The Impact of Village Fund Program in Developing Physical Infrastructure: Case on Construction Value Across Provinces in Indonesia

Mochamad Thoriq Akbar[1*], Estro Dariatno Sihaloho[2]

[1,2] Department of Economics, Faculty of Economics and Business Padjadjaran University

A B S T R A C T

Indonesia is the largest archipelago country with over than 260 million population. Yet, its archipelagic state makes it hard for the Indonesian government to distribute its income equally, causing severe poverty in certain regions. To overcome this problem, the role of construction industry is very crucial. Many papers say construction industry plays an important role to achieve socio- economic development goals in providing shelter, physical infrastructure, employment, and higher economic growth. Knowing the importance of construction sector, especially in physical infrastructure, President of Indonesia, Joko Widodo, focuses on accelerating infrastructure development. To equally distribute the development between rural and urban areas and shorten the level of inequality, in 2015 Indonesian government made a program in a form of fiscal transfers called Village Fund program. The objective of this paper is to measure the impact of Village Fund program in developing physical infrastructure across provinces in Indonesia. This paper used panel data with Random Effect Model to analyze the marginal effect of Village Fund in construction sector. The finished construction value is used as the dependent variable. As the independent variable, this paper uses the amount of Village Fund given and Gross Domestic Regional Product (GRDP) as the control variable in 33 provinces that participated in Village Fund program during 2015 and 2016. Setting with $\alpha = 0.01$, the result shows that Village Fund program has a marginal positive effect to finished construction value. Every one percentage point change in Village Fund increases the amount of construction value finished by 0.033%. For the other variable, every 1% increase in GRDP also increase the construction value by 0.41%. We hope this paper could be useful to evaluate the implementation of Village Fund and as a base for making similar policies in the future.

Penulis korespondensi:
E-mail: mochamad16024@mail.unpad.ac.id

INTRODUCTION

In pure economic terms, poverty is when a family's income fails to meet federally established threshold that differs across countries. Economist often seek to identify the families whose economic position fails below some minimally acceptance level. Similarly, the international standard of extreme poverty is set to the possession of less than 1$ a day. Poverty is one of the biggest challenge that faced by many countries around the world. By emphasizing this problem as the first goal in the Sustainable Development Goals (SDGs) shows that poverty is really an important problem that needs to be alleviated, especially in developing countries.

Developing countries is home of 85% of total world population and bears levels of poverty and inequality far higher than in the rich nations. Whereas in a typical developing economy the share of people striving to survive with less than $2 a day is more than 30%, that share is close to zero in the industrialized countries (Alvaredo & Gasparini, 2015). Indonesia itself, as one of the developing country and the largest archipelago and the 4th populous country in the world also had a problem to distribute its income equally and causing severe poverty in certain regions, especially in rural areas.

A phenomenon when there is poverty in rural areas is called as Rural Poverty. According to the data from *Badan Pusat Statistik* (BPS) in September 2017, there are more than 26 million people who are living below poverty line in Indonesia which more than 50% of the poor people is living in rural areas. Why could be happened? To understand poverty creation in rural areas there are numerous characteristics of a country's economy and society such as political instability, high concentration of land ownership and rapidly large growth in family number with high dependency ratio (Khan, 2001). Unequal Income distribution between the rural and urban also become a prominent cause of high rural poverty In Indonesia. As also stated by BPS, the gini coefficient, which is an indicator to measure the inequality of income in Indonesia is classified as high in 0.391 and not giving a signal for a downtrend in several past years. The problem of income distribution is also important to poverty reduction because there are linkages between those two variables. In a research with the title of *Growth, Poverty and Inequality* (Wodon, 1999), stated that there are significant linkages between income distribution and poverty, where changes in income distribution have even larger effect on measures of the depths and severity poverty.

One of the way that could reduce the level of poverty is the development of infrastructure. Infrastructure is the basic physical and organizational structures and facilities needed for the operation of a society. Infrastructure is composed of public and private physical improvements such as roads, bridges, tunnels, water supply, electrical grids telecommunications to provide commodites and services essential to enable, sustain or enhance societal living conditions (Fulmer, 2009). Long-term financing in infrastructure is needed to reduce poverty and inequality because a lack of infrastructure comes at an enormous economic and social cost and infrastructure is the backbone of any country, generating jobs, improving the quality of life for the poor and boosting economic growth (Badre, 2015).

The essential role of infrastructure is realized by Joko Widodo, the seventh president of Indonesia. In his period of presidency, he said that he will prioritizing to increase productivity and competitiveness, improve quality of life and also developing Indonesia's rural areas through the development of infrastructure. The government budget plan for infrastructure in 2018 reach around 409 trillion rupiahs, and it's always been increasing since Jokowi's presidency in 2015. The increase in budget

indicating the commitment of government in that issue but, the key is not only about the infrastructure, it is on how we develop infrastructure equally across islands and across provinces especially in rural areas. To tackle the problem, in 2015 Indonesian government made a program in a form of fiscal transfer called Village Fund program.

According to Fiscal Transfer Theory (Theory of Grants), intergovernmental transfers comes into various form depending on the objectives to be achieved. The first type is Block Grant Transfer, is a fund that is given as a repayment of the actual expenditure that has been spend by the local government. The other form is matching grant, it is an assistance given with certain proportion of local government spending (Boex, 2001). Matching these characteristics, we can classifiy the Village Fund Program as the type of matching grant or as a financial assistance.

Fisher (1996) stated that there are four objectives of fiscal transfer between regions, 1) fix the negative externalities caused by sub-national government structures, so as to improve the efficiency of fiscal decisions; 2) redistribute resources across regions; 3) substitute tax structure between one an the other to gain advantages in economies scale; and also 4) stabilize the macro-economic for sub-national government sector.

Village Fund Program, with the tagline of "create jobs, overcome poverty, eradicate inequality", is a program that started from 2015 by government of Indonesia in a form of fiscal transfer to villages through local government budget (APBD) ruled based on UU No.6 in 2014 about Village Fund (*Kementrian Keuangan*, 2017). Similar policy is already done in Thailand. According to a paper (Menkhoff & Rungruxsirivorn, 2010), the application of Village Fund program could leads to better access of finance which means better inclusivity for the rural areas. Study by (Boonperm, Haughton, & Khandker, 2013), show that Village Fund in Thailand have a moderate income in household spending and lesser impact on income. This program comes with a hope that could reduce the gap between urban and rural and also equally develop infrastructure in Indonesia.

Graph above visualizes that from 2015, there is an increase in Village Fund budget allocation from 20.6 trillion in 2015 rupiahs to 60 trillion rupiahs on 2018 (constant from 2017). This increase questioning us that Is the program already succesfully completed its objectives especially in reducing infrastructure gap between rural and urban areas?

Knowing the influence of Village Fund program in infrastructure is very crucial as the evaluation of this program, we
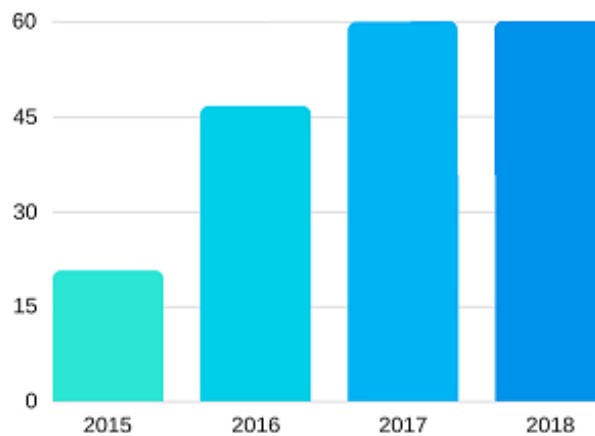

Figure 1
Village Fund Allocation (In trillion rupiahs) in 2015-2016

are interested to write a paper with a title "The Impact of Village Fund Program in Developing Physical Infrastructure". This paper examine how big the influence of increase in village fund budget and the advancement of infrastructure, which is represented by construction value across provinces in Indonesia. We hope this paper could be useful to evaluate the implementation of the program and could be use as a base for making similar policy in the future.

DATA & METHODS

Authors want to measure the impact of Village Fund Program in the development of physical infrastructure across provinces in Indonesia. The data that has been used in the process of making this paper are the amount of village fund given from Indonesian Ministry of Finance, the amount of Gross Regional Domestic Product (GRDP) Indonesia and to measure the advancement of infrastructure, we used finished construction value data from *Badan Pusat Statistik* (BPS). All the data are for 33 provinces in Indonesia in 2015 and 2016.

As we can see, authors only use 33 pro-vinces although there are 34 provinces in Indonesia. The only province that is not being used is DKI Jakarta, because there is no village fund for DKI Jakarta. Authors only use the data in 2015 and 2016 because there is a constraint in data availability, especially the data for construction value.

To measure the impact of Village Fund program in those 33 provinces, authors use Panel Data Regression. Panel data is the combination of cross-sectional data and time-series data whereas could make more efficient outcome by giving more information that are not explained if only using cross-section or time-series (Hsiao, 2014). In panel data regression, there are two general model which are Random Effect Model (REM) and Fixed Effect Model (FEM). To choose the most appropriate model authors use Hausman Test. Hausman Specification Test or Durbin-Wu-Hausman test is a statistical hypothesis in econometrics to evaluate the consistency of an estimator when compared to an alternative (Hausman, 1978). We use the amount of finished construction value, which represents the indicator of physical infrastructure development, as the dependent variable, the amount of village fund given as the independent variable, and GRDP as the control variable. The regression could be expressed in econometrics model as:

$$logConstruct_{it} = \beta_0 + \beta_1 logVFund_{it} + \beta_2 logGRDP_{it} + u_{it}$$

Table 1
Summary Statistic

	Variable	Mean	Std. Dev	Min	Max	Obs
logConstruct	overall	15.96445	1.000493	14.04265	18.2574	N = 66
	between		1.007453	14.06754	18.21607	n = 33
	within		0.405133	15.90981	16.01908	T = 2
logGRDP	overall	10.33484	0.49707	9.314687	11.76442	N = 66
	between		0.500522	9.331853	11.75175	n = 33
	within		0.02025	10.29502	10.37465	T = 2
logVFund	overall	19.82469	1.259531	17.32857	22.33319	N = 66
	between		0.876019	18.16228	21.59955	n = 33
	within		0.91149	18.49245	21.1569	T = 2

As we can see in the model above, the authors transformed all the variable into logarithmic form. The purposes are to make the data conform to normality and for convenience reason, the data are interpreted better in terms of percentages. By using STATA 14 as the statistical software, now authors could find effect of these independent variable into the development of physical infrastructure, which is represented by finished construction value.

RESULT & DISCUSSION

According to the regression result, we find that with 1% of significance level, the amount of village fund given is positively correlated and increase the finished construction value which means that if government tries to increase the budget of village fund, it also will enhance the development of physical infrastructure. When using random effect model, we find that with 10% of significance level, the level of Gross Regional Domestic Product is positively correlated with finished construction value. On the other hand, when using fixed effect model, GRDP is not significant to the finished construction value.

Figure 2 shows the how the regression result differs when using the two models. To choose the more appropriate model, authors used Hausman Test. The null hypothesis in Hausman test is the random effect model is preferred and the alternative hypothesis is fixed effect model. The result is we get the chi value of 0.1022 which means we can't reject the null hypothesis and the result from random effect model is more appropriate.

We could see that in random effect model, the coefficient of logVFund is 0.0339 and significant in 1%, which means that in every 1% increase in the amount of village fund given will increase the finished construction value by 0.0339%. This is indicating that Village Fund Program significantly increases the development of physical infrastructure across 33 provinces in Indonesia. For the GRDP, we could see that the coefficient is 0.413 and significant in 10% level, which means that in every 1% increase in the level of GRDP, it will increase the finished construction value by 0.413%. This could be occurred because the two- way relationship between income (GRDP) and the development of

Table 2
Regression Result using Outreg

VARIABLES	(1) Random Effect	(2) Fixed Effect
logVFund	0.0339*** (0.00577)	0.0395*** (0.00586)
logGRDP	0.413* (0.219)	0.0971 (0.264)
Constant	11.02*** (2.185)	14.18*** (2.627)
Observations	66	66
R-squared		0.865
Number of id_region	33	33

infrastructure (finished construction value) whereas the development of infrastructure will increase the level of GDP, and higher income means we have more fiscal space to develop more infrastructure.

To ensure that the model is giving the right result, authors checked the result with the actual data of infrastructure development. The positive relationship between the amount of village fund and the development of physical infrastructure in this regression is in line with the actual or in the real-world case. According to the report by the government to local media (Okezone, 2018), from the first implementation of Village Fund Program in 2015, the program already built 121,000 km road in rural areas, 1,960 km bridges, irrigation facilitation, Village-owned enterprises (BUMDes), and village fund already succeed in building more than 291 thousand unit of landslide mitigation system.

It is confirmed that the increase the amount of village fund will increase the development of physical infrastructure, but is the result by Village Fund Program already at the optimum level? By looking at the coefficient, we could see that the effect of increasing village fund allocation is still very low –lower than 1%. To make an optimum impact in years ahead, one of the way that Indonesian government could do is to improve the distribution system of village fund among provinces and also improve the supervision in the use of village fund.

Supervision in the usage of village fund is very important to do because the existence of the physical infrastructure development itself does not guarantee the alleviation of poverty and leads to economic growth. Poorly managed and supervise infrastructure investments are the main explanation of surfacing economic and financial problems (Ansar, Flyvbjerg, Budzier, & Lunn, 2016). This underperforming infrastructure investment could also lead to economic fragility.

CONCLUSION

Poverty is one of the main problem in developing countries. Lack of infrastructure is one of the factor that poverty in a country is still having high level of poverty. Indonesian government, in Joko Widodo's presidency realized that the development of infrastructure, especially physical infrastructure is essential to tackle problems in Indonesia. Because of that, the budget for infrastructure is increasing every year with a hope it will boost the economic growth. To prevent the widening gap between infrastructure between urban and rural areas, Indonesian government started Village Fund Program in 2015. This paper tried to measure the impact of Village Fund Program in developing physical infrastructure in 2015 and 2016.

According to the regression result that we already discussed in previous section, we find that the amount of village fund among provinces has a positive marginal effect to the development of physical infrastructure which represented by the finished construction value. With 1% of significance level, an increase of village fund by 1% would increase the finished construction value by 0.0339% which indicating there is a development of physical infrastructure. The problem is the Village Fund Program is may not give the optimum impact because the increase of the allocation only gives lower than 1% increase in physical infrastructure development which means that the usage of village fund is still not focusing on the development. Solution for this problem is to improve the distribution system of village fund program (already changed in 2018) and improve the supervision about the use of village fund.

This study, however, have several drawbacks that can be improved in further or extended studies. First, this study is still lacked on data especially for the time-series data. This is because the Village Fund program has only started from 2015 and

the data on BPS, especially for the construction value has not been updated yet. Second, for the usage of finished construction value. In general, yes, the construction value could indicate the development of physical infrastructure, but we do not know about where the development really happened, in rural or urban areas? There is a chance that the impact of village fund could be misleading. We hope that this paper could be useful to evaluate the implementation of the Village Fund Program and as a base for making similar policy in the future.

REFERENCES

Alvaredo, F., & Gasparini, L. (2015). Recent Trends in Inequality and Poverty. *Handbook of Income Distribution*.

Ansar, A., Flyvbjerg, B., Budzier, A., & Lunn, D. (2016) Does Infrastructure investment lead to economic growth or economic fragility? Evidence from China. *Oxford Review of Economic Policy*, 360-390

Badre, B. (2015, October 7). *Why infrastructure investment is key to ending poverty*. Retrieved from World Economic Forum: https://www.weforum.org/agenda/2015/10/why-infrastructure-investment-is-key- to-ending-poverty/

Boex, Jamie. (2001). *An Introductory Overview of Intergovernmental Fiscal Relations*. International Studies Program, Andre Young School of Public Policy Studies, Georgia State University, Atlanta

Boonperm, J., Haughton, J., & Khandker, S. R. (2013). Does the Village Fund matter in Thailand? Evaluathing the impact on incomes ann spending. *Journal of Asian Economics*.

Fisher, R.C. (1996). *State and Local Public Finance*. Michigan State University. Irwin

Fulmer, J. (2009). What in the world is Infrastructure? Infrastructure Investor.

Hsiao, C. (2014). A*nalysis of Panel Data (Econometric Society Monograph)*. Cambridge University Press.

Kementrian Keuangan. (2017). *Buku Pintar Dana Desa*. Jakarta.

Khan, M. H. (2001). Rural Poverty in Developing Countries. *International Monetary Fund Economic Issues*.

Menkhoff, L., & Rungruxsirivorn, O. (2010). Do Village Funds Improve Access to Finance? Evidence from Thailand. *World Development* Vol.39 No.1.

Okezone. (2018, 3 12). *Economy Okezone*. Retrieved from https://economy.okezone.com/read/2018/03/12/320/1871426/pembangunan- infrastruktur-desa-terbukti-turunkan-tingkat-kemiskinan-4-5

Wodon, Q. (1999). *Growth, Poverty and Inequality: A Regional Panel for Bangladesh*. Washington, D.C: World Bank.