RURAL DEVELOPMENT POLICY AND POVERTY ALLEVIATION: THE CASE OF VILLAGE FUNDS IN ACEH PROVINCE, INDONESIA

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ARTICLE INFO	ABSTRACT

Village fund is still a new fiscal policy that was initially launched in 2015 by the seventh president of Indonesia, "Joko Widodo", as his pilot project. Some villages have significantly benefited from developments and improvements initiated by the policy. However, it has also been identified through various investigative analyses that not all village funds allocations transferred to local governments have been implemented effectively and efficiently. This research examines the relationship between the village funds allocations and poverty alleviation in Aceh province, Indonesia. Using a panel data model that employed random-effects estimations, it can be concluded the village funds allocations from the period of 2015 to 2018 cannot reduce the poverty rate in 23 regencies/municipalities in Aceh. Fiscal variables, government expenditure and government own revenue have also shown a positive relationship with the poverty rate. Furthermore, with fixed-effects estimation, village funds allocations also show the same result of its relationship with the number of people living in poverty. Meanwhile, one fiscal variable, GDRP has a negative and significant relationship with the number of people living in poverty. Some social variables, such as education and population have also had significant and negative effects on the poverty rate and the number of people living in poverty in Aceh.

Dana desa merupakan suatu kebijakan fiskal yang pertama kali di terapkan pada tahun 2015 sebagai pilot projek presiden ke tujuh Indonesia, "Joko Widodo". Sejumlah desa telah mendapatkan manfaat dari pembangunan dan peningkatan desa yang di inisiasikan dalam kebijakan tersebut. Namun demikian, kebijakan fiskal tersebut juga telah banyak di analisis dari berbagai jenis penelitian mengenai dana desa dan hasil menunjukkan bahwa tidak semua dana desa yang telah disalurkan ke desa-desa telah diimplementasikan secara efektif and efisien. Maka penelitian ini bertujuan untuk mengidentifikasi hubungan antara alokasi dana desa dan pengentasan kemiskinan di provinsi Aceh, Indonesia. Dengan

menggunakan model panel data yang juga diikuti dengan pengujian *random-effect test*, menunjukkan hasil bahwa alokasi dana desa mulai dari periode 2015 sampai dengan 2018 tidak dapat mengurangi tingkat kemiskinan pada 23 kabupaten/kota di Aceh. *Variable* fiskal, pengeluaran pemerintah dan pendapatan asli daerah juga menunjukkan hubungan positif dengan tingkat kemiskinan. Selanjutnya, dengan pengujian *fixed-effect* model, alokasi dana desa juga menyimpulkan hasil yang sama kaitan hubungannya dengan jumlah angka penduduk miskin di Aceh. Namun, *variable* GDRP memiliki hubungan yang *negative* dengan jumlah angka penduduk miskin. Beberapa *variable* sosial lainnya seperti Pendidikan dan jumlah penduduk memiliki hubungan yang negatif dan signifikan terhadap tingkat kemiskinan dan jumlah angka penduduk miskin di Aceh.

1. INTRODUCTION

Poverty is still a main issue in developing countries, Indonesia being no exception. The Indonesian government is still struggling to reduce its poverty rate, which only could be reduced by merely 36 per cent between 2012 and 2018. However, and as provided by the data, the poverty rate is now at its record lowest in Indonesian history (World Bank, 2019). Furthermore, about 25.9 million people in Indonesia are living under the poverty line. Thus, the Indonesian government has been focussed and unwavering in attempting to formulate their best policy to alleviate the poverty rate. As poverty is one of the centrally debated topics, many internal and external experts to the government have researched and tried to identify how to reduce the poverty rate in the country.

At the moment, the Indonesian government provides cards to the poor, which is part of fiscal policy to address poverty problems. The goal of these cards is to provide additional welfare benefits. The major purpose is to actually increase willingness to consume certain goods and services. For example, Kartu Indonesia Pintar (Smart Indonesian Card), according to KEMENDIBUD (Ministry of Education and Culture Indonesia), is aimed to enable people living in poverty to get a higher education so they can have a better quality of life and better job prospects. Although this policy may be effective in the short-term (up to five years), the government needs to further elaborate on the purpose of the cards so the recipients can use them more wisely. Besides, this scheme should only be executed for the short term because citizens will only continue to inadvertently burden government funds (Rakhmat & Tarahita, 2018).

Furthermore, the World Bank (2004, cited by Ambia & Sujarwoto, 2018) stated that one of the steps to reduce poverty is to improve infrastructures such as roads and electric facilities. The Indonesian government already has tried to initiate the policy and as a result, it has provided funds to all rural areas to by the so-called village funds. This means the government wants all the village leaders to be able to independently maintain and develop their districts through the funds that are provided by the central government, such as, improving road quality as well as building bridges to make villages more accessible, hence allowing for more visitors and likely economic improvements. If the Indonesian government has been concerned about the long-term development, this policy is a better option to be conducted centrally (Rakhmat & Talita, 2018). Optimistically, having access to proper facilities and improved living conditions then villagers will be encouraged and more active to decreasing their dependencies on welfare by increasing their abilities to generate more moderate incomes.

Aceh province has faced enormous personal, social and political challenges as associated with catastrophic natural disasters such as an earth quake and resulting tsunami in 2004 leaving more than two hundred thousand people dead or presumably dead. Prior to the tsunami, Aceh also experienced thirty years of local unrest and conflict with the central government before a Memorandum of Understanding (MoU) was reached in 2005 whereby Aceh was granted some special provisions (autonomy funds and law) to take more control over the royalties associated with its own natural resources. Nonetheless, Aceh has been thriving not only from the proceeds of its royalties but also because of additional aid from the central government and from many foreign countries.

However, the Acehnese government still remains challenged on how to make Aceh's economy grow. It has been reported by Statistics Indonesia that Aceh province is one of the poorest provinces in Indonesia and the poorest on the Sumatran Island. In 2018, the number of poor people in Aceh reached 831.000 (approximately 17%), an increase of about 3000 people from the previous year.

The condition of poverty in Aceh can be seen in Figure 1 (as provided). The figure clearly shows there has not been much change in the number of people living in poverty in Aceh. With a total of 23 regencies and municipalities, Aceh Utara has the highest number of poor people, almost reaching 120 thousand people and then followed by Pidie as the second highest and Bireun as the third (roughly 90 thousand and 70 thousand poor people respectively).

Dewi et al. (2018) show that with all special provisions that Aceh has had from the central government, such as autonomy funds and oil and gas revenue sharing (70% for Aceh Province and 30% is shared to the central government); still Aceh struggles to address the poverty problem. The authors added their analysis and concluded that structural and cultural features are the two main contributing factors causing poverty in Aceh. Conversantly, an empirical study from Lewis (2016) reveals that local government spending could positively influence education, health and infrastructure service access. Accordingly, alleviating poverty problems may be addressed by increasing government expenditure especially for health, education and infrastructure seems to be a better way as shown by Anderson et al. (2017).

It is empirically true that such government spending shows positive and significant effects on reducing the poverty rate, even though particular regions do not have positive impacts of government fiscal policy. In Aceh for instance, those research findings against the reality do not seem to detect any impacts on poverty alleviation. Therefore, other rural

development programs such as fiscal decentralisation policy in the form of village funds should be considered to address the poverty problem with a more effective utilisation of resources.

However, other ways should be investigated to better utilise village funds for catering to the needs of the people in rural areas, which currently is not appropriately implemented and executed by the local government bodies or other institutions.

Based on the introduction above, this research examines:

1. Do the village funds allocations effectively alleviate the poverty problem in Aceh Province?

2. Do other fiscal policies for rural development (local government expenditure, government own revenue and regional economic growth) have an effect on the poverty rate?

3. What are the feasible policy solutions for the Aceh and Indonesian governments in order to reduce the poverty rate by managing village funds allocations?

2. THEORETICAL FRAMEWORK

2.1. Village Funding

The name of village funding was firstly invented by the government of Thailand, which in 2001 launched the so-called Thailand Village and Urban Revolving Funds (VF). The scheme of village funds of Thailand is completely different from the village funds law in Indonesia. The Thailand Village Funds is designed as a loan that will be lent to households and become the second largest microcredit scheme in the world (Boonperm et al. 2012). In Cambodia, village funds were firstly implemented in 2006, but the funding scheme is held by a non-profit organisation. Bamberger and Bamberger (2019), co-founders of village funds in Cambodia, explain that the main purposes of the aid are providing scholarships, English classes, school facilities, eye care, providing clean water and community improvements.

On the other hand, the village funds in Indonesia is a new fiscal scheme, even the first in the world, that assists villagers (particularly in remote areas) to improve and develop their environments. Village funds are one of the fiscal policies that were legalised in national budgeting plan and implemented since 2015 and they have become a pilot project of President Joko Widodo. This project is also one of the government's efforts to be wielded as a formidable weapon to develop its rural areas that hopefully will improve inhabitants' welfare as written in Village Law. The Village Law No.6/2014 states that rural areas can initiate a change and development rather than merely being an object of development. Villages are given

such responsibilities and rights to manage their own governance as well as ensuring their people live in prosperity. A village in Indonesia will have many supports from the central government towards improving their income. The allocation of village funds is part of the APBN (National Income and Expenditure Budgeting Plan).

According to the Indonesian Ministry of Finance, the purposes of village funds are to:

1. Improve public service,
2. Alleviate Poverty,
3. Develop the rural economy,
4. Reduce inequality in rural areas,
5. Improve the villages as subject in development.

2.2. Village Funds Regulation in Indonesia

Village funds is one of the fiscal decentralisation policies, which means the budget distribution process is delegated from a higher level of government (the central government) to lower tiers of government (local government). According to Luiz (2000), fiscal decentralisation is aimed to bring the government closer to the people, which are expected to boost public sector efficiency as well as accountability and transparency in the government system both in policy making and service delivery.

According to the Law of Village Funds (UU No.6/2014 in Article 72:2), village funds are allocated to the local governments considerate of:

1. Population,
2. Poverty rate,
3. The size of the village, and
4. Any geographical problems.

Village funds are the vehicle for the implementation of short-term development projects in rural areas with a view of achieving longer-term benefits, according to President Joko Widodo. The aims to be achieved are decreasing remote area problems, such as access to the village, the lack of economic growth and other disparity problems. Through this policy, the government has succeeded to decrease the proportion of remote areas from 26% in 2011 to about 20% in 2019. Furthermore, the allocation for village funds has been increasing every year; in 2018 more than Rp.149 trillion has been transferred to each village (the Ministry of Finance Indonesia, 2018). This money has been used to assist approximately 20,000 villages to be independent.

Figure 2 demonstrates the allocation of village funds transferred to the rural areas in Aceh province. It shows there was an increase in the village funds allocation until 2017 for each regency/municipality. The largest amount of money was transferred to Aceh

Utara and the lowest allocation is in Sabang. Furthermore, the regulation states that 70 per cent of village funds must be used for development programs with a maximum of 30 per cent being allocated to salaries and any administrative costs. There will be a fine incurred if villages do not spend 70 per cent of their allocation which also results in the delay of village funds distribution and / or cutting the allocation in the following fiscal year.

2.3. Previous Research

The analysis of village funds has been examined by several researchers. Suryahadi and Izzati (2018) had found there is a problem in one of the aims of funds for villages and cards for the poor are not sufficient and effective in reducing the rate of people who live in poverty. The authors concluded that creating jobs for the poor and increasing incomes are needed to increase economic growth. Additionally, Setianingsih (2015) describes that the village funds allocation for rural development has no progress at all. It is because there is problem in the rural sector itself with their management and human resource barrier.

Furthermore, Daforsa and Handra (2019) examined the village funds management in poverty alleviation at a regional district (West Sumatra) and found that village funds is could significantly help to reduce the poverty rate simultaneously in different municipalities. The most influencing variables that have a significant correlation with poverty are community development and infrastructure development policies.

Susilowati et al. (2017) used panel data analysis and had a different finding but with similar focused on one of the provinces which stated that the village funds variable could not reduce the poverty problem in a municipality in East Java province. Furthermore, the authors added that it is because the funding is only focused on improving infrastructures, which might be useful for non-poor people.

Another research on a small area had been analysed by Azlina et al. (2017) which studied the effectiveness of village funds management in Riau Province. It concluded that village funds have been mismanaged by villagers which should be managed by village development. Additionally, due to the lack of human resources, it is quite difficult to use all the funds and what are really needed for the village itself. The villages have to examine what is priority before the budget preparation process is finalised. It is supported by the research done by Mondale et al. (2017) analysed the financial management of village funds and compared with two different districts in Sub District in Central Aceh District in Aceh Province, Indonesia. The authors found that competence and quality of the human resources, public participation and oversight by the BPD (Supervisory Board Village) are the three factors that influenced the realisation of the funds themselves.

Although those three factors are beneficial in one district, another district is less effective due to the lack of human resources.

Analysing fiscal policy and capacity towards addressing the poverty problem in Indonesia, Sriyana (2015) finds that using *fix effect model*, public spending and fiscal policy are significant indicators for poverty rate. What could be seen as obstacles of implementing the village allocation funds programs are the first level of public education (human resource capability is still below standard), second is the lack of appropriate management of other village institutions and third is the failure mechanisms of socialisation and increased capacity building to the villagers (Warsono & Ruksamin, 2014).

In summary, most of the research on village funds has been about the financial management in local government on how to best budget and utilise the funding. However, there has not been much research regarding the allocation of village funds and its relationship with poverty, particularly in Aceh province. Therefore, this research will conduct an empirical case study analysis of poverty and rural development policy (village funds allocations).

3. METHOD

3.1. Data

The case study is of Aceh province, the west region of Indonesia, comprising 23 regencies/municipalities for the period of 2015 to 2018. This research uses only secondary data which was collected from different sources, such as Statistics Indonesia, the Ministry of Finance Indonesia and other formal governmental institutions in Indonesia.

This research has also considered other variables that have a correlation with poverty. According to a study by Anderson et al. (2017) and supported by research from Suwardi (2011) with a meta-regression and panel data analysis, the authors conclude that increasing government expenditure and/or local government spending especially for health, education and infrastructure seems to be a better way to alleviate poverty. Additionally, the sectors contributing most to reducing the poverty rate are infrastructure and education.

3.2. Variables Description

Shown in Table 1. In terms of other indicators that may have an impact on the poverty rate, this research has also considered to add several fiscal policy variables, such as government expenditure, Gross Domestic Regional Product (GDRP) and governments'

own revenue. However, there are several social variables that can be considered for analysis, such as education, population and unemployment. Based on the literature review, both dependent and independent variables are explained in Table 1.

3.3. Summary Statistics

Table 2 summarises the statistics of each variable using Stata regression. With the total of 92 observations from 2015 to 2018 period in this research, it provides the mean, standard deviation, the minimum value and the maximum value of each variable that has been observed. Aceh province has the maximum of IDR16 billion of region income measured by looking at the GDRP, the lowest value of region income is IDR5 billion with the mean IDR 912 million.

The mean of the number of people living in poverty in Aceh Province is 37.087 people with the minimum are 5.615 and the maximum is 118.742 poor people. Meanwhile, for the poverty rate of Aceh province, it is shown that the highest rate of the poverty is 75% and the lowest rate of the poverty is 7% with the mean 17%. The mean of the village funds allocations is IDR 162 billion with the lowest allocation is IDR 6 billion and the largest allocation is IDR 635 billion.

The highest rate of education in Aceh Province is 93.36% and the lowest rate is 55.79% with the mean of 74.35%. Furthermore, in Aceh, averagely people living in one region are 223.643 people of which the highest population for one region is 611.435 people and the minimum population is 33.215 people.

With that amount of population, the mean of the unemployment rate in Aceh province is 6.74% of which the highest unemployment rate is 17.05% and the lowest unemployment rate is 1.04%.

3.4. Poverty and Village Funds Allocations

This chapter will identify how the relationship between poverty and village funds allocation before testing the model. Looking for the case of the allocation in Aceh province since 2015 to 2018 is assumed to have no impact on reducing the rate of poverty or the number of people living in the poverty in Aceh province. Calculating how changes in the village funds allocations and poverty number/poverty rate, mathematically can be counted with the formulas below:

$$\% \, Change = \frac{Poverty_t}{Poverty_{t-1}} - 1 \qquad (1)$$

$$\% \, Change = \frac{POVR_t}{POVR_{t-1}} - 1 \qquad (2)$$

The two scatter plots in Figure 3 and Figure 4 illustrate how the allocation of village funds in year t-1 could have an impact on the poverty rate and the number of poor people respectively.

Results show that the village funds allocations have no significant impact on reducing the poverty rate and the number of people who live in the poverty of the following year in Aceh. There should have been such an effect because; theoretically the boost in the funding budget could have a negative relationship with poverty alleviation.

Furthermore, looking at the regional difference towards the village funds allocations and the poverty rate shown in the figure 3, the author has had an assumption that village funds allocation in 23 regency in Aceh Province does not have a significant relationship with reducing the poverty rate.

By looking at the mean of poverty rate and village funds allocations shown in Figure 5 below, some regencies like Aceh Besar, Pidie and Bireun do not show the decrease in the poverty rate, even though those three regions have had higher allocation of village funds from the central government. In Aceh Utara, which has the largest proportion of village funds, shows not much improvement in the effort to alleviate poverty rate, which leads Aceh Utara to remain as the poorest regency in Aceh Province with above 30 per cent.

3.5. Research Method

This research uses a panel data method with its main purpose is to analyse the poverty rate as dependent variable and village funds allocation as independent variable. However, this research will also examine other independent variables that could have impact on the poverty as mentioned in chapter four previous.

The poverty rate ($POVR_{it}$) is expressed as a function of village funds allocation (VF_{it}), government expenditure (GE_{it}), government own revenue(GOR_{it}), gross domestic regional product ($GDRP_{it}$), and social indicators (X_{it}).

$$POVR_{it} = f \, (VF_{it}, GE_{it}, GOR_{it}, GDRP_{it}, X_{it}) \qquad (3)$$

According to Verbeek (2012), panel data is a combined observation analysis that comprised of repeated observation over the same units (individuals, households, firms, countries, etc.) so called cross section data that is collected over a number of periods (time series data). Several main benefits of panel data analysis are it:

1. Is able to control the individual heterogeneity.

2. Could give more estimation and or control for the unobservable factors that vary across unit and over time, which cannot be estimated using time series or cross-sectional data alone.

3. Could minimalise the collinearity in the model.

As mentioned previously, panel data consists of *i* for cross-sectional units as regions (*i* = 1, 2, ..., N) and *t* (*t* = 1, 2, ..., T) for the period of time, thus the estimated model has N x T dimension. For instance, consider an economic analysis that Y as dependent and affected by X_1 and X_2 as observable explanatory variables. Hence, the standard linear regression model of panel data estimation is given by:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \varepsilon_{it} \tag{4}$$

Where Y_{it} is the value of dependent variable Y for the individuals and time periods, X_{1it} and X_{2it} are the value of explanatory variable X_1, X_2 for the individuals *i* and for the time periods *t*, β_0 is the intercept, β_1, β_2 is the slope coefficients of X_1 and X_2 that are identical for all individuals as well as time periods and ε_{it} is the error terms for the unit *i* and for the time periods *t*.

In most of panel data estimation, error term in the regression model denotes two components. First, random error term is all omitted factors that affect the dependent variable that vary across unit and over time periods, which is also known as random effects model. Second, error term is assumed to be fixed of all unobservable factors that affect the dependent variable vary across individuals and over time periods so called fixed effect model. After using the Hausman test (see Appendix 1), which is a prominent method for choosing the random or fixed-effects model (Baltagi, 2001 and also in Wooldridge, 2003). Therefore, for this research, the random-effects model is best to analyse the relationship between the poverty rate and village funds allocation with the estimated model as follows:

$$POVR_{it} = \beta_0 + \beta_1 VF_{it} + \beta_2 GE_{it} + \beta_3 GOR_{it} + \beta_4 GDRP_{it} + \beta_5 X_{it} + \varepsilon_{it} \tag{5}$$

4. RESULTS and DISCUSSIO

4.1. Village Funds Allocation and Poverty Rate

After the regression using Stata software with the test of the random-effects model shown in Table 3, first the village funds allocations without control of other instrumental variables, has a positive, but not significant relationship with the poverty rate in Aceh province. This means the higher the allocation of village funds to the local government the more the poverty rate will rise.

Second, after adding some social variables (such as unemployment, education and population), the village funds allocations still shows a positive and strongly significant relationship with the poverty rate at the same year. Other fiscal variables, such as GDRP, government expenditure and government own revenue have a positive relationship with the poverty rate but are not significant.

On the other hand, education and population have negative and significant impact on the rate of poverty in Aceh province. The empirical evidence in Table 3 shows the more educated people in Aceh can reduce the poverty rate of 39% significantly and the coefficient of education changes by including other variables. Moreover, the increase of people living in Aceh could reduce the poverty rate at all significant level (1%, 5% and 10%), but the coefficient is very low.

As mentioned previously, the estimates result in Table 3 only shows the effect of village funds allocation on the poverty rate at the same year. However, this research also has examined how the village funds allocations from the previous year could have an effect on the poverty rate in the following year. The estimates result of the changes of village funds allocations and its relationship with the poverty rate can be observed in Table 4.

It can be seen that there is not much difference from both Table 3 and Table 4 towards the impact of village funds and the lag of village funds allocations on the poverty rate. The results are almost the same, previous village funds allocations are seemed to have a positive relationship with the poverty rate in the following year or in the estimated year. The same empirical evidence also happens for other fiscal policy (GDRP, government expenditure and government own revenue) and one social variable is the unemployment rate. The rate of education and the number of the population in Aceh do have a negative and significant effect on the poverty rate.

4.2. Village Funds Allocation and the Number of Poor People

In the research question, this research is trying to identify the impact of village funds allocations and the poverty problem in Aceh province. By saying that, this research also has estimated the village funds allocations and has examined its relationship with the number of people living in the poverty in Aceh province. The estimated regression model is as follows:

$$POVERTY_{it} = \beta_0 + \beta_1 VF_{it} + \beta_2 GE_{it} + \beta_3 GOR_{it} + \beta_4 GDRP_{it} + \beta_5 X_{it} + \varepsilon_{it} \tag{6}$$

For this regression, after conducting the Hausman test, fixed-effects model is best to be used to identify the relationship between the village funds allocations and the number of poor people in Aceh province.

As shown in Table 5, first village funds allocations itself has positive impact on the number of people living in poverty but not significant at any level. Furthermore, after adding all controlling variables except for government expenditure and government own revenue, village funds allocations still do have a positive effect but now is significant on the number of people living in the poverty meaning that, the more village funds are allocated would increase the number of people living in the poverty in Aceh of 0.1%. Government expenditure and government own revenue both also have positive effect on the number of people living in the poverty in Aceh but are not significant at any level. Additionally, one social variable, unemployment rate has positive impact on the number of poor people, which means the increase of unemployed people would also increase the number of people living in poverty for 0.54% but still is not significant and the coefficient changes regarding to other variables at any level.

Interestingly, the education sector without adding control variables of fiscal policy could reduce the number of people living in the poverty of 0.4% afterwards, when adding all controlling variables, the effect changes to have positive impact on the number of people living in the poverty but insignificant at any level. On the other hand, the population variable has a negative relationship with the number of poor people but not significant, while GDRP has negative and significant effect on the number of poor people in Aceh province at 10% significant level.

With more analysis, this research also estimates the allocation of village funds and how its changes in the previous years might affect the number of people living in the poverty in Aceh, in which the results are shown in Table 6. Similarly, village funds allocations from previous years cannot reduce the number of people living in the poverty without adding controlling variable in the regression. However, it does have a negative relationship with the poverty number when adding some instrumental variables, but the change is very low and still not significant. Other controlling variables in this regression also show the same results and are not much different with the estimates result in Table 5.

4.3. Discussion

The empirical findings above have clearly confirmed the research hypothesis, which means the village funds allocations seems to be ineffective in alleviating poverty problems in Aceh province. Additionally, this research also has similar findings to previous research as discussed in the literature review chapter.

There are some external and internal problems which might be the lack of the allocation of village funds, such as misallocation, worse finance management, a lack of participation of the villagers and low human resource development in the budgeting plan. Warsono and Ruksamin (2014) in their study on the obstacles of implementation of the village funds program in North Konawe Southeast Sulawesi, find the major reasons of the ineffectiveness of the village funds are the low level of public education, weak managerial ability in local government institutions and failure of the budgeting plan mechanism.

Education and population variables with both fixed effect and random effect model have shown negative relationship with the poverty rate and the number of people living in the poverty. Thus, it can be said that more people in Aceh going to school and being educated will decrease the number of poor people. Janjua and Kamal (2011) have the same finding in analysing the role of education in poverty alleviation in 40 developing countries. The authors conclude that education is the most significant sector in reducing poverty problems. It is because the education level can improve job opportunities and increase their income.

Interestingly, the increase in population can reduce the poverty rate and the number of people living in poverty in Aceh. These empirical results go against the widely known Malthusian population theory, that high population growth would increase the demand for food, which is hard for a developing country like Indonesia to supply, leading to starvation and poverty. However, a study from Weil and Wilde (2009) supports the finding in this research. The authors conclude that high population does not mean could lead to increase the poverty rate. It is because higher population maybe also associated with better social services from education and health. It can be said that the government of Aceh seems to have successfully managed the size of its population. However, According to Thristiawati (2017), mostly people who live in poverty are elderly who do not have appropriate and socially acceptable dwellings – for example: many resorts to taking shelter within public infrastructures. The author also stated that the government should provide and optimise the social programs for adults especially for those who live in poverty. This is something other indicators should be identified to look for the reasons and best to be include for next research.

Furthermore, the GDRP variable using the fixed-effects model significantly can reduce the number of people living in poverty. It means there is still a disparity in regional income that could be one of the reasons that the poverty problem still exists in Aceh.

Azwar et al. (2013) stated that the government of Aceh can reduce the economic growth disparity among the regencies in Aceh by improving the quality of education, health and consumer purchasing power.

Hence, there are some feasible policy interventions that might be the best solution for improving the effectiveness of the village funds allocations for poverty alleviation in Aceh. Based on the obstacles of the implementation of village funds community participation (CP) in rural development projects is vital because the world's poor have actually suffered due to the development itself so that everyone in the development focused area needs to be involved in making the development decisions, implementation and benefits (Claridge, 2004).

Furthermore, according to Paul (1987), in a World Bank discussion paper, in more analysis about CP, has divided its purpose into four objectives which are:

a. As an instrument of empowerment, meaning development projects such as village funds enable weaker groups to share political awareness and strengths. The goal is that people are able to take the initiative and to be involved in the process of development.

b. Building beneficiary capacity, developing community capacity may be a long-term benefit to sustainable development.

c. Project effectiveness, to be distinguished the effectiveness from efficiency where the community participation can enhance the effectiveness.

d. Project efficiency, minimise cost when implementing the project due to the timely beneficiary inputs. Community participatory development might be able to promote the agreement, cooperation and interaction among beneficiaries.

On the other hand, communities which are willing to participate in development projects should have a screening process in terms of characteristics of participant (including gender, age, economic or social factors) that could influence the profile of participation, their motives for participating (comprised of the expectation of direct as well as indirect benefits and the commitment to participate), the preconditions for effective participation across categories and forms of participation and the results of participation (Norad, 2013.

5. Conclusion

To summarise, village funds is still a new fiscal policy that was firstly launched in 2015 by the seventh president of Indonesia Joko Widodo as his pilot project. It is reported that this funding scheme has slightly contributed to reducing the poverty rate in some rural areas. However, not all of the village funds allocations that have been transferred to local governments have been implemented efficiently and effectively. In the Aceh province case that has been analysed in this research, village funds allocations could not reduce the poverty rate and also the number of people living in poverty. However, the village funds have a causality relationship with poverty in Aceh province. There are some possible factors that might be the reasons of the ineffective implementation of the village funds. It is due to some factors such as misallocation, worse finance management, a lack of participation of the villagers and low human resource development in the budgeting plan. To answer the problem, participatory development, which is involving the villagers in the budgeting plan towards the village funds allocation might be the best way forward.

However, Education, population GDRP variables have shown a negative relationship with the poverty rate and the number of people living in poverty in Aceh province. That can be said that those three variables can alleviate poverty problems in Aceh.

6. Limitation and Implication

Furthermore, this study uses data from 2015 to 2018, which is hardly enough to identify the effect of village funds on poverty alleviation. Therefore, for future research, it is highly recommended to use a longer data period to look for changes. Additionally, factors that affect the ineffectiveness of village funds have not been empirically analysed, so that another recommendation is to identify internal or external factors of village funds implementation.

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ILUSTRATION TABLES

Table 1. Definition of dependent and independent variables and sources

Variables	Definition	Sources
Poverty Rate ($POVR_i$) in annual %	The percentage of people living in poverty.	Statistics Indonesia
Village Funds Allocation (VF_i) in million Rupiah	Total budget allocation of village funds to be transferred from the central government to local governments.	Ministry of Finance and Local government office
Government expenditure (GOR_i) in million Rupiah	Annual government budget for public spending.	Statistics Indonesia
Government own revenue (GOR_i) in million Rupiah	Annual local government revenue, which is nationally named *Pendapatan Asli Daerah (PAD).*	Statistics Indonesia
Gross domestic regional product ($GDRP_i$) in million Rupiah	The regency's / municipality's annual income in constant 2010 prices.	Statistics Indonesia
Social variables (X_i)	Education (%), unemployment (%), and population (in thousands).	Statistics Indonesia

Table 2. Summary Statistics of Each Variable

Variable	Observation	Mean	Min	Max
The number of people living in poverty	92	37087.02	5615.00	118742.00
Poverty rate	92	0.17	0.07	0.75
Village funds allocation	92	162000000000	6060000000	635000000000
GDRP	92	5137300.00	912987.20	16400000.00
Government expenditure	92	1240318.00	554845.00	2714590.00
Government own revenue	92	116000000000	35900000000	377000000000
Unemployment	92	6.74	1.04	17.05
Education	92	74.35	55.79	93.96
Population	92	223643.50	33215.00	611435.00

Source: Stata Outcome

Table 3. Estimated results of village funds allocations and poverty rate

	Poverty Rate	Poverty Rate	Poverty Rate	Poverty Rate	Poverty Rate	Poverty Rate
Village Funds Allocation	0.000	0.000***	0.000***	0.000*	0.000	0.000
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Unemployment		0.473	0.203	0.187	0.396	0.231
		[0.3641]	[0.2104]	[0.2080]	[0.3316]	[0.2134]
Education		-0.395***	-0.334***	-0.334**	-0.317**	-0.325**
		[0.1354]	[0.1252]	[0.1450]	[0.1277]	[0.1456]
Population		-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
		[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
GDRP			0.000	0.000		0.000
			[0.0000]	[0.0000]		[0.0000]
Government Expenditure				0.000	0.000	0.000
				[0.0000]	[0.0000]	[0.0000]
Government Own Revenue					0.000**	0.000**
					[0.0000]	[0.0000]
Constant	0.150***	0.541***	0.479***	0.484***	0.438***	0.470***
	[0.0153]	[0.1124]	[0.1035]	[0.1406]	[0.1192]	[0.1393]
N	92	92	92	92	92	92

Note: Standard errors in brackets * $p<0.10$, ** $p<0.05$, *** $p<0.01$

Table 4. Estimated results of the lag of village funds and poverty rate

	Poverty Rate	Poverty Rate	Poverty Rate	Poverty Rate	Poverty Rate	Poverty Rate
Lag of VF Allocation	0.000	0.000***	0.000***	0.000***	0.000***	0.000***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Unemployment		0.655	0.285	0.28	0.35	0.441
		[0.4206]	[0.3148]	[0.2659]	[0.2978]	[0.3088]
Education		-0.457***	-0.388***	-0.277*	-0.269**	-0.263**
		[0.1597]	[0.1453]	[0.1419]	[0.1311]	[0.1250]
Population		-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
		[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
GDRP			0.000	0.000	0.000	
			[0.0000]	[0.0000]	[0.0000]	
Government Expenditure				0.000**	0.000**	0.000***
				[0.0000]	[0.0000]	[0.0000]
Government Own Revenue					0.000	0.000
					[0.0000]	[0.0000]
Constant	0.136***	0.579***	0.517***	0.375***	0.362***	0.348***
	[0.0221]	[0.1273]	[0.1191]	[0.1298]	[0.1124]	[0.1083]
N	69	69	69	69	69	69

Note: Standard errors in brackets * p<0.10, ** p<0.05, *** p<0.01

Table 5. Estimated results of village funds allocations and the number of poor people

	POVERTY	POVERTY	POVERTY	POVERTY	POVERTY	POVERTY
Village Funds	0.000	0.001	0.001**	0.001	0.000	0.001
	[0.0004]	[0.0004]	[0.0005]	[0.0005]	[0.0005]	[0.0005]
Unemployment		0.054	0.048	0.045	0.047	0.057
		[0.0592]	[0.0490]	[0.0469]	[0.0651]	[0.0545]
Education		-0.004	0.012	0.016	0.007	0.018
		[0.0212]	[0.0196]	[0.0216]	[0.0250]	[0.0221]
Population		-0.001	-0.011	-0.013	-0.008	-0.016
		[0.0218]	[0.0189]	[0.0198]	[0.0238]	[0.0201]
GDRP			-2.033*	-1.918*		-2.106*
			[1.1282]	[1.0901]		[1.1177]
Government Expenditure				0.001	0.003	0.002
				[0.0016]	[0.0024]	[0.0017]
Government Own Revenue					0.000	0.001
					[0.0009]	[0.0010]
Constanta	36590.744***	35929.940***	45593.999***	43754.955***	32782.934***	43463.687***
	[566.7721]	[1278.9641]	[5156.8452]	[5338.6140]	[3298.0274]	[5354.9604]
N	92	92	92	92	92	92

Note: Standard errors in brackets * p<0.10, ** p<0.05, *** p<0.01

Table 6. Estimated results of the lag of village funds allocations and the number of poor people

	POVERTY	POVERTY	POVERTY	POVERTY	POVERTY	POVERTY
Lag of VF Allocation	0.000	0.000	0.001	0.000	0.000	-0.000
	[0.0002]	[0.0002]	[0.0005]	[0.0004]	[0.0004]	[0.0002]
Unemploymen t		0.132	0.154**	0.121*	0.125	0.09
		[0.0896]	[0.0741]	[0.0669]	[0.0752]	[0.0744]
Education		0.008	0.017	0.024	0.025	0.021
		[0.0193]	[0.0180]	[0.0184]	[0.0212]	[0.0226]
Population		-0.013	-0.02	-0.023	-0.023	-0.018
		[0.0179]	[0.0168]	[0.0165]	[0.0191]	[0.0202]
GDRP			-2.904*	-1.98	-2.052	
			[1.5916]	[1.3937]	[1.5064]	
Government Expenditure				0.004**	0.004**	0.005**
				[0.0015]	[0.0018]	[0.0021]
Government Own Revenue					0	0
					[0.0008]	[0.0008]
Constanta	37530.668***	36635.404***	50649.803***	41264.432***	41287.968***	30801.561***
	[267.7020]	[1064.8908]	[7618.3359]	[7454.3753]	[7551.6710]	[3410.7513]
N	69	69	69	69	69	69

Note: Standard errors in brackets * $p<0.10$, ** $p<0.05$, *** $p<0.01$

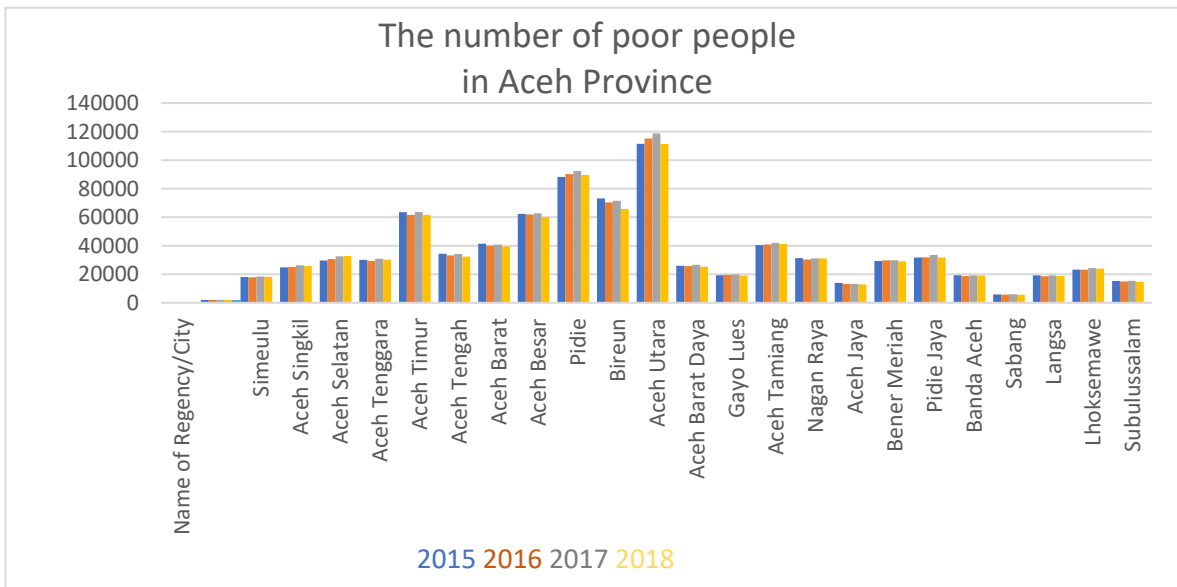**ILUSTRATION FIGURES**

Figure 1. Number of people living in poverty in Aceh province
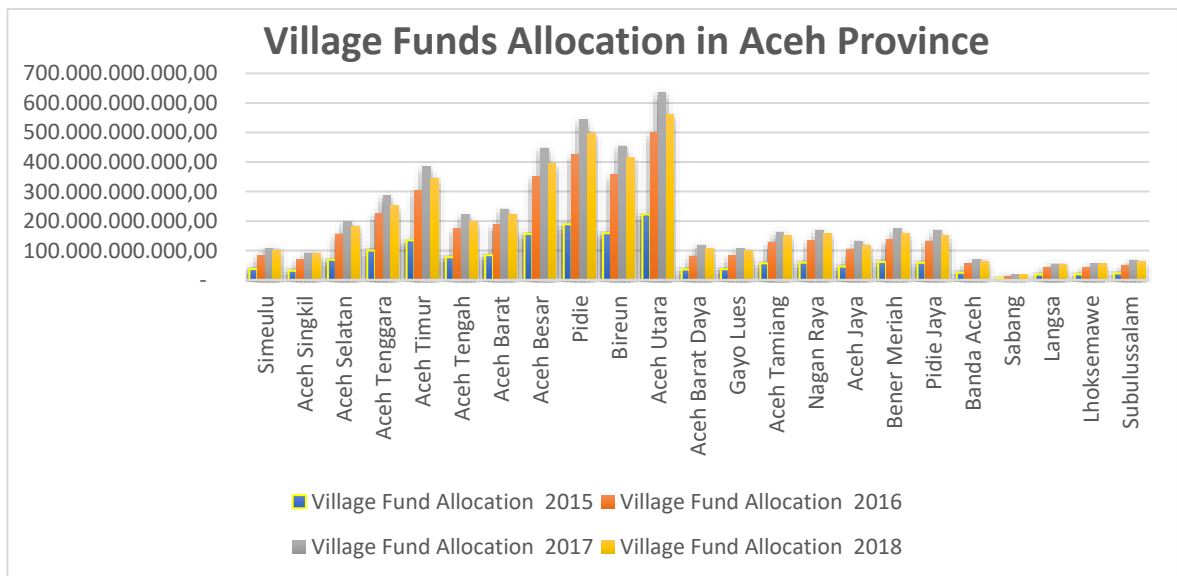Source: BPS (Statistics Indonesia)

Figure 2. Allocation of village funds in Aceh province
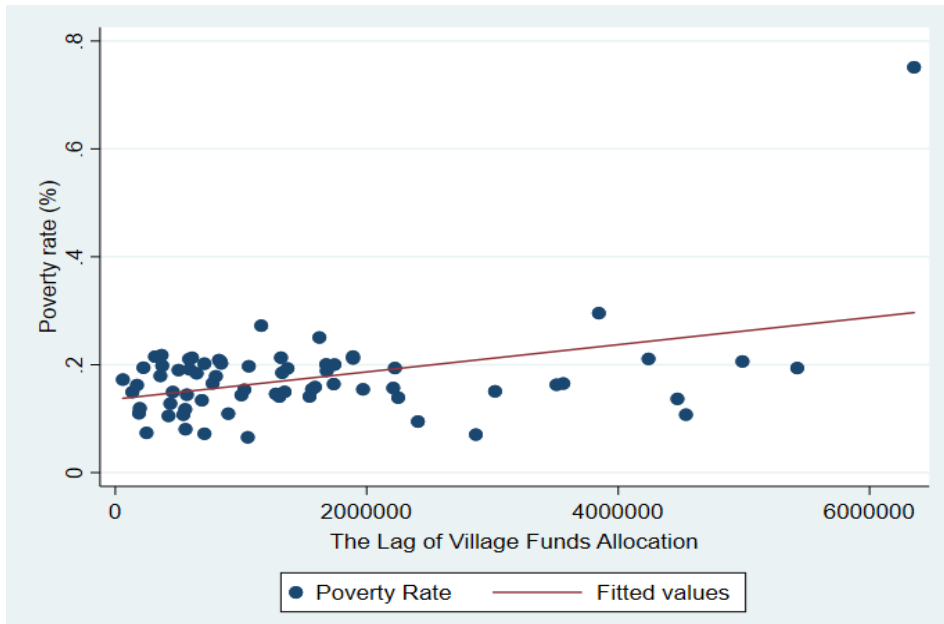Source: The Ministry of Finance Indonesia

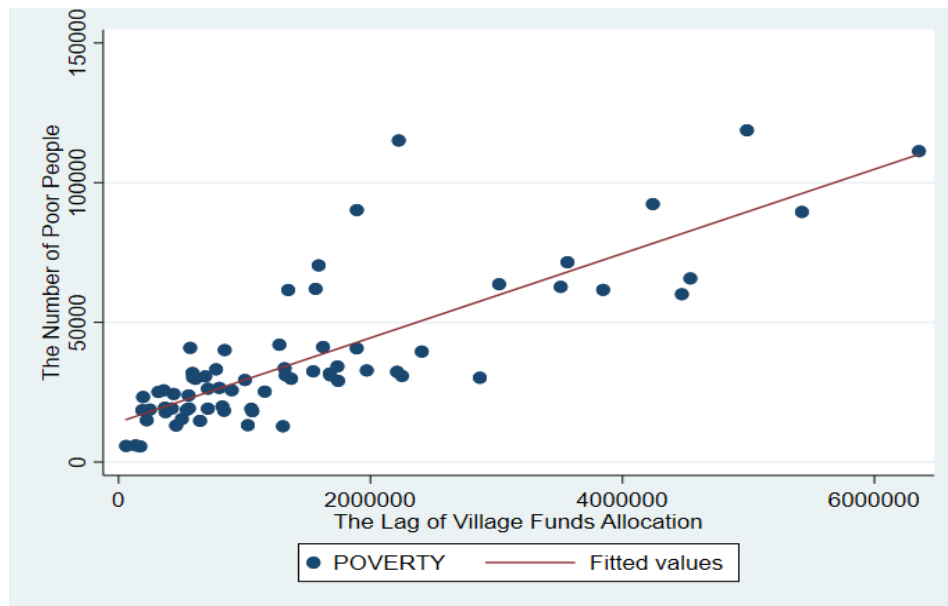*Figure 3. Relationship between the lag of village funds allocation and poverty rate*

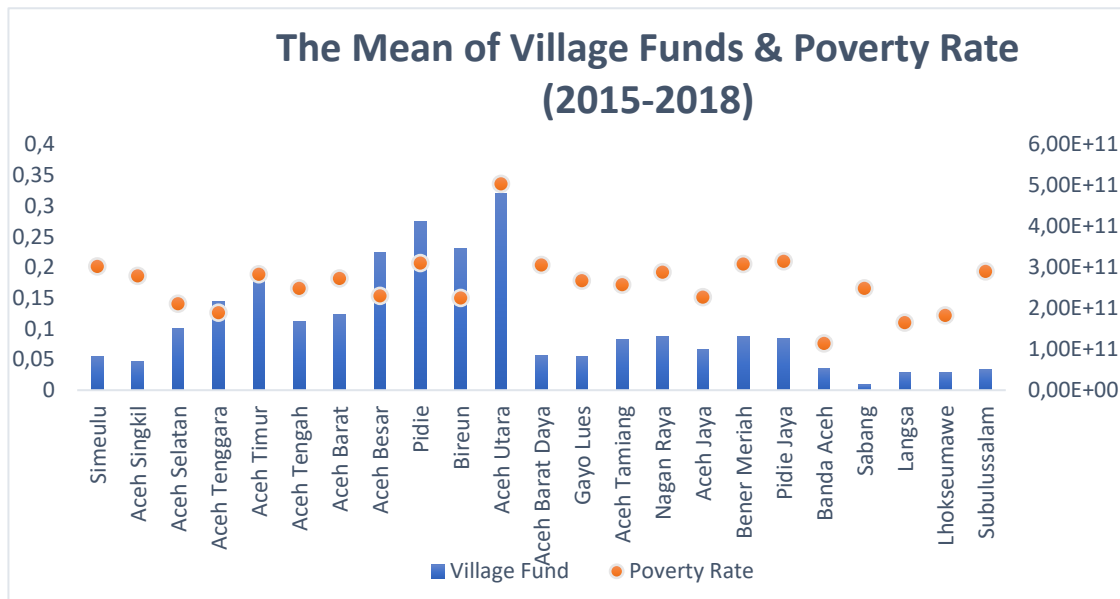*Figure 4. Relationship between the lag of village funds allocation and the number of people living in poverty*

Figure 5. Mean of village funds and poverty rate from 2015 to 2018