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The Effect of Village Income and Gross Regional Domestic Product on Poverty in Indonesia

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Abstract: The problem of poverty still exists today, and economic disparities are still found in districts/cities in Indonesia. The government has taken various ways to alleviate the problem of poverty, one of which is by distributing village funds to all corners of the country. Based on the data availability in Buku Saku Dana Desa and Buku Pintar Dana Desa published by the Ministry of Finance, Village income from 2015 to 2017 tends to increase. Meanwhile, the number of poor individuals throughout Indonesia between 2016 and 2017 has decreased. This paper attempts to examine whether or not Village Income, such as Village Funds, Revenue Sharing Taxes and Levies, Village Fund Allocations, and Village Original Income, as well as the GRDP (Gross Regional Domestic Product), affect the incidence of District/City poverty in Indonesia. This study uses secondary data from Statistics Indonesia for two years, consisting of 407 districts/cities in Indonesia each year. The regression analysis with static panel data using a double log model is the data analysis technique used in this article. The results show that Village Income and GRDP have an effect on poverty in districts/cities in Indonesia, with values of −0.0004 for Village Funds, 0.003 for Revenue Sharing Taxes and Levies, −0.026 for Village Fund Allocation, 0.002 for Village Original Income, and −0.197 for Gross Regional Domestic Product. We advise the government to increase village fund transfers, village fund allocation, and GRDP to lower poverty levels.

Keywords: village fund; village income; GRDP; fixed effect model; poverty

1. Introduction

One of the UN's Sustainable Development Goals Report 2019's objectives is to eradicate poverty in all of its forms worldwide. According to the United Nations report, the world is not on track for poverty alleviation in 2030, with 8.6% (2018) and 6% (projection 2030). Rural areas are home to 79 percent of the world's poor, with a poverty rate of 17.2 percent (more than three times higher) than metropolitan areas, with a rate of 5.3 percent. Then there are poor and middle-income countries, where 90 percent of disaster deaths occur, and 55 percent of the world's population lacks access to social safety (United Nations Department of Economic and Social Affairs, 2019). The problem of poverty in rural areas, which is unequal compared to urban areas, is interesting to address.

Based on data obtained from the results of a study by the Fiscal Policy Agency Ministry of Finance (2017) and data from Statistics Indonesia, village income from the three largest sources of village income is then added to Village Original Income, then divided proportionally to the number of villages. The average revenue per village was expected to be more than Rp1 billion, which was Rp1.18 billion in 2016 and 2017, it reached Rp1.33 billion, as presented in Table 1.

Table 1. Village Income in 2015–2017

Description	2015	2016	2017
Village Fund (Rp Trillion)	20.77	46.98	60.00
Village Fund Allocation/ADD (Rp Trillion)	33.83	35.45	34.07
Revenue Sharing of Regional Taxes and Levies (Rp Trillion)	2.65	2.85	3.17
Village Original Income (Rp Trillion)	4.22	3.53	3.09
Total Village Income (Rp Trillion)	61.47	88.81	100.33
Number of Villages	74,093	74,754	74,954
Average Income per Village (Rp Million)	**829.63**	**1,188.03**	**1,338.55**

Source: Study results of the Fiscal Policy Agency of the Ministry of Finance (2017) and BPS, processed

The distribution of village funds has always increased from year to year, starting in 2015. The total amount of village funding disbursed by the Government from 2015 to August 2019 was 229.4 trillion rupiahs, as shown in Figure 1.
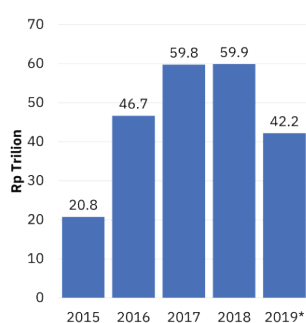

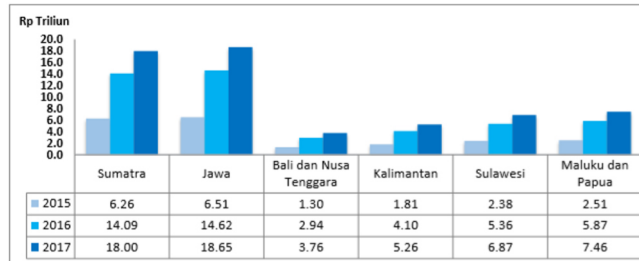**Figure 1.** Realization of Village Funds 2015–August 2019

Source: Jayani (2019)

From 2015 to 2016, the village fund doubled in size and continued to grow steadily until 2019. Village budget allocation is based on four factors, according to Village Law 6/2014: each village's population, poverty rate, total area, and degree of geographical constraint. The Village Fund's methodology emphasizes fundamental distribution, implying a fairly equal distribution of resources for all communities (Arifin et al., 2020).

As presented in Table 1 and Figure 1, trends in Village Income and Village Funds show an increase from year to year. However, although there is an upward trend, it

turns out that there is an imbalance in the distribution of Village Funds, where the Village Fund per region/island during 2015-2017 is still dominant on the islands of Sumatra and Java, is presented in Table 2. The reason is that many villages are scattered on these two islands compared to other islands.

Figure 2. Distribution of Village Funds by Region/Island, 2015–2017

Rp Triliun	Sumatra	Jawa	Bali dan Nusa Tenggara	Kalimantan	Sulawesi	Maluku dan Papua
2015	6.26	6.51	1.30	1.81	2.38	2.51
2016	14.09	14.62	2.94	4.10	5.36	5.87
2017	18.00	18.65	3.76	5.26	6.87	7.46

Source: The results of the study of The Ministry of Finance's Fiscal Policy Agency (2017)

The explanation of the distribution gap between regions is in line with the research of the Community Collaboration and Services for Welfare Team (Kompak) and the National Development Planning Agency (Bappenas & Kompak, 2017), which evaluates the formula and its implications for the distribution of Village Funds between regions and between districts/municipalities, as well as an analysis of the distribution of village funds as a poverty alleviation program. According to the study, the 2016 village fund allocation methodology resulted in an unfair cash distribution amongst districts/cities and regions.

Village funds are seen to help resolve issues of poverty and inequality amongst villages. The Village Fund Program is a crucial tool used by Indonesia's central government to promote economic growth, combat inequality, and alleviate poverty in rural areas (Saragi et al., 2021). According to the BKF study conducted by the Ministry of Finance of the Republic of Indonesia in 2017, the Village Fund implementation has successfully lowered the poverty rate from 14.2 percent in 2015 to 13.9 percent in 2017. When evaluated from the various studies that discuss the relationship between the two factors, village funds substantially impact poverty (Kadafi & Sudrahman, 2018; Riyanto & Junaedi, 2017; Sari & Abdullah, 2017; Susilowati et al., 2017). Most researchers concluded that poverty had a negative relationship with village revenues. In addition to using Village Funds, Village Funds Allocation, and Capital Expenditures, Susilowati et al. (2017) also add GRDP in analyzing the impact on poverty in East Java.

Based on some of the previous literature, little research still examines the impact of village funds and GRDP on reducing poverty in Indonesia. Several earlier studies still have several limitations. These limitations include the number of local samples (the highest is at the level of one province) and the lack of control variables used in the study. This research is expected to contribute to two aspects. The first contribution empirically proves the impact of the Village Income and GRDP on reducing poverty per district/municipality in Indonesia. The second contribution of this study is that it can complement existing studies.

Joko Widodo and Jusuf Kalla, the presidential and vice-presidential candidates in the 2014 presidential election, have a vision and objective for a government agenda known as Nawa Cita. As stated in the third Nawa Cita, "Building Indonesia from the Periphery by Strengthening Regions and Villages within the Framework of a Unitary State," one of the key government priorities for the couple is regional and village development. The development pattern is arguably a continuation of the previous pattern of government, namely regional autonomy, which came into effect in January 2001 through fiscal decentralization. The implementation of regional autonomy was followed up by new regulations that could not be separated from the emergence of reforms in the field of state finance. The reform took the form of issuing three packages of state finance laws (Law Number 17/2003, 1/2004, and 15/2004).

Village funds, part of the Transfer to Regions program, are one of Indonesia's fiscal decentralization instruments. The development of the decentralization system in Indonesia started in the Dutch colonial era through the issuance of the Decentralization Law known as Decentralisatie Wet 1903 (Hestiliani, 2019). Two years later, in implementing the Decentralisatie Wet 1903, the Dutch Government issued Decentralisatie Besluit 1905 and Local Raden Ordonnantie No. 181 in 1905. Since then, Indonesia began recognizing the term decentralization, although it could not be fully implemented and continued to experience developments in the next era.

The National Community Empowerment Program has been in place since 2007, but in 2011 it could only reach 54% of the villages (Agusta, 2014). Then the allocation of village funds began in early 2015. In previous years, the village fund budget was not seen directly in the state budget structure. The goal of this village fund budget is to provide communities with the power and resources they need to manage their potential and improve their residents' economic conditions and wellbeing. The increase in GRDP (Gross Regional Domestic Product) implies that a region's economic status is improving. The bigger the potential source of money in an area, the higher the GRDP, and the lower the GRDP, the greater the impact on poverty (Susilowati et al., 2017).

The Village Fund's regulations have been described in full in Law Number 6/2014 concerning Villages and PP No. 60/2014 concerning Village Funds Sourced from the state budget. The Village Fund is used to pay for government operations, development, community development, empowerment, and any unexpected revenues. Village development is a top priority for the Village Fund.

According to article 72 paragraph (1) of Law Number 6/2014 concerning Villages, village revenue consists of 7 (seven) types of income, with the Village Fund (DD) from the APBN, the Village Fund Allocation (ADD), which is 10% of the District/City General Transfer (DTU), and 10% of District/City Regional Tax and Levy Revenue Sharing being the three largest sources of village income. In addition, there are Village Original Income, Financial Aid, Grants and Non-binding Donations from Third Parties, and Other Income.

Several opinions in Indonesia define poverty (Haughton & Khandker, 2012; Suliswanto, 2010; Wiguna & Sakti, 2013). Poverty is described as a low standard of living or the presence of a material lack in a number or group of people compared to the general standard of living in society. This low living standard directly impacts the health, moral life, and self-esteem of persons considered poor (Suliswanto, 2010). Poverty is a state of being unable to meet a person's necessities, such as health, reasonable living standards, self-respect, freedom, and a sense of respect for others, as well as a bleak future for the country and the state (Wiguna & Sakti, 2013). Poverty is then defined by comparing each individual's income or consumption to predetermined standards. The individual is labeled poor if their income or consumption falls below that benchmark (Haughton & Khandker, 2012). BPS in measuring poverty uses the concept of the basic needs approach. This concept refers to the Handbook on Poverty and Inequality published by the World Bank. With this approach, poverty is seen as an economic inability to meet basic food and non-food needs measured by the expenditure side. A population is categorized as poor if it has an average monthly per capita expenditure below the poverty line.

Research on village funds has begun, including Lewis (2015), who examines problems in the Village Fund formula currently used by the Indonesian government. The formula has considered the heterogeneity of each village, namely the village's ability to collect the income (Lewis, 2015). Furthermore, research by Bappenas and Kompak (2017) shows that: 1) the village fund allocation formula for 2016 resulted in an unequal distribution of funds between districts/cities and between regions; 2) the village fund formula used is still considered unfair if it is associated with the need for village funds to overcome poverty problems and increase access of the poor to public services, and 3) village funds are still used to build physical buildings and infrastructure 84 percent of the time, while just 6.5 percent are used for community

empowerment. The Directorate of Disadvantaged Regions, Transmigration, and Rural Areas, National Development Planning Agency (2016), did an additional study and concluded that each village has various strengths and weaknesses in terms of social, political, cultural, physical, and economic elements.

According to the findings of research conducted by the Fiscal Policy Agency (BKF) Ministry of Finance from the Republic of Indonesia (2017), the Village Fund, which was implemented from 2015 until 2017, was able to reduce poverty from 14.2 percent in 2015 to 13.9 percent in 2017. Similarly, the number of impoverished individuals in rural areas fell by 4.70 percent (842.76 thousand persons) from 17.94 million in 2015 to 17.10 million in 2017.

Further research on the effect of village funds on other variables was carried out by Riyanto and Junaedi (2017) and Sari and Abdullah (2017), who found the same thing, that village funds affect the social, economic, and ecological resilience of villages and poverty. Azwardi and Sukanto (2014) found the opposite that village funds were not able to reduce poverty. Sari and Abdullah (2017) examined disparities in village poverty in Tulungagung District from 2015 to 2016, as well as the impact of the Village Fund and Allocation of Village Fund on village poverty in Tulungagung District. Village Funds and Allocation of Village Fund impacted village poverty, with values of 4.52 and 1.52 for Village Funds and Allocations of Village Funds, respectively. The value of R2 (coefficient of determination) is 0.99. It indicates that the Village Fund and ADD factors have a 99 percent potential to explain rural poverty in Tulungagung District. The findings of panel data regression analysis using the chosen Fixed Effect Model demonstrate that rural poverty in Tulungagung District differed between 2015 and 2016.

The Village Funds (DD), Village Funds Allocation (ADD), Capital Expenditures, and GRDP (PDRB) affected poverty in districts/municipalities in East Java (Susilowati et al., 2017). Economic development aims to achieve long-term economic growth, with indices of success including GRDP (PDRB), education, income distribution, and the number of impoverished people (Todaro, 1989). As a result, the GRDP variable can be utilized to influence poverty in districts and cities. Susilowati et al. (2017) found that Village Funds (DD), Village Funds Allocation (ADD), Capital Expenditures, and GRDP (PDRB) all have an impact on District/City poverty, with values of −3.59 for Village Funds Allocation and 2.87 for Village Funds, respectively. Villages have a capital expenditure of −6.05 and a Gross Regional Domestic Product of −3.57. While the value of R² (coefficient of determination) is 0.99, or 99 percent, the variables Village Funds (Dana Desa), Village Funds Allocation (Alokasi Dana Desa), Capital Expenditures, and GRDP (PDRB) have a 99 percent ability to explain rural poverty. The Fixed Effect Model was adopted, as was the case with Sari and Abdullah (2017).

In addition, Kadafi and Sudrahman (2018) researched the effects of village grants received by undeveloped villages in Indonesian districts/cities on poverty and literacy rates. Village funds collected by Indonesia's undeveloped villages per district/municipalities have consequences for poverty, but the effects of village funds on poverty are still minor (Kadafi & Sudrahman, 2018). Even though village grants collected by impoverished villages per district/city in Indonesia have just a 12.7% impact on poverty, they do have an impact. This is because village funds are still routinely used for physical infrastructure and facilities with no economic multiplier effect. According to the findings of the t-test study, the second conclusion is that the Village Fund received by Indonesia's undeveloped villages by district/city has a 70.6 percent effect on literacy rates, or that the t-count value of 11.688 is more than the t-table 2.022.

The objective of this paper is to examine the impact of Village Income, such as Village Funds (DD), Revenue Sharing Taxes and Levies (BHPR), Village Fund Allocation (ADD), Original Income of Village (PADES), and GRDP (PDRB) on District/City poverty in Indonesia by using the BPS data based on the formulation of the problems described previously.

2. Methods

This study uses data from BPS for two years, consisting of 407 districts/cities in Indonesia each year, so the total observations for the two periods were 814 districts/municipalities. We collect the data mostly from secondary data obtained by downloading from the BPS website. The regression analysis with static panel data using a double log model is the data analysis technique used in this article, following the method proposed by Sari and Abdullah (2017) and Susilowati et al. (2017).

The estimation model proposed in this paper is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + dT + e_{it} \quad \text{...........................(1)}$$

Where:

Y_{it}	=	*District/City poverty as measured by the number of poor people (JPM), collected from BPS data, the unit is individual*
β_0	=	*Constant/Intercept*
$\beta_1 \beta_2 \beta_3 \beta_4 \beta_5$	=	*Regression coefficient*
X_1	=	*Village Fund (DD), collected from BPS data (Village Government Financial Statistics), the unit is IDR*
X_2	=	*Tax and Levy Profit Sharing (BHPR), collected from BPS data (Village Government Financial Statistics), the unit is IDR*
X_3	=	*Village Fund Allocation (ADD), collected from BPS data (Village Government Financial Statistics), the unit is IDR*
X_4	=	*Original Income of Village (PADES), collected from BPS data (Village Government Financial Statistics), the unit is IDR*
X_5	=	*Gross Regional Domestic Product (GRDP) or PDRB, collected from BPS data (District/City GRDP in Indonesia), the unit is IDR*
dT	=	*Dummy time, year 2016 = 0 and year 2017 = 1*
		To find out whether there is a change in district/city poverty between the two years
e_{it}	=	*Error term*

Secondary BPS data was gathered from the https://bps.go.id/ website for this study, such as the number of poor people per province (BPS - Statistics Indonesia, 2020b), percentage of poor people per district/city (BPS - Statistics Indonesia, 2020c), number of poor people per district/city (BPS - Statistics Indonesia, 2020a), Village Government Financial Statistics 2016–2018 (BPS - Statistics Indonesia, 2018, 2019b), and District/City GRDP or PDRB in Indonesia (BPS - Statistics Indonesia, 2019a).

The author uses panel data regression to facilitate interpretation and understanding in reading the output of the research estimation results. Panel data will provide more information, more variability, less collinearity, greater freedom, and greater efficiency (Gujarati & Porter, 2009). According to Sari and Abdullah (2017) and Susilowati et al. (2017), the regression analysis with static panel data using a double log model is the data analysis technique used in their article. This study adopted their research method to answer whether Village Income and GRDP affect the incidence of District/City poverty in Indonesia. The interpretation of the regression output is that a rise in the proportion of independent variables will increase/decrease the dependent variable by a certain percentage. This shows the use of the double log (log-log) model in making estimates.

From equation 1, we then transform the data into the log-log form. This shape transformation will make it easier to interpret the relationship between variables. The estimation model is rewritten as:

$$\log JPM_{it} = \beta_0 + \beta_1 \log DD_{it} + \beta_2 \log BHPR_{it} + \beta_3 \log ADD_{it} + \beta_4 \log PADES_{it}$$
$$+ \beta_5 \log PDRB_{it} + dT + e_{it} \quad \text{........(2)}$$

Where i represents individual districts/cities in Indonesia, and t is the observation period (in this case, two years, 2016 and 2017).

The number of poor individuals per district/municipality in Indonesia was used as the dependent variable. Indicates the number of poor persons in each district/city over two years. The independent variables used are Village Funds (Dana Desa), Allocation of Village Funds (Alokasi Dana Desa), Original Income of Village (PADES), Profit Sharing of Taxes, and Levies (BHPR), and GRDP (PDRB). The Village Funds and Allocation of Village Funds variables are included as independent variables in Sari and Abdullah's (2017) study. In addition, a dummy time is also used to determine whether there is a change in district/city poverty between the two years, so for 2016, it is filled

with a value of 0, and in 2017 it is filled with a value of 1. Research by Susilowati et al. (2017) uses the variables Village Funds, Allocation of Village Funds, GRDP, and Capital Expenditure as independent variables.

3. Results and Discussion

3.1. Overview of Village Income, GRDP, and Poverty

We use Statistics Indonesia data from 2016–2017 to find descriptive statistics on differences in poverty rates. The number of poor individuals decreased between 2016 and 2017. In 2016, there were 28,005.39 thousand impoverished individuals in Indonesia, which reduced to 27,771.22 thousand in 2017. Meanwhile, in 2016, there were 17,665.62 thousand poor people in rural areas (63.08 percent of the total), and in 2017, there were 17,097.39 thousand poor individuals in rural areas (61.56 percent of the total). With the reduction in the number of poor individuals, it is necessary to investigate whether Village Income and GRDP variables affect city/district poverty in Indonesia.

To see the distribution gap between regions can be seen from the correlation between Village Funds (DD), Revenue Sharing Taxes and Levies (BHPR), Village Funds Allocation (ADD), Original Income of Village (PADES), and GRDP or PDRB with the poverty level of districts/cities in Indonesia. Using the unconditional plot of the Eviews software output, the correlation of several variables of Village Income with the poverty level of districts/cities shows different correlations (see Figure 3).
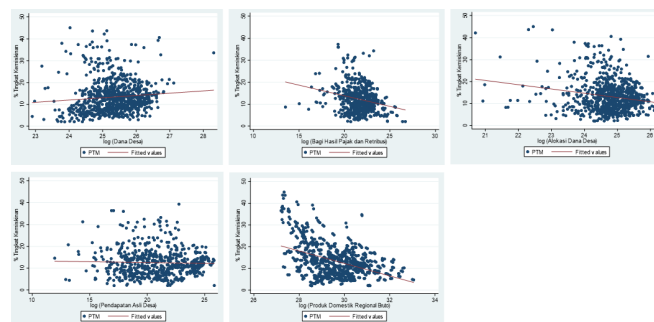

Figure 3. Correlation of Village Funds (DD), Revenue Sharing Taxes and Levies (BHPR), Village Funds Allocation (ADD), Original Income of Village (PADES), and Gross Regional Domestic Product (PDRB) with District/City Poverty Levels

Source: Statistics Indonesia data in 2016–2017, processed

The correlation of the Village Fund with the poverty level of the district/city shows a positive correlation, the district/city with higher the poverty rate means, the larger the allocated Village Fund. Meanwhile, the correlation between the variables of Tax and Levy Revenue Sharing, Village Fund Allocation, Original Income of Village, and GRDP with city/district poverty levels shows a negative correlation.

Moreover, to provide a clearer picture at the village level, a correlation between the dispersion of Village Funds (DD), Tax and Levy Revenue Sharing (BHPR), Village Fund Allocation (ADD), Village Original Income (PADES), and GRDP (PDRB) was carried out with the number of poor people (see Figure 4).

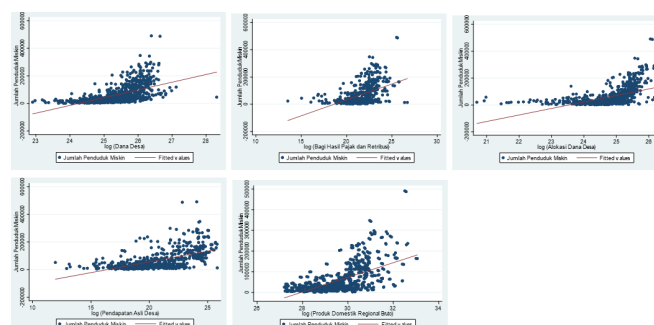**Figure 4.** Correlation of Village Funds (DD), Revenue Sharing Taxes and Levies (BHPR), Village Fund Allocation (ADD), Original Income of Village (PADES), and Gross Regional Domestic Product (PDRB) with Number of Poor Population per District/City

Source: Statistics Indonesia data in 2016–2017, processed

All Village Income variables used with the Number of Poor Populations show a positive correlation. However, many villages still have the same Number of Poor People but receive a higher or smaller distribution of Village Funds. Likewise, for Revenue Sharing Taxes and Levies (BHPR), Village Fund Allocation (ADD), Original Income of Village (PADES), and GRDP (PDRB), the value can be higher or lower when the number of poor people has the same relative value.

Table 2 shows descriptive statistics for the observed variables.

Table 2. Descriptive Statistics Summary by Variable

	JPM	ADD (millions)	DD (millions)	BHPR (millions)	PADES (millions)	PDRB (millions)
Mean	59,507	69,100	124,000	5,530	8,150	14,000,000
Median	31,595	60,400	101,000	1,370	364	7,180,000
Maximum	490,800	250,000	1,970,000	390,000	164,000	228,000,000
Minimum	1,230	-	-	-	-	649,000
Std. Dev.	66,196	41,400	104,000	21,000	20,100	21,600,000
Observations	814	814	814	814	814	814

Source: BPS data, processed

Table 3 shows descriptive statistics for variables translated into a log form.

Table 3. Summary of Descriptive Statistics per variable in log form

	LJPM	LDD	LBHPR	LADD	LPADES	LPDRB
Mean	11	25.44	21.74	25.01	21.20	29.95
Median	11	25.50	21.86	25.02	21.22	29.99
Maximum	13	27.12	26.69	26.24	25.82	33.06
Minimum	7	22.90	13.51	23.24	14.00	27.24
Std. Dev.	1	0.66	1.55	0.52	2.48	1.06
Observations	500	500	500	500	500	500

Source: BPS data, processed

Panel data regression analysis with Pooled model, a mix of time-series and cross-sectional data, was utilized as the data analysis technique. The Fixed Effect Model (FEM), Common Effect Model (CEM), and Random Effect Model (REM) are three types of regression models used to analyze panel data models.

For the observed data (407 districts/cities), poverty development between 2016 and 2017 is a drop in the number of poor individuals from 24,328.16 thousand individuals in 2016 to 24,110.54 thousand in 2017. In other terms, there were 217.62 thousand fewer individuals. Table 4 shows the developments for additional variables for the districts/cities that are the subject of observation.

Almost all Village Income variables have increased, except for Village Original Income, which has declined, as shown in Table 4.

Table 4. Village Income Trends 2016–2017

Description	2016	2017	Difference
Village Fund (Rp Trillion)	45,38	55,82	10,44
Revenue Sharing of Regional Taxes and Levies (Rp Trillion)	2,04	2,46	0,42
Village Fund Allocation/ADD (Rp Trillion)	26,25	29,99	3,73
Village Original Income (Rp Trillion)	3,54	3,10	(0,44)
Gross Regional Domestic Product (Rp Trillion)	5,57	5,84	0,27

Source: BPS data, processed

3.2. Model Estimation Results

Based on the regression processing results using Eviews program software, the estimation findings utilizing the Fixed Effect, Random Effect, and Common Effect techniques are as follows:

a. Common Effect Model (CEM)

$$\log JPM = -23.597 + 0.768 * \log DD + 0.006 * \log BHPR + 0.274 * \log ADD +$$
$$0.102 * \log PADES + 0.194 * \log PDRB - 0.318 * DT$$

.... (3)

b. Fixed Effect Model (FEM)

$$\log JPM = 17.170 + 0.0004 * \log DD + 0.003 * \log BHPR + 0.026 * \log ADD +$$
$$0.002 * \log PADES + 0.197 * \log PDRB - 0.004 * DT$$

.... (4)

c. Random Effect Model (REM)

$$\log JPM = -6.826 + 0.970 * \log DD + 0.003 * \log BHPR + 0.013 * \log ADD +$$
$$0.004 * \log PADES + 0.509 * \log PDRB - 0.059 * DT$$

.... (5)

In order to choose which panel model is the most suitable for use in the model, it is necessary to use a comparison between the Fixed Effect, Common Effect, and Random Effects Models using the Chow Test and also Hausman Test to determine which one is the best model that will be used in estimating the effect of variables.

a. Chow Test

To assess whether Fixed Effect or Common Effect models should be employed, the Chow test is utilized. The results of the Chow test are summarized in Table 5.

Table 5. Chow Test Results

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1682.930608	(285,208)	0.0000
Cross-section Chi-square	3871.838316	285	0.0000

Source: Eviews 9 regression output

Prob. F = 0.0000 based on the Chow test results. Because this value suggests that the p-value is less than $\alpha = 0.05$, Ho was rejected. As a result, using the Fixed Effect Model rather than the Common Effect Model is preferable. The Fixed Effect Model was the more appropriate choice during the Chow test.

b. Hausman Test

The Hausman test assesses which technique best among the Random and Fixed Effect models. In Table 6, the results of the Hausman test are shown:

Table 6. Hausman Test Results

Correlated Random Effects-Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	331.307704	6	0.0000

Source: Eviews 9 regression output

Prob. = 0.0000 was found using the Hausman test. Because this figure implies that the p-value is less than $\alpha = 0.05$, Ho was rejected. As a result, the Fixed Effect Model is preferable to the Random Effect Model. Another test is the Breush-Pagan

Lagrange Multiplier (LM), extensively used to choose the best model between the Common Effect and Random Effect techniques. However, the Breush-Pagan LM test was not performed because the Fixed Effect Model was the optimal model choice based on the Chow and Hausman tests. As a result, the Fixed Effect Model will be utilized to interpret the results (equation 4).

The following are the findings of panel data estimation using the Fixed Effect Model:

Table 7. Panel Data Estimation Results Using the Fixed Effect Model

Dependent Variable: LJPM
Method: Panel Least Squares
Date: 05/31/20 Time: 14:38
Sample: 2016 2017
Periods included: 2
Cross-sections included: 286
Total panel (unbalanced) observations: 500

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	17.16970	2.617279	6.560132	0.0000
LDD	−0.000434	0.019639	−0.022085	0.9824
LBHPR	0.003010	0.001992	1.511419	0.1322
LADD	−0.025560	0.006972	−3.666190	0.0003
LPADES	0.002110	0.001215	1.736626	0.0839
LPDRB	−0.196901	0.084200	−2.338504	0.0203
DT	0.004332	0.007166	0.604561	0.5461
		Effects Specification		
R-squared	0.999871	Mean dependent var		10.73409
Adjusted R-squared	0.999691	S.D. dependent var		1.077687
S.E. of regression	0.018946	Akaike info criterion		−4.803510
Sum squared resid	0.074662	Schwarz criterion		−2.342179
Log likelihood	1492.878	Hannan-Quinn criter.		−3.837688
F-statistic	5547.518	Durbin-Watson stat.		4.651163
Prob(F-statistic)	0.000000			

Source: Eviews 9 regression output

Equation with Fixed Effect model:

$$\log JPM = 17.170 - 0.0004 * \log DD + 0.003 * \log BHPR - 0.026 * \log ADD + 0.002 * \log PADES - 0.197 * \log PDRB + 0.004 * DT \quad \text{........................ (6)}$$

District/City poverty in Indonesia if it is assumed that the variable value of Village Funds (DD), Revenue Sharing Taxes and Levies (BHPR), Village Fund Allocation (ADD), Village Original Income (PADES), GRDP (PDRB), and time dummy is zero, determined by the value of the intercept (β_0). The intercept value in the Fixed Effect model is 17,170. This means that if the Village Fund (DD), Revenue Sharing Taxes and Levies (BHPR), Allocation of Village Funds (ADD), Original Income of Village (PADES), GRDP (PDRB), and time dummy are zero, then there will be an increase in district/city poverty of 17.17%.

On District/City poverty, the Village Fund (DD) variable shows a negative but non-significant effect. The value of -0.0004 indicates that if the Village Fund increase by 1 percent, it can reduce poverty by 0.0004 percent in the district/city. This value corresponds to the notion that increasing the Village Fund will lessen poverty in the District/City.

Variables for Revenue Sharing Taxes and Levies (BHPR) have a favorable but insignificant impact on poverty in the District/City. For example, the coefficient of 0.003 shows that a 1% rise in Revenue Sharing Taxes and Levies will result in a 0.003 percent increase in poverty in the District/City. However, this value contradicts the premise; it turns out that when Revenue Sharing for Taxes and Levies grows, poverty in the District/City increases.

On District/City poverty, the Allocation of Village Fund (ADD) variable has a considerable negative impact. The coefficient of -0.026 suggests that every 1% increase in Village Fund Allocation reduces poverty in the district/city by 0.026 percent. This number corresponds to the notion that increasing the Village Fund Allocation will lessen poverty in the District/City.

In the District/City, the Village Original Income (PADES) variable has a positive but non-significant impact on poverty. The correlation of 0.002 means that every 1% rise in Village Original Income increases District/City poverty by 0.002 percent. However, this figure contradicts the premise; it turns out that poverty in the District/City rises when the Village's Original Income increases.

District/city poverty is influenced by the GRDP (PDRB) variable in a negative and significant way. The coefficient of -0.197 implies that for every 1% increase in GRDP, poverty in districts/cities is reduced by 0.197 percent. This figure supports the concept that as the GRDP (PDRB) rises, poverty in the Regency/Municipality decreases.

On district/city poverty, the time dummy variable (DT) has a positive but non-significant influence. If the Village Fund (DD), Revenue Sharing Taxes and Levies (BHPR), Village Funds Allocation (ADD), Original Income of Village (PADES), and GRDP (PDRB) are all zero, then the district/city poverty rate will grow by 0.004 individuals from 2016 to 2017. This number supports that poverty levels in districts and cities differed between 2016 and 2017.

The F-Test, t-test, and Coefficient of Determination Test (R^2) findings are obtained based on the results of the regression using the Fixed Effect Model:

a. F-Test

The F-test is one of the statistical tests used to see the effect of all variables together, namely the independent variable (unbound variable) in the form of Village Fund (DD), Revenue Sharing Taxes and Levies (BHPR), Original Income of Village (PADES), Allocation of Village Funds (ADD), GRDP (PDRB) and dummy time on the dependent variable (the dependent variable), namely the poverty of districts/cities in Indonesia. Furthermore, the results of the test simultaneously (together). The results of the regression test are carried out by looking at the probability F statistic = 0.00000 ≤ probability α value = 5%, meaning H_1 is accepted, which means that all independent variables are Village Fund (DD), Original Income of Village (PADES), Allocation of Village Funds (ADD), Revenue Sharing Taxes and Levies (BHPR), GRDP (PDRB), and time dummy has a substantial impact on poverty.

b. t-test

The purpose of this t-test is to see if the independent variables Village Funds, Revenue Sharing Taxes and Levies, Village Fund Allocations, Village Original Income, and GRDP, as well as the time dummy, have any impact on the dependent variable, District/City Poverty.

Table 8. Results of t-test on the Fixed Effect Model

Variable	Coefficient	t-Statistic	Prob.	Significance (α=0.05)	Information
LDD	−0.000434	−0.022085	0.9824	0.05	Not significant
LBHPR	0.003010	1.511419	0.1322	0.05	Not significant
LADD	−0.025560	−3.666190	0.0003*	0.05	Significant
LPADES	0.002110	1.736626	0.0839	0.05	Not significant

Table 8. Results of t-test on the Fixed Effect Model

Variable	Coefficient	t-Statistic	Prob.	Significance (α=0.05)	Information
LPDRB	−0.196901	−2.338504	0.0203*	0.05	Significant
DT	0.004332	0.604561	0.5461	0.05	Not significant

Source: The regression analysis results from reviews 9, processed

The t-test results demonstrate that the Village Fund Allocation (ADD) and GRDP (PDRB) variables have a significant impact on poverty. In contrast, the Village Fund (DD), Revenue Sharing Taxes and Levies (BHPR), Village Original Income (PADES), and time dummy factors do not.

c. Coefficient of Determination Test (R^2)

The coefficient of determination (R^2) is a commonly used metric for determining how well a model can explain variations in the dependent variable. R^2 has a value of zero (0) and one (1). The R^2 value in the table is 0.999871; thus, it can be interpreted that the total variation in poverty in districts/cities in Indonesia can be described by the independent variable and the time dummy of 99%. In comparison, the remaining 1% is explained by variables not included in the model.

The results of the research estimate confirm the various studies that discuss the relationship between village funds and their substantial impact on poverty (Kadafi & Sudrahman, 2018; Riyanto & Junaedi, 2017; Sari & Abdullah, 2017; Susilowati et al., 2017). This study also confirms Susilowati et al. (2017) research that discusses GRDP's impact on poverty in East Java.

4. Conclusion

Based on the above data result, analysis, and discussion, it can be concluded that Village Income and GRDP substantially affect poverty. Therefore, this study can support previous research. Partially, Village Fund Allocation and GRDP have a significant effect on district/city poverty. In contrast, Village Funds, Revenue Sharing Taxes, Levies, Village Original Income, and time dummy have an insignificant impact on the poverty variable. The time dummy is then used to show district/city poverty differences between 2016 and 2017.

Allocation of Village Funds and GRDP effectively reduces poverty, while Revenue Sharing for Taxes and Levies, Village Original Income tends to be ineffective and unsuccessful in reducing poverty in each District/City. Village Fund is still used to develop rural physical infrastructure and facilities, which does not have a multiplier impact in terms of increasing the economics of the community. Compared to the creation of physical facilities and infrastructure, which reached 84 percent, the utilization of Village Funds for community empowerment is still comparatively minor, at only 6.5 percent. Then for the Revenue Sharing of Taxes and Levies and Village Original Income, the value tends to be smaller when compared to the Village Fund, so, naturally, its role is less effective in alleviating poverty.

Suggestions that can be given in this writing are as follows:

1. In implementing village development activities, the government is expected to reduce poverty and realize community welfare through alternative affirmative policies (Murliasari, 2021). Based on this study result, we advise the government to increase village fund transfers, village fund allocation, and GRDP to lower poverty levels. Through the improvement and proper management of these three funds, hopefully, poverty reduction can be achieved.

2. Perform unit root tests to determine which variables should be entered into the model in level form and which variables should be transformed to other forms. In estimating the model, two years of observation time cannot be carried out with a unit root test with software Eviews due to insufficient observations. This unit root test is used to see if the variable data being used is stationary or not and to find out

what data transformation is appropriate for model estimation (e.g., by changing the data in log format).

3. Based on the references obtained, the estimation model used is the double log model. If the estimation model is regressed with a linear-linear model, the parameter coefficients obtained are very large, considering the financial variable data used are worth billions or even trillions of rupiah. As a result, more research is required into the use of a more exact model, whether it is in the form of a level (linear-linear) or must be translated into a double log.

4. Adding panel data with a longer time series, which is more than two years of observation, so that it is possible to overcome the problem of the insufficient number of observations.

5. It adds independent variables other than Village Income that may affect poverty alleviation, namely the Village Budget variable from the Village Expenditure side.

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