

Village Funds and Resilience in Rural Areas: Evidence from Indonesia Post-Covid Pandemic



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ABSTRACT: This research strives to prove whether village funds can effectively increase resilience in rural areas in the post-pandemic period, especially in alleviating rural poverty. There are two objectives in this study, namely: (i) to estimate the impact of village funds on poverty levels in rural areas; and (ii) to identify factors that influence growth. The Year 2021 is assumed to be the post-pandemic period because of improvement in economic growth. The analytical model applied in this research is three-stage least squares (3sls). This study has two endogenous variables: economic growth and poverty in rural areas. The results showed no effect of village funds on rural poverty. In addition, village funds have also not affected economic growth. The policy of refocusing the use of village funds in overcoming the covid pandemic is thought to be the most potent cause of the absence of village funds on poverty and economic growth.

KEYWORDS: Pandemic Resilience, Rural Poverty, Three-stage Least Squares, Village Funds

I. INTRODUCTION

The COVID-19 pandemic has damaged economic activity in urban and rural areas (Sharifi and Khavarian-Garmsir, 2020; De Luca et al, 2020; Lukic et al, 2022). Not only contracting the economic growth, but the pandemic also affected increasing poverty both in urban and rural areas (Suryahadi et al., 2020). However, urban areas still have better resilience than rural areas in facing the pandemic. In comparison, based on BPS-Statistic Indonesia (2022), the poverty rate in rural areas is higher than in urban areas. Covid-19 has provoked economic activity in rural areas to be completely paralyzed (Mueller et al, 2021).

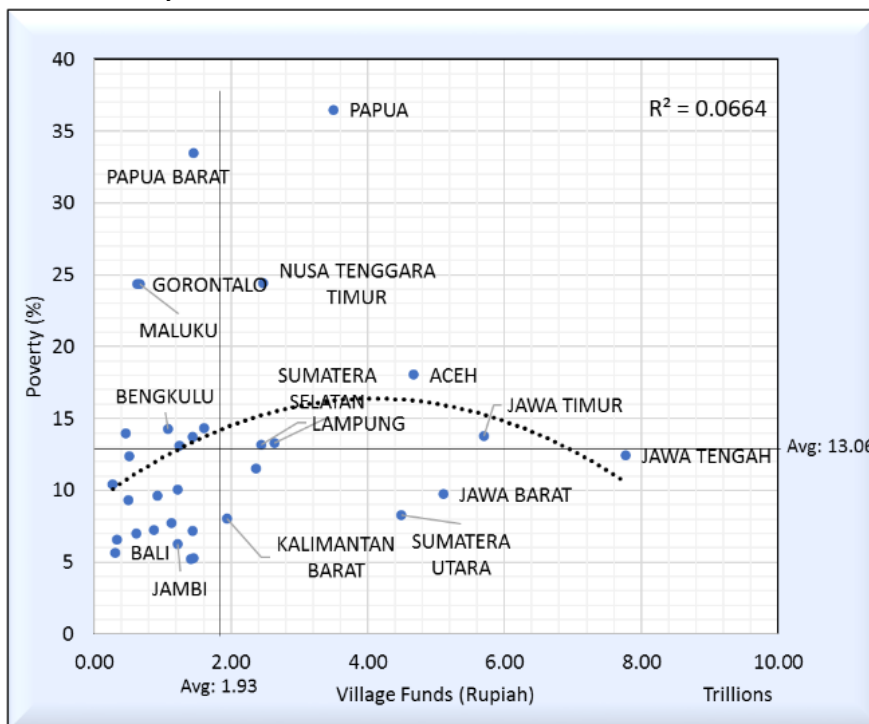
Empirical evidence suggests a significant decrease in social mobility following the prevalence of COVID-19 (Hadjimetriou et al, 2020; Saha et al, 2020). However, economic activity in urban areas is still better than that in rural areas due to economic activities' high mobility and accessibility. Thus, the role of the government in intervening in rural economic activities is vital. Thus, the level of rural resilience in the face of COVID-19 increases.

One of the strategic efforts that can be done is to utilize village funds. Putra (2017) believes that fiscal decentralization can reduce poverty. In this context, village funds are one of the fiscal instruments that can stimulate village development (Hermawan et al., 2019). The proper use of village funds reduces poverty in rural areas (Saragi et al, 2021). Village funds can finance village development which is expected to involve the community more. In addition, village funds also play a vital role in community empowerment efforts to increase economic activity.

Conceptually, there are two ways in which village funds can increase the resilience of rural communities. First, by providing funds as a poverty safety net. Second, by financing productive activities that involve the community more. Thus, the role of village funds in increasing resilience to COVID-19 can also be through economic growth. Based on data published by BPS-Statistic Indonesia (2022), village funds distributed by the government through the APBN scheme show significant developments. Even during the pandemic, village funds did not shrink and instead increased.

If data on village funds is associated with rural poverty, information on four quadrants will be obtained. The first quadrant provides information about regions with significant village funds but accompanied by high rural poverty. The second quadrant shows areas with limited village funds but extremely rural poverty. At the same time, the third quadrant shows the quadrant of regions that have little village funds and relatively good rural poverty. In comparison, the fourth quadrant shows the quadrant of regions that have relatively large village funds with good rural poverty.

Quadrant of Village Funds and Poverty in 2021



This figure indicates that there is still no clear relationship between village funds and rural poverty. However, previous research stated that the effect of village funds on poverty was very small or insignificant. In general, this influence is due to the low usefulness of unused village funds specifically for the poor (Ramly et al., 2018), low community participation and supervision (Ramly et al., 2018), a high potential for corruption (Ash-shidiqq and Wibisono, 2018), and incompetent village heads (Warsito and Maerani, 2018). On the other hand, Oktavia (2020) and Arham and Payu (2019) concludes that poverty is reduced due to the use of village funds.

Therefore, this research strives to prove whether village funds can effectively increase resilience in rural areas in the post-pandemic period, especially in alleviating rural poverty. There are two objectives in this study, namely: (i) to estimate the impact of village funds on poverty levels in rural areas; and (ii) to identify factors that influence growth

II. REASERCH METHOD

The approach used in this study is a quantitative approach with cross-sectional data types. Data comes from two agencies: Statistics Indonesia (BPS) and the Ministry of Village, Development of Disadvantaged Regions, and Transmigration (Kemendes). The number of data processing is 33, with the scope of all provinces in Indonesia after excluding Jakarta, and the year of observation is 2021. This year is used because it is assumed to be the post-pandemic period, where there has been an improvement in economic growth.

The variables used in this study were poverty in rural areas, economic growth, village funds, community health centers (Puskesmas), agricultural growth, village operating BLT, village-owned enterprises (BUMDes), mastering information, and communication technology (ICT), investment growth and industrial growth. Poverty in rural areas (%) is the percentage of poor people. Economic growth (%) is an increase in the actual output of an economy, as measured by changes in the 2010 GDP at the provincial level. In addition, village funds (%) are the percentage of funds that has been transferred through the Regency/Municipal APBD to the specified village funds budget ceiling.

The Puskesmas (Ln) is a Sum of community health centers and their auxiliaries. Meanwhile, agricultural growth (%) is value-added growth (constant=2010) in the agricultural sector. BUMDes (Ln) is the number of village-owned enterprises. Meanwhile, ICT (%) is the proportion of productive population mastering ICT in rural areas to the total productive population. Investment growth (%) reflects the growth of gross fixed capital formation. Furthermore, industrial growth (%) is the manufacturing sector's value-added growth (constant=2010).

In this study, the simultaneous equation model was used due to its ability to explain complex economic problems (Ekananda, 2016). Furthermore, this equation model is divided into two interrelated forms, (i) the economic growth equation and (iii) poverty in the rural equation. These are further written as follows:

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$$Pov_i = \beta_0 + \beta_1 Growth_i + \beta_2 VF_i + \beta_3 Puskesmas_i + \beta_4 Agri_i + \beta_5 BLT_i + \beta_6 Bumdes_i + \beta_7 ICT_i + \epsilon_1 \quad (1)$$

$$Growth_i = \alpha_0 + \alpha_1 VF_i + \alpha_2 Ind_i + \alpha_3 Invest_i + \epsilon_2 \quad (2)$$

Where, Pov = the level of poverty in rural areas (%), Growth = economic growth (%), VF = realization of Village Funds (%), Puskesmas = the log natural value of health centers and its auxiliaries (Ln), Agri = growth in agricultural sector (%), BLT = proportion of village operating BLT (%), Bumdes = the log natural value of village-owned enterprises (Ln), ICT = proportion of population mastering ICT, Ind = growth in the manufacturing sector, Invest = growth in gross fixed capital formation (%), $\beta_0, \alpha_0 =$ intercepts, $\epsilon_1, \epsilon_2 =$ error terms, and $i =$ the unit of analysis.

According to Greene in (Ekananda, 2016), several methods were used in estimating the simultaneous equation model. This indicated that ILS and 2/3SLS methods were used in identified and overidentified equations, respectively. Based on the recognition of order conditions (Appendix 1), each proposed equation had a value (K-k) greater than (d-1), indicating overidentification. Therefore, 3SLS was adopted to estimate equations (1) and (2). The application of this method produced a more efficient estimation because its standard error was smaller than that of the 2SLS.

III. RESULT AND DISCUSSION

A. Statistical Result

The Granger Causality test was carried out among the main variables in this study to measure the validity of endogenous factors, namely government debt, income inequality, and economic growth. This test was used to identify whether or not each variable had a reciprocal relationship. Furthermore, the assumption of the hypothesis in the Granger Test stated that the tested variable (excluded) is found to influence the intended equation when $prob > \chi^2$ is significant. However, simultaneous equations are likely to be still carried out when the test results indicate no reciprocal relationship. This was possible as long as there was endogeneity, a condition where errors in one equation affect the others.

Based on this test (Appendix 2), the value of $Prob > \chi^2$ was not significant (all variables had values greater than 10%). It indicated that the main variables did not have a reciprocal relationship, leading to the need for an endogeneity test.

An endogeneity test is performed to determine whether the error in an equation affects the other endogenous variables. When the error has a significant effect, the symptoms of endogeneity are observed, leading to the performance of simultaneous equations. In this study, two equations were contained in the simultaneous system, indicating the need for two endogeneity tests. First, testing the effect of the poverty error on economic growth. Second, testing the effect of the economic growth error on poverty.

Based on the endogeneity test (Appendix 3), the $P > |t|$ value showed that each error was significant (all have values less than 10%). It indicated that there were symptoms of endogeneity. Therefore, simultaneous equations applied in this study.

Table 1. Statistic Result

Variables	Coef.	Std. Error	P> z
Pov			
Village Funds	1,1335	0,0964	0,166
Growth	-1,2034	0,4346	0,006
Puskesmas	2,1969	2,3106	0,342
Agri	-0,8809	0,5227	0,092
BLT	-0,1829	0,0798	0,022
Bumdes	-2,8679	1,4015	0,041
ICT	-0,4422	0,1110	0,000
Constant	55,69	15,338	0,000
Growth			
Village Funds	-0,0089	0,0282	0,751
Ind	0,1644	0,0282	0,000
Invest	0,1799	0,0416	0,000
Constant	3,0462	2,6392	0,248

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According to statistical results (Table 1), two factors became endogenous variables: poverty in rural areas and economic growth. Therefore, the statistical analysis in this study was divided into two parts.

Firstly, industrial and investment growth had significant levels of less than 1% in the economic growth equation. This indicated that both variables significantly affected economic growth. The coefficient of the industrial growth was 0,1644, indicating a higher industrial growth of 1%, and the economic growth increased by 0.164%, assuming that village funds and investment growth did not change. Meanwhile, the coefficient value of investment growth was 0.179, which implied an increase in the economic growth of 0.179%, when economic growth improved by 1%. It was based on the assumption that the village funds and industrial growth were fixed. At the same time, the constant and village funds were not significant. It means village funds did not significantly affect poverty in rural areas.

Secondly, village funds and puskesmas did not significantly affect poverty. It was due to having a significance level of more than 10% in the poverty equation. Meanwhile, other variables significantly influenced poverty with varying degrees of significance. Village funds had an error rate and coefficient of 16% and 1.133, respectively. It indicated that 16 and 84% of the coefficient are believed to be zero and 1.0002, respectively. Meanwhile, puskesmas had an error rate and coefficient of 34% and 2.196, respectively. It indicated that 34% of the coefficient is believed to be zero.

The agricultural growth further had an error rate of less than 10%, with a coefficient of -0.8809. This indicated that poverty in rural areas decreased to 0.8809% when there was an increase in the agricultural growth by 1%, based on the assumptions of *ceteris paribus*. Furthermore, the BLT variable had an error level of less than 5%, with a coefficient of -1.829. It indicated that poverty in rural areas decreased by 1.829% when there was a rise in the proportion of villages operating BLT by 1%, based on the assumption that other variables did not change.

In addition, bumdes had an error rate of less than 5%, with a coefficient of -2.867. It indicated that an increase in the number of village-owned enterprises by 1% caused a decrease in poverty in rural areas by 2.867%. The ICT variable further had an error rate of less than 1%, with a coefficient of -0.442. It indicated that poverty in rural areas decreased by 0.442% when there was a rise in the proportion of the productive population mastering ICT by 1%, assuming the other variables remained constant.

B. The Nexus Between Village Funds and Other Variables Toward Poverty in Rural Areas

Based on statistical results, the village funds had an insignificant relationship with poverty in rural areas. The policy of refocusing the use of village funds in overcoming the covid pandemic is thought to be the strongest cause of the absence of impact of village funds on poverty. This study's results align with Ramly et al. (2018), concluding that village funds have no impact on poverty. Saragi et al. (2021) believe that the benefits of village funds are not directly enjoyed by the poor. The village fund program is not optimal in reducing poverty because it is still directed at infrastructure and physical development (Ramly et al. 2018).

On the other hand, economic growth influences efforts to reduce poverty in rural areas. This finding follows Kakwani and Son (2003), who state that poverty reduction can be achieved by increasing economic activity. It is more due to increasing the involvement of the poor in economic act (Handoyo et al., 2021).

Number of health center and auxiliaries (puskesmas) has no significant effect toward poverty in rural areas. The existence of puskesmas is a proxy for access to health facilities. Improved health levels will lead to increased productivity. Thus, the increasing number of puskesmas is expected to increase the accessibility of the poor to health facilities. However, it seems that health services are getting more accessible during the pandemic. Thus, the puskesmas do not impact reducing poverty in rural areas.

Agricultural growth is a prime mover for rural economic activities as known as traditional sector. The negative relationship of this variable with poverty in rural areas indicated that agricultural sector. The agricultural sector has a strong relationship with rural areas. Developing the agricultural sector will provide opportunities for villagers to be more empowered (Shehu, 2018). Mainly in the context of increasing economic activity so that farmers' incomes have increased. In addition, the agricultural sector's growth is expected to involve more of the poor in rural areas to work. The poor do not have sufficient qualifications to enter the labor market. Thus, the agricultural sector becomes a strategic means of absorbing the labor of the poor (Arsyad et al., 2020).

Village operating BLT (cash transfer) has significant impact to reduce poverty in rural areas. Greater cash transfer implies more social safety net program. The provision of social assistance in the form of cash social assistance is an effort by the government to distribute welfare. This policy is expected to increase public consumption in meeting their basic needs. It will increase the productivity of the poor and increase their income.

Village owned enterprises (BUMDes) has significant effect to reduce rural poverty. It is due to increasement of economic activity. BUMDes is one of the program initiations directed by the central government as their efforts to achieve village

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economic independence and poverty reduction (Paellorisky and Solikin, 2019; Sara et al., 2021). The development of bumdes will increase the scale of business owned by the village (Nugroho, 2020).

Higher proportion of mastering ICT in rural areas has significant effect to reduce poverty in rural areas. ICT implies higher technology adoption. It means mastering ICT will increase productivity. The results of this study support the finding that ICT can reduce the rate of poverty and improve the quality of human life (Doong & Ho, 2012; Zaman et al., 2011). Yekini et al. (2012) assessed that ICT positively impacts the rate of poverty reduction through the deployment of an effective and competitive ICT infrastructure. This deployment is accompanied by efforts to provide opportunities, generate income, improve education and empowerment, and provide universal service programs.

C. The Nexus Between Village Funds and Other Variables Toward Economic Growth

Based on statistical results, the coefficient of government debt had an insignificant relationship with economic growth. This finding further strengthens the notion that there is a refocus on using village funds to increase village resilience in the face of the covid pandemic.

Industrial growth is known as a change in structural transformation from the traditional to the modern sectors. The positive relationship of this variable with economic growth indicated that the growth in manufacturing sector can accelerate economic activity. The industrial sector was likely can absorb labour and add value to a product, especially in agricultural products. This indicated that the agricultural sector has a linkage with the industrial system in some regencies. This result further showed that industrial growth expected to encourage the development of the agricultural system.

The growth of gross fixed capital formation to GDP reflected the pace of investment and indicated a positive relationship with economic growth. It indicated that investments increased economic activity. These results were consistent with the neoclassical concept, which stated that economic growth was determined by investment (Olsson, 2013). Investment was still interpreted as an instrument to encourage economic growth.

CONCLUSION

The results showed no effect of village funds on village poverty. The policy of refocusing the use of village funds in overcoming the covid pandemic is thought to be the strongest cause of the absence of impact of village funds on poverty. In addition, village funds have also been shown not to affect economic growth. This finding further strengthens the notion that there is a refocus on using village funds to increase village resilience in the face of the covid pandemic.

In order to reduce rural poverty in the post-COVID pandemic, five recommendations need to be implemented: (i) revitalizing the agricultural sector, (ii) increasing the number of villages that operate cash transfers, (iii) facilitating the establishment of village-owned enterprises, (iv) increasing the ability to use information and communication technology, and (v) accelerating economic activity. However, encouraging economic growth is determined by the growth of industry and investment.

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APPENDIX 1. IDENTIFICATION OF ORDER CONDITION

Coefficient of Variable											(k-1)	(b-1)
1	Y_1	Y_2	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8		
$-\beta_{10}$	1	$-\alpha_{12}$	$-\beta_{11}$	$-\beta_{12}$	$-\beta_{13}$	$-\beta_{14}$	$-\beta_{15}$	$-\beta_{16}$	0	0	6	2
$-\beta_{20}$	0	1	0	0	0	0	0	0	$-\beta_{27}$	$-\beta_{28}$	2	1

APPENDIX 2: GRANGER-CAUSALITY TEST

Equation \ Excluded	chi2	Prob > chi2
Pov		
Growth	0,045	0,832
Growth		
Inq	0,025	0,873

APPENDIX 3: ENDOGENEITY TEST

Equation Tested	t	P> t
Pov → Growth	-3,98	0,00
Growth → Pov	-4,22	0,00



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