, including office needs (computer and stationeries).	Yes, No	4, 1
D3	VF is used for financing the official travel of village governments.	Yes, No	4, 1
D4	VF is used for financing the election of head of village.	Yes, No	4, 1
D5	VF is used for financing <i>SILTAP</i> , salary, honorarium of village government or incentives for custom institutions.	Yes, No	4, 1
D6	VF is used for financing regencies' roads, school buildings (for SD, SMP, SMA, SMK) which are the authorities of regency and city governments..	Yes, No	4, 1
D7	VF is used for financing BPJS and BPJS premium for village officers..	Yes, No	4, 1
D8	VF is used for purchasing lands for village office.	Yes, No	4, 1
D9	VF is used for assisting land purchase for religious buildings including the building.	Yes, No	4, 1
D10	VF is used for financing religious programs.	Yes, No	4, 1
D11	VF is used for financing tuition fees of village officers.	Yes, No	4, 1
D12	VF is used for financing the honorarium of officers of districts, regencies, cities and provinces.	Yes, No	4, 1

Source: Authors' Questionnaire Design.

In the study of Lengkong and Tasik, respondents were given questions as listed in table 2 related to the management and the use of village fund in one-year period, 2016 – 2017 [2]. In contrast, this study makes an extension by including a treatment. Particularly, we deliver every question in table 2 to each respondent together with the treatment. The treatment we make is introducing or emphasizing the importance of Government Regulation and regulations of Ministry of Village, Development of Disadvantaged Regions and Transmigration related to village fund management which regulates that village fund is only for infra-structure and society development. Executing the treatment, we do not explicitly inform the restrictions on fund abuse and misappropriation. Additionally, we ask the respondents what they will do in the future after the presence of the treatment.

Before we proceed with our analysis, we present the findings of Lengkong and Tasik in table 3 to make comparison with our findings [2]. The comprehensive column shows that financial management dimension has the highest score, while the misappropriation dimension has the lowest score. Comprehensive score is the average scores of three regencies in the sample.

TABLE III. DIMENSION SCORES BEFORE TREATMENT

Dimensions	Comprehensive	Minut	Minsel	Minahasa
Financial Management (max = 4, min = 1)	2,65	2,53	2,54	2,75
Village Infrastructure (max 3,45, min = 1)	1,86	1,79	1,91	1,89
Society Empowerment (max = 4, min = 1)	1,76	1,75	2,03	1,68
Misappropriation (max = 4, min = 1)	1,19	1,15	1,06	1,27

Among regencies, table 3 shows that Minahasa has the highest score in financial management and it is higher than the comprehensive score. South Minahasa (Minsel) has the highest score in village infrastructure. Minsel also has the highest score in society empowerment among dimensions. In misappropriation, Minahasa has the highest score among regencies, while Minsel has the lowest score.

The findings above become the benchmark to examine the change in behavior of the respondents when we introduce or emphasize the Government Regulation and Regulation of the Ministry in the questionnaire. These regulations are the treatment in this study.

We use the same respondents and the same day of data collection as in [8] to avoid any bias that may result from using different respondents and day. The following table 4 presents the score after the treatment.

TABLE IV. DIMENSION SCORE AFTER THE TREATMENT

Dimensions	Comprehensive	Minut	Minsel	Minahasa
Financial Management (max = 4, min = 1)	2,73	2,78	2,54	2,78
Village Infrastructure (max 3,45, min = 1)	2,27	2,20	2,18	2,34
Society Empowerment (max = 4, min = 1)	2,48	2,29	2,91	2,44
Misappropriation (max = 4, min = 1)	1,26	1,04	1,25	1,38

Source: Authors' calculation

### III. RESULTS AND DISCUSSION

Comparing table 3 and 4 gives distinct differences in scores. It is evident that the treatment does affect the behavior of the respondents. In general, the scores increase in all dimensions. The rise of scores in the first three dimensions indicate that there is a willingness to well manage the village fund. However, this treatment is not able to reduce the score in misappropriation dimension. North Minahasa (Minut) is the only regency that shows decreasing in score of this dimension.

One thing that is obvious here is that majority of village officers understand the management of village fund as mandated by the Government Regulation and the Ministry Regulations. Nevertheless, not all officers understand what use of village fund can be categorized as misappropriation. One

can see the increase in score of misappropriation of Minahasa and South Minahasa.

As shown in table 5, when we look at the per-centage change of the score, there is no change in score in financial management dimension of South Minahasa, while the highest change occurs in society empowerment dimension of Minahasa. Of these dimension, the change in scores of society empowerment dimensions is the highest, while village infrastructure dimension has the second highest change.

TABLE V. CHANGE IN SCORE OF DIMENSION AFTER TREATMENT

Dimension	Comprehensive	Minut	Minsel	Minahasa
Financial Management	3,14%	9,89%	0,00%	1,01%
Village Infrastructure	21,95%	22,88%	14,29%	24,10%
Society Empowerment	40,97%	30,95%	43,08%	45,34%
Misappropriation	5,71%	-9,42%	17,65%	8,20%

Source: Authors' calculation

Table 6. shows the village's score of each dimension before treatment. In general, Liba village has the highest score overall and Watutumou village has the lowest score. In financial management dimension, Liba has the highest score of 3.83, while Pineleng II has the lowest score of 1.67. In village infrastructure dimension, South Raringis has the highest score of 2.55, and both Watutumou and Pulutan have the lowest score of 1.45. In society empowerment dimension, both Tumulung and Matani Satu have the highest score of 2.25 and Watutumou, Tolok, Sendangan and Pulutan have the lowest scores of 1.38. In misappropriation dimension, Pineleng II has the highest score of 1.75 while Tumulung, Kolongan Tetempangan, Matani, South Raringis, Tolok, Sendangan, Pulutan have the lowest score of 1.

TABLE VI. DIMENSION SCORE FOR EACH VILLAGE BEFORE TREATMENT

	Tumalung	Kaasar	Kolong an Tetempangan	Watu tumou	Matani Satu	Matani	North Raringis	South Raringis
Financial Management	2.67	2.33	2.67	2.50	2.58	2.50	3.00	3.00
Village Infrastructure	1.82	1.82	1.91	1.45	2.05	1.77	1.91	2.55
Society Empowerment	2.25	1.75	1.69	1.38	2.25	1.81	1.63	1.75
Misappropriation	1.00	1.25	1.00	1.25	1.13	1.00	1.50	1.00
	Tolok	Liba	Sendangan	Pulutan	Warembungan	Pineleng I	Pineleng II	
Financial Management	3.00	3.83	2.67	2.83	2.67	2.33	1.67	
Village Infrastructure	1.55	1.73	1.55	1.45	1.95	2.14	2.18	

Table 6. Cont.

Society Empowerment	1.38	2.13	1.38	1.38	1.94	1.75	1.75	
Misappropriation	1.00	1.50	1.00	1.00	1.38	1.38	1.75	

Source: Authors' calculation

Table 7 shows that after the treatment, the score structure changes. Now, Pulutan has the highest score in all dimensions, while Kaasar has the lowest score. In financial management dimension, Pineleng Dua has the highest score, while Liba has the lowest score. It is interesting that these villages swap the positions from the initial positions (i.e. before the treatment). This change indicates a drastic change in behavior of officers of both villages after the presence of the treatment.

In village infrastructure dimension, Pulutan has the highest score, while Matani Satu has the lowest one. In this dimension, Pulutan has moved from having the lowest score to the highest score. In society empowerment dimension, Pulutan has the highest score, while Kaasar, Tolok, and Pineleng Satu have the lowest ones. These three villages do not experience changes in this dimension. In misappropriation dimension, Liba has the highest score, while Kaasar and Watutumou have the lowest ones.

TABLE VII. CHANGE IN SCORE OF DIMENSION FOR EACH VILLAGE AFTER TREATMENT (IN %)

	Tumaluntung	Kaasar	Kolonan Tete mpan gan	Watutumou	Matani Satu	Matani	North Rarin gis	South Rarin gis
Financial Management	-18.75	7.14	21.88	20.00	-9.68	10.00	5.56	-11.11
Village Infrastructure	50.00	-5.00	28.57	43.75	-8.89	41.03	4.76	10.71
Society Empowerment	22.22	0.00	59.26	54.55	11.11	82.76	15.38	35.71
Misappropriation	25.00	20.00	0.00	20.00	33.33	0.00	16.67	0.00
	Tolok	Liba	Sendangan	Pulutan	Warembungan	Pineleng I	Pineleng II	
Financial Management	0.00	30.43	6.25	5.88	12.50	3.57	30.00	
Village Infrastructure	11.76	31.58	47.06	81.25	48.84	0.00	16.67	
Society Empowerment	0.00	52.94	27.27	136.36	96.77	0.00	64.29	
Misappropriation	0.00	66.67	0.00	0.00	9.09	-9.09	0.00	

Source: Authors' calculation

Using the scores above, we try to calculate the economic growth rate that each regency and village can achieve. To ease the calculation, we use the capital expenditure coefficient estimated by Hur using Real GDP Growth model [14]. The

coefficient is 0.236. To calculate the contribution of improvement in village fund management, we assume that 1% change in the management improvement is due to 1% increase in village fund managed appropriately. The improvement is indicated by the percentage change of scores after treatment. Therefore, one can state that 1% increase in rupiahs spent for village development leads to an increase in village growth rate by 0.236%. To summarize, table 8 shows the potential growth rate of regencies and villages using the coefficient of 0.236 and the assumption above.

It turns out that, the average growth rate of regencies contributed by the presence of village fund is 3.44%. In particular, North Minahasa may have the highest growth rate of 4.32%; Minahasa grows at 3.67% and South Minahasa grows at the lowest rate of 2.34% contributed by village fund.

TABLE VIII. POTENTIAL ECONOMIC GROWTH RATE OF REGENCIES CONTRIBUTED BY THE PRESENCE OF VILLAGE AFTER TREATMENT

	Comprehensive	Minut	Minsel	Minahasa
Financial Management	0.74%	2.33%	0.00%	0.24%
Village Infrastructure	5.18%	5.40%	3.37%	5.69%
Society Empowerment	9.67%	7.30%	10.17%	10.70%
Misappropriation	1.35%	2.22%	4.16%	1.93%
Potential Growth Rate of Each Regency	3.56%	4.32%	2.34%	3.67%
Average Growth Rate of Regencies	3.44%			

Source: Authors' calculation

In village level, the economy may grow 3.98% contributed by the village fund. Pulutan has the highest growth rate of 13.19%, while Matani Satu has negative growth rate of -2.41%. Table 9 lists all the growth rates of each village as follows.

TABLE IX. POTENTIAL ECONOMIC GROWTH RATE OF VILLAGES CONTRIBUTED BY THE PRESENCE OF VILLAGE AFTER TREATMENT (IN %)

	Tumaluntung	Kaasar	Kolonan Tete mpan gan	Watutumou	Matani Satu	Matani	North Rarin gis	South Rarin gis
Financial Management	-4.43	1.69	5.16	4.72	-2.28	2.36	1.31	-2.62
Village Infrastructure	11.80	-1.18	6.74	10.33	-2.10	9.68	1.12	2.53
Society Empowerment	5.24	0.00	13.99	12.87	2.62	19.53	3.63	8.43
Misappropriation	5.90	-4.72	0.00	-4.72	7.87	0.00	3.93	0.00
Potential Growth Rate of each Village	1.68	1.31	6.47	8.16	-2.41	7.89	0.53	2.08

Table 9. Cont.

	Tolok	Liba	Send anga n	Pulut an	Ware mbun gan	Pinel eng I	Pinel eng II
Financial Management	0.00	-7.18	1.48	1.39	2.95	0.84	7.08
Village Infrastructure	2.78	7.45	11.11	19.18	11.53	0.00	3.93
Society Empowerment	0.00	12.49	6.44	32.18	22.84	0.00	15.17
Misappropriation	0.00	15.73	0.00	0.00	2.15	-2.15	0.00
Potential Growth Rate of each Village	0.69	-0.74	4.75	13.19	8.79	0.75	6.55
Average Growth Rate of Villages	3,98%						

Source: Authors' calculation

Based on the results of calculation above, it is obvious that improvement in village fund management can contribute positively to the economic growth rate of the regency and village. The growth rate may be higher if the village officers truly understand the mandate of Law No. 6 of 2014 concerning Village Funds and all Government and Ministers' Regulations derived from the Law [1]. Seen from the score of misappropriation, one can conclude that there are still many village officers do not understand the Law. This lack of understanding is a serious problem higher level government have to address to make the village fund management more appropriate.

#### IV. CONCLUSION

This study relies on the model of Dimensions of Village Fund Management Measure (DVFMM) introduced by [8] to evaluate the change in behavior and potential improvement in village fund management as well as potential economic growth rate of the regencies and villages after we introduce and emphasize the Government and Minister's Regulations. These regulations are taken as treatment in this study. Particularly, this study examines the changes in the four dimensions of village fund management after the treatment takes place. The dimensions include Financial Management, Village Infrastructure, Society Empowerment, Misappropriation.

It turns out that after the treatment in effect, there is a tendency that village officers improve the fund management. The change in the scores indicates the improvement. It is obvious that there is a positive improvement in the fund management that contribute to a positive economic growth of regencies and villages in average. All four dimensions show rise in scores. However, it is still evident that there is still lack of understanding in managing the fund based on [12] and all Regulations derived from this Law. If all village officers understand the Law and Regulations, the management can be

better and the contribution of village fund to the growth rate can be higher than when they lack understanding. Particularly, having better understanding may result in lower scores of the misappropriation dimension which, in this study, is still above 1.

However, the findings show that improvement in village fund management may lead to growth rates of 3.44 and 3.98% in average contributed by the village fund for regencies and villages respectively. As noted earlier, the growth rates may be higher when village officers do not lack understanding about the fund management according to the Law and Regulations.

To improve the fund management and achieve the targeted economic growth rate, it is important that the governments increase the capacity and understanding of village officers in managing the village funds to enable them to use the fund in more appropriate ways. Although the we have introduced and emphasized the Government Regulations, the score of misappropriation dimension is still above the expected score of 1.

Therefore, to reach the targeted benefit of village fund and the economic growth rate, higher level government improve the control and monitoring of the fund management by the village officers through the use of logbook and routine reporting. Both higher level governments and independent non-government organizations assigned by the provincial governments conduct the control and monitoring. Additionally, better rewards and punishment systems may benefit the fund management.

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