Jurnal

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REDUCING THE PROVINCIAL POVERTY RATE IN INDONESIA:
THE IMPACT OF LOCAL GOVERNMENT EXPENDITURE

Abstract

This study seeks to examine the effect of local government expenditure on the improvement of provincial welfare in Indonesia. The data used in government expenditure is expenditure based on functions, particularly health, education, and social protection functions in the province, both district / city and provincial government expenditures obtained from the Directorate General of Financial Balance (DJPK), while the provincial poverty rate serves as a proxy for regional welfare. Over the period 2015-2021, the Fixed Effect model using the Estimated General Least Square (EGLS) approach is used to estimate outcomes for 34 provinces in Indonesia. The results indicated that government expenditure on the health sector and education sector had a negative significant influence on reducing the poverty rate, whereas government expenditure on social protection did not. The control factors, such as economic growth, had a negative effect on poverty reduction in Indonesia, whereas the unemployment rate and informal labor in the agricultural sector had positive and significant effects.

Introduction

Poverty is associated with declining income gaps and human resources (Okwi & Hoogeveen, 2003). The Central Bureau of Statistics Indonesia (2015) defines poverty is inability to fullfil primary, needs such as food, or non-food that is measured from the expenditure side. Inability to meet basic due to conditions that do not favour them in obtaining opportunities (Sriyana, 2021) so he is unable to expand and determine his life choices (Rustanto, 2014). Ragnar Nurkse (1953) has given concept of the Vycious Cycle Poverty states that low-income levels leade to low income and reserve funds. Therefore there will be low rate of investment, leading to a decrease in the productivity rate that will again decrease to low income

Indonesian poverty has decreased during the previous seven years (2015-2020). However, poverty on provinces will reveal a rather large poverty gap, with many regions exceeding the national poverty rate such as Papua, West Papua, Maluku, and East Nusa Tenggara, are oh high the national level of poverty. This problem is related to the condition of education and health infrastructure as a support for increasing human resources. In addition, poverty is also related to vulnerability and limited access to a decent life. Mckague, research study et al. (2015), conducted that government must guarantee and protect the poor through infrastructure, providing employment, and making policies related to poverty. Government expenditure is one way to overcome poverty. Numerous research stated that government expenditure had a significant impact on poverty alleviation in Indonesia. According to research that government expenditure will increase economic activity and have an impact on reducing poverty rates based on time series data from 1976 to 2010 in Pakistan (Mehmood 2010). Research from Oriavwote & Ukawe (2018) stated government expenditure combating poverty is a key sector of Nigerian economy. Similiar result of a significant to reducing poverty through infrastructure in China (X et al., 2022)

There has been many researchers bond government expenditure spesifically such as health, education, social protection, etc. Several research show that government expenditure on health care improves quality of life standars, including stunting treatment, reducing the risk of maternal and child mortality, and improving access to free health services for the poor. Research by Oriavwote &

Ukawe (2018) states that government expenditure on health can decrease poverty Rate in Nigeria by increasing per capita income. Studies by Muhammad & David, (2019) and Bahtera et al., (2018) concluded that there was a negative and significant enclosed by government expenditure on health and poverty Rate and suggested more allocations. Nonetheless, a study from Misdawita & Sari (2013) shows the distinct, that expenditure on health has no significant with poverty Rate. This is because the pattern of government expenditure in the health sector is not immediately visible and requires quite a long time. Abdelhak & Sulaiman (2012) and Pusparani (2022) finds, there are other factors such as ineffective management and weak performance oversight.

In addition, government expenditure on education has a significant influence on reducing poverty rates (Komarudin & Oak, 2020). Human resources through education are believed to be able to change economic conditions, spesifically poverty. Simeon & Odior's research (2014) states the same thing that the education sector has a significant and negative impact on poverty level in Nigeria. Alamanda, (2020) also concluded that the research results indicated a negative and significant of government expenditure to poverty rate. Findings from Taruno (2019) that the effect of government expenditure has a significant influence on poverty in both villages and cities. However Widodo 's findings (2012) found different results, where government expenditure can increase poverty rates if it is not followed by adequate welfare and employment after completing education. This is because it will bring up educated unemployment which has an impact on increasing poverty.

The problem of poverty is related to vulnerability, where the poor are easily exposed to the risk of shocks, so they are unable to meet their basic needs. Social protection programs are specifically designed to help reduce poverty and protect people close to poverty (near poor) can survive vulnerabilities. Several social protection programs that have been provided to the community are in the form of the Family Hope Program (PKH), National Health Insurance (JKN), Rice Assistance for Prosperous Families (Rastra), Non-Cash Food Assistance (BNPT), and others. According to several studies, assistance from social protection programs have not been given effect on poverty rates. Studies by Abell & Abell, (2004); (Mehmood, 2010); Misdawita & Sari, (2013) found that government expenditure on social protection can reduce poverty. However, several other studies state that social protection cannot directly reduce the poverty rate, it only reduces vulnerability, so it has not been succesful to alleviation the poverty rate (Suharto, 2013). Huraerah (2019) states that expenditure on social protection has not been effective on reducing the poverty rate because it is used for other purposes. Research Dewi & Andrianus (2021) also concludes the same thing government expenditure has not been able to fallout poverty rates numerically because people's welfare has not been measured after receiving assistance.

Based on the result studies are paired, there are differences in the impact of government expenditure on poverty reduction in Indonesia. This study intends to fill the aforcited research apparent. The novelty is to use provincial data, so that contribute to make policymakers and give a oversight to other academicians. Thus, it is necessary to conduct research to review between government expenditure (education, health, and social protection) and provincial poverty rate in 2015-2021.

RESEARCH METHODS

This research method used a descriptive quantitative. The scope of the research is 34 provinces, and secondary data for 7 years (2015-2021). This study used 3 independent variables and 3 control variables. The purpose of using control variables is to increase accuracy and provide a treasury for explanations.

Table 1. Operational Variable

No	Variable	Abbrev.	Definition of variable	Source	Unit of Measurement
1	Poverty	Pov	Percentage of poverty rate	BPS	Percent
2.	Government expenditure of health	RGEhealth	The ratio of government expenditure on health to current PDRB	DJPK	Percent
3	Government expenditure of education	RGEedu	The ratio of government expenditure on education to current PDRB	DJPK	Percent
4.	Government expenditure of social protection	RGEsoc	The ratio of government expenditure on social protection to current PDRB	DJPK	Percent
5	Economic growth	LNPDRB	The natural logarithmic of constant PDRB	BPS	Percent
6	Unemployment	Un	Unemployment rate	BPS	Percent
7	Informal labour of the agriculture	TKI	Percentage of labour in the agriculture	BPS	Percent

Notes: DJPK (Directorate General of Fiscal Balance, Ministry of Finance), BPS (Central Bureau of Statistics)

The model used fixed effect from panel data regression. Previously, the Chow test was carried out, where the test was to see the best intermediate model common effects (CE) or models Fixed Effect (FE) in determining research calculations. If the probability F < 0.05, then FE is the chosen model. Afterwards the Chow test was carried out, the next test was required by the Hausman test. The Hausman test is a test that chooses between Fixed Effects (FE) or Random Effects (RE). If the probability F < 0.05, then FE is the chosen model, otherwise if the F value > 0.05, then the Random Effect is selected and proceeds to the Lagrange Multiplier (LM) test.

The model adapted from Abdelhak & Sulaiman (2012) and is modified based on empirical studies that have been conducted, by adding the variables unemployment Susanti (2013) and informal agricultural sector workers referring to Rini's research (2012) on the control variable. The equation of this research model is as follows:

$$Pov_{it} = \alpha_0 + \beta_1 RGEhealth_{it} + \beta_2 RGEedu_{it-1} + \beta_3 RGEsoc_{it-1} + \beta_5 LnPDRB_{it} + \beta_6 UN_{it} + \beta_7 TKI_{it} + e_{it} \dots\dots\dots (1)$$

Where *POV* is the poverty percentage, *RGEhealth* is the ratio of government expenditure on health to GDRP, *RGEedu* is the ratio of government expenditure on education to GDRP, *RGEsoc* is the ratio of government expenditure on social protection to GDRP, LnPDRB is economic growth, *UN* is the unemployment rate, *TKI* is informal labour of agricultural, *i* is 34 provinces, *t* is the time of research, *t-1* is variable lag, and e *is* an error term

Therefore, firstly, a classic assumption tests consisting of multicollinearity test, autocorrelation test, and heteroscedasticity tests was performed. In the classical assumption test of multicollinearity, it can be told from the value of the variable coefficient of less than 0.8 to indicate that multicollinearity does not occur. As for autocorrelation, it can be examined from the value of Durbin Watson. However, if there is autocorrelation, then it is done by adding the variable AR (1) to improve

autocorrelation. This research was conducted by Aleksandrovich & Upadhyaya (2017) who used these variables to improve autocorrelation.

$$Pov_{it} = \alpha_0 + \beta_1 RGEhealth_{it} + \beta_2 RGEedu_{it-1} + \beta_3 RGEsoc_{it-1} + \beta_5 LnPDRB_{it} + \beta_6 UN_{it} + \beta_7 TKI_{it} + AR(1) + e_{it} \ldots\ldots\ldots (2)$$

Similar to the heteroskedasticity test, the test is used in regression models to test whether, there are residual differences between one observation and others. The model can be followed from probability of Obs R^2. If the value of Obs $R^2 < 0.05$, there is heteroscedasticity. Otherwise, the value of probability of Obs*$R2 > 0.05$, there is no heteroscedasticity (Kurniawan, 2008).

Subsequently, statistical criteria testing was carried out consisting of a partial test (t test), simultaneous test (F test), and the coefficient of determination. A partial test (t-test) was conducted to examine how the effect of the independent variables on the dependent variable partially (each variable). While the simultaneous test (F test) is a test to see how the independent variables affect the dependent variable simultaneously As for the coefficient of determination to see how the independent variable can explain the dependent variable through the adjusted R-square value.

The next analysis is a descriptive analysis using quadrants. Where 4 quadrants interpret the relationship between the two variables. The following quadrant interpretation is used:

- Quadrant I show the ratio of independent variable is high and the poverty rate is high.
- Quadrant II shows the ratio of independent variable is low and the poverty rate is high.
- Quadrant III shows a ratio of independent is low and poverty rate is low.
- Quadrant IV shows the ratio of independent variable is high and poverty rate is low.

As for the quadrants, some points are numbered (provincial code), with the following information:
1) Aceh, (2) North Sumatra, (3) West Sumatra, (4) Riau, (5) Jambi, (6) South Sumatra, (7) Bengkulu, (8) Lampung, (9) Bangka Belitung Island, (10) Riau Island, (11) DKI Jakarta, (12) West Java, (13) Central Java, (14) D.I. Yogyakarta, (15) East Java, (16) Banten, (17) Bali, (18) West Nusa Tenggara, (19) East Nusa Tenggara, (20) West Kalimantan, (21) Central Kalimantan, (22) South Kalimantan, (23) East Kalimantan (24) North Kalimantan, (25) North Sulawesi, (26) Central Sulawesi, (27) South Sulawesi, (28) Southeast Sulawesi, (29) Gorontalo, (30) West Sulawesi, (31) Maluku , (32) North Maluku, (33) West Papua, (34) Papua

Result and Discussion

The results of the research will be discussed after conducting econometric and statistical testing. In this study, model selection was performed using the chow test to choose fixed effect or common effect.

Table 2. Chow test

Effects Test	Statistic	d.f	Prob.
Cross-section F	736.185600	(33,198)	0.0000

Source: EViews 9 data, processed.

Based on chow test, the best model is obtained fixed effect proven value probability less than 0.05, so it continues with the Hausman test. On the occasion, from the Hausman test is obtained fixed effect proven value probability less than 0.05 (Gujarati, 2004)

Table 3. Hausman test

Test Summary	Chi-Sq.Statistic	Chi-Sq. d.f	Prob.
Cross-section random	32.148697	6	0.0000

Source: EViews 9 data, processed

Then, the classical assumption test was carried out consisting of a multicollinearity test, autocorrelation test, and heteroscedastic test. Based on the multicollinearity test, the coefficient of each variable is less than 0.8, this indicates that these variables do not have multicollinearity.

Table 4. Multicolienarity Test

Variabel	RGEhealth	RGEedu(-1)	RGEsoc(-1)	LnPDRB	UN	TKI
RGEhealth	1.000	0.722	0.615	-0.408	-0.178	0.366
RGEedu(-1)	0.722	1.000	0.697	-0.499	-0.266	0.482
RGEsoc(-1)	0.615	0.697	1.000	-0.504	-0.170	0.365
LnPDRB	-0.408	-0.499	-0.504	1.000	0.393	-0.414
UN	-0.178	-0.266	-0.170	0.393	1.000	-0.298
TKI	0.366	0.482	0.365	-0.414	-0.298	1.000

Source: EViews 9 data, processed

Afterwards the test is autocorrelation test through the Durbin Watson (DW) value. The condition for no autocorrelation is dU < dw < 4 − dU. In the model below there are 2 (two) estimation results, where in the first estimation it is infected with autocorrelation with a dw value of 1.263183 (does not meet the requirements). For this reason, a second estimate is made for improvement by adding the AR variable (1). The use of this method is by the study of Aleksandrovich and Upadhyaya (2017), stating that the autocorrelation-constrained model is better after being corrected using AR (1) and accepted at α Rate of 1%, 5%, and 10%. From the results of AR (1), there is no problem with autocorrelation.

Table 5. Comparison of Regression Results Before and After Using AR Another test is.

Variable	Before added AR (1)		After added AR (1)	
	Coefficient	Prob.	Coefficient	Std. Error
C	9.365692	0.744245	9.935660	0.929604
RGEHEALTH	-0.157254	0.019892	-0.028131	0.012608
RGEEDU (-1)	-0.045111	0.038935	-0.037995	0.019546
RGESOC (-1)	-0.099007	0.630841	2,60E-01	0.380471
LNPDRB	-0.511926	0.087363	-0.392797	0.199033
UN	0.115628	0.021433	0.125064	0.028494
TKI	0.034132	0.008135	0.013272	0.006202
AR (1)	-	-	0.623437	0.044020
R-squared	0.996336		0.998701	
Adjusted R-squared	0.995464		0.998298	
F-statistic	1143.384		2479.426	
Prob(F-statistic)	0.000000		0.000000	
Dw	1.263183		2.067100	

Source: DJPK and BPS, E-views 9.0 processed.

For the assumption classic test, heteroscedasticity, in this study used the method Generalized Least Square (GLS) so that the heteroscedastic problem can be overcome. According to Juanda (2009), the GLS method is a method used to transform the weighting of the original data so that it can improve heteroscedasticity problems.

The following test statistical criteria consisting of a partial test (t test), simultaneous test (f test), and test of the coefficient of determination tests. Based on the t-test that 5 (five) variables have a t stat value that is greater than the t table value. The results of the t-stat test show that these variables are

significant to the dependent variable (poverty level), whereas the RGEsoc variable is not significant to for tependent variable (poverty level).

Table 6. t-statistic test

Variabel	t-stat	t-table	Prob	Ket.
RGEhealth	-2.231183	1.970024	0.0274	**
RGEedu (-1)	-1.943886	1.651308	0.0541	*
RGEsoc(-1)	0.682610		0.4961	Tdk signifikan
LnPDRB	-1.973522	1.651308	0.0506	*
UN	4.389072	2.596732	0.0000	***
TKI	2.139996	1.970024	0.0342	**

Note: *significant on 90%, ** significant on 95% *** significant on 99%
Source: DJPK and BPS, processed by E-views 9.0

After carrying out a partial test (t-stat test), an F-stat test found out whether all the independent variables together could influence the dependent variable. For the simultaneous test method by looking at the value probability in the state. Based on the results, the value probability of the F-stat is 0.0000 less than α 1%, so the independent variables simultaneously have a significant effect on the dependent variable (poverty level) at the same time. The coefficient of the determination test shows a value adjusted R-square is 0.998298. This shows that the independent variables in the model can explain 99% of the dependent variable, while the remaining values are influenced by other variables from the outside variable.

Based on the selection of models, the fixed effect model (FEM) using weighting with Cross Section Weight (GLS) is the best model. The estimation results obtained in the table below.

Table 7. The relationship between dependent variable and independent variable

Variable	Coefficient	Std. Error	inf.
C	9.935660	0.929604	
RGEHEALTH	-0.028131	0.012608	**
RGEEDU (-1)	-0.037995	0.019546	*
RGESOC (-1)	0.259713	0.380471	not significant
LNPDRB	-0.392797	0.199033	*
UN	0.125064	0.028494	***
TKI	0.013272	0.006202	**
AR (1)	0.623437	0.044020	
R-squared	0.998701		
Adjusted R-squared	0.998298		
F-statistic	24.79426		
Prob(F-statistic)	0.000000		
Durbin Watson stat	2.067100		

Note: *significant on 90%, ** significant on 95% *** significant on 99%
Source: DJPK and BPS, processed by E-views 9.0

The form of the econometric equation, the results of data processing can be written in the equation below:

Pov_{it} =9.9355660 -0.02813$RGEhealth_{it}$ -0.037995$RGEEdu_{it-1}$+0.259713$RGEsoc_{it-1}$-0.392797$LNPRB_{it}$ +0.125064UN_{it}+0.013272TKI_{it} + e_i .... (3)

Based on the result of the equation above, each independent variable will show the dependent variable. The dependent variables in this research are government output (health, education, and social protection), economic growth, unemployment, and informal labour in the agricultural sector. The variable of government expenditure on health has significant effect to reduce poverty rate. The value of the coefficient of government expenditure on health is -0.02813, every one percent increase in government expenditure on health can reduce the level of poverty in Indonesia by 0.02813 percent. Some of these studies explain that government expenditure on health can reduce the level of poverty such as research by Bahtera et al., (2018) and Bahtera et al., (2018) which explains that government expenditure on health is negatively and significantly related to the level of poverty. Likewise, to Marna's research (2016), health sector production is one of the main factors in reducing the level of poverty. This shows that the government's policy through government production as an effort to reduce poverty is on target and carried out continuously as written in Health Law No. 39 of 2009.

Furthermore, government expenditure on education in the previous year had a significant effect on reducing the poverty rate this year, with the coefficient is -0.037995. Research from Carolina (2022), Oriavwote & Ukawe (2018) and Oriavwote & Ukawe, (2018) are in line with this research. Government expenditure on the education sector can reduce poverty through increased income. There is a lag in this variable because government expenditure on education cannot be seen directly in the same year. For example, the realization of the construction of educational infrastructure, which cannot be directly benefited in the same year, will need to be processed in the next few years, so that an increase in school enrolment rates will be seen in the coming year. Likewise, an increase in human resources does not directly affect the reduction in the poverty rate, because it requires a gradual educational process. So, those who have graduated from education will work to increase their income to meet their daily needs.

The coefficient value for the variable government expenditure on social assistance is 0.4961, and it does not significantly affect poverty rates. This outcome is not predicted by the hypothesis for a number of reasons, including the fact that the design of social protection attempts to reduce vulnerability and enhance social standing, hence preventing any discernible decline (Suharto, 2013). Social protection frequently lacks monitoring and assessment, particularly in the absence of clear directives, so the program is ineffective. Social protection in the form of poor assistance does not reflect the government's goal of alleviating poverty (Perotti, 2004). Due to a lack of vigilance in maintaining an integrated database, inaccurate beneficiary data are the most significant obstacle to social protection (Beni & Manggu, 2020). Yet, other factors, such as inadequate public awareness of beneficiaries between those who are eligible and those who are not, have contributed to the emergence of social conflict (Bah et al., (2015), and Habib & Tri, (2020). Government investment in distributing cash for social protection is a good thing, but it must be paired with solutions and attention to a number of issues for social protection to have a significant impact on poverty rates.

One of the variables that determine the amount of poverty is economic growth. This is due to the correlation between economic growth and per capita income. In this study, the coefficient for the relationship between economic growth and poverty is -0.392797. This demonstrates that for every one percent gain in economic growth, poverty can be reduced by 0.392797 percent. This is consistent with Hambarsari & Inggit (2016) conclusion that the relationship between economic growth and poverty is negative and significant, and that economic expansion can reduce the poverty rate. Economic expansion has an effect on the economy through stimulating economic activity in the form of employment. The acceleration of the economy allows individuals to raise their income, hence

reducing poverty. According to Nyamweya & Obuya, (2020), economic growth is a prerequisite for poverty elimination.

Unemployment is one of the problems in macro indicators. This study shows that the unemployment variable has a coefficient of 0.125064 and has a significant effect. This shows that a one percent increase in unemployment can increase poverty by 0.125064 percent. This research is in line with Susanti's research (2013) which concluded that an increase in unemployment can increase poverty. The most influential factor why unemployment can increase poverty is the loss of income which causes a loss of one's welfare and is unable to meet the necessities of life, especially basic needs (basic need). If basic needs are not met, then the community is categorized as poor (*Badan Pusat Statistik*, 2016)

Other research was conducted by Azis (2018) and Quy (2016) Unemployment and poverty have a relationship that cannot be ignored because losing a job means losing other access needed so it is difficult to obtain other basic needs such as clean water, health facilities, housing, and others. . Unemployment is also a problem at the macro level because it lowers the level of state income in the form of a decrease in per capita income followed by a decrease in labour productivity. This affects economic activity which creates a poverty trap because it is unable to maintain a minimum standard of living.

The bond by the variables of agricultural sector informal labor of agriculture and poverty in this study has a coefficient of 0.013272 and is significant. This shows that every 1 percent increase in the informal labour of agricultural sector will increase poverty by 0.013272 percent. Based on this study, the informal labor of agriculture has not been able to increase income so there are still many informal labours of agricultural who are categorized as poor. Rini's research (2012) concluded that informal labour is closer to poverty, one of the informal sectors that affect poverty is the agricultural sector. This is due to the low development of the agricultural sector resulting in low productivity. Besides low productivity, there are still many people with low Rate of education. Of the informal labour of agricultural sector, 66 percent are elementary school graduates and only 3 percent are Diploma and Bachelor graduates (BPS, 2020). Workers in the informal sector tend to have low human capital, which has implications for low productivity and fluctuating income (Maloney, 2003)

Communities, especially in rural areas, choose an informal workforce in the agricultural sector, this is a source of income that is obtained, or an alternative is available only in the agricultural sector, so that rural communities tend to absorb labour in the agricultural sector. The classic problem in the informal agricultural sector is low wages while the prices of necessities of life continue to rise. Problems like this make people who work in the informal agricultural sector remain poor. *World Bank*, (2020) notes that in Indonesia there are 34.3 million informal labour of agriculture who do not have a fixed income and are highly vulnerable to poverty.

The next analysis is descriptive which is explained in the form of quadrants. Quadrant analysis is seen in graphical of the independent and dependent variables. In the quadrant analysis of government expenditure on health and the poverty rate per province in Indonesia, it can be seen in the figure below,
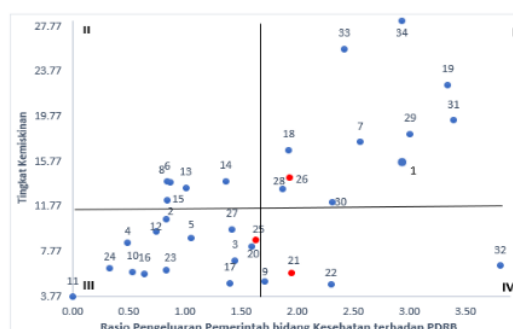
Source: DJPK and BPS, data processed.
Figure 2 Quadrant Analysis of the Ratio of Government Expenditures on Health Sector to Poverty Rate in 34 Provinces in Indonesia in 2015
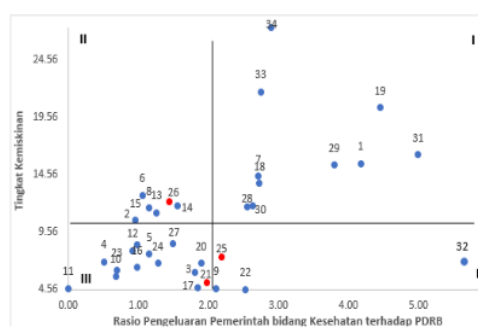
Source: DJPK and BPS, data processed.
Figure 3 Quadrant Analysis of the Ratio of Government Expenditures on Health Sector to Poverty Rate in 34 Provinces in Indonesia in 2021

In general, the provinces in figures 2 and 3 are in quadrant III, low government expenditure on health can reduce poverty Rate. This shows that these provinces have been optimal in reducing poverty Rate. Local governments need to plan a budget that can reduce poverty. Health local government budget for poverty can be a priority to reduce poverty. This can be seen in several provinces that have been able to reduce poverty through government expenditure in the field of success in reducing the poverty rate which is in quadrant IV. This can be indicated by local governments in quadrant IV that have complied with government regulations to prepare a health budget of 5%. Besides that, public health and different health Rate in each province are problems and challenges for each local government in reducing poverty. Several regions have experienced positive changes in reducing poverty, such as the province of Central Kalimantan. Several other provinces have negative changes to poverty reduction. North Sulawesi 2015 was in quadrant IV changing to quadrant III in 2021. Central Sulawesi, which was in quadrant I (2015) became quadrant II in 2021. North Sulawesi moved from high to low expenditure. Meanwhile, Central Sulawesi remains in a high poverty position in 2015 and 2021.

Table 8. Changes in Provincial Positions in the Quadrant of Government Expenditures on Health Sector to Poverty Rate

| No	Province	2015	2021
1	Central Kalimantan (21)	III	IV
2	North Sulawesi (25)	IV	III
3	Central Sulawesi (26)	I	II

Source: Processed data (2022)

In the quadrant analysis of government expenditure on education and the poverty rate per province in Indonesia, it can be seen in the figure below. Provinces in Indonesia are generally in quadrants II and III in 2015 and quadrant III in 2021. This shows that several provinces have low poverty conditions. Government expenditure on education in provinces that are in quadrant III is indicated to have better quality human resources compared to other quadrants (other than quadrant IV).
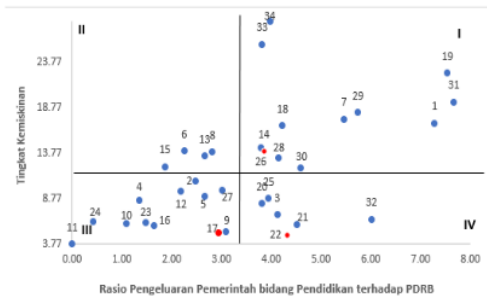
Source: DJPK and BPS, data processed.

Figure 4 Quadrant Analysis of the Ratio of Government Expenditures on Education Sector to Poverty Rate in 34 Provinces in Indonesia in 2015
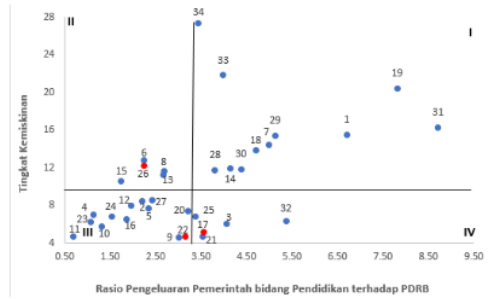
Source: DJPK and BPS, data processed.

Figure 5 Quadrant Analysis of the Ratio of Government Expenditures on Education Sector to Poverty Rate in 34 Provinces in Indonesia in 2021

Local governments that are in quadrant III indicate that the community has met the target of the education program so that the local community in quadrant III can reduce poverty. This is with good quality resources, having the opportunity to get a job, and poverty rates can be reduced. Several regions show positive changes in the government's role in education budget policies, such as the provinces of Bali and South Kalimantan. While Central Sulawesi showed results that were not optimal because in 2015 the government's expenditure on education had not been able to reduce poverty. Central Sulawesi in 2021 showed worse results than in 2015.

Table 9. Changes in the Position of the Province in the Quadrant of Government Expenditure on Social Protection to Poverty Rate

No	Provinsi	2015	2021
1	Bali (17)	III	IV
2	South Kalimantan (22)	IV	III
3	Central Sulawesi (26)	I	II

Source: Processed data (2022)

In the quadrant analysis of government expenditure on social protection and the poverty rate per province in Indonesia, it can be seen in the figure below. The role of government expenditure on social protection is likely to be in quadrant III in 2015 and 2021. Regional government expenditure on social protection can generally show better results in reducing the poverty rate. There are still many provinces that are in quadrant III. Regional governments that are outside of quadrants III and IV need to improve the social protection budget, one of which is by evaluating developments in the poverty rate in the community.
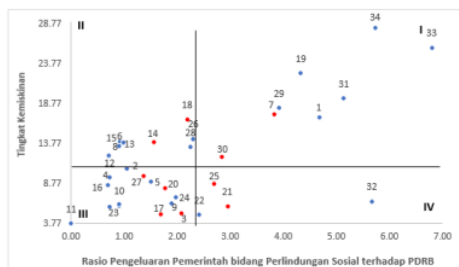
Source: DJPK and BPS, data processed.

Figure 6 Quadrant Analysis of the Ratio of Government Expenditures on Sosial Protection Sector to Poverty Rate in 34 Provinces in Indonesia in 2015
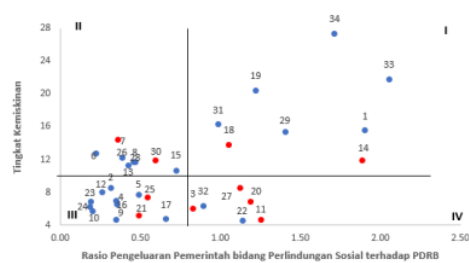
Source: DJPK and BPS, data processed.

Figure 7 Quadrant Analysis of the Ratio of Government Expenditures on Sosial Protection Sector to Poverty Rate in 34 Provinces in Indonesia in 2021

The development of the role of local governments in reducing poverty through expenditure on social protection in several regions has reduced the poverty rate. Five regions have reduced poverty as seen by moving to quadrant IV in 2021. Meanwhile, other provinces have not shown optimal results, as can be seen in the table below.

Table 10. Changes in the Position of the Province in the Quadrant of Government Expenditure on Social Protection to Poverty Rate

No	Provinsi	2015	2021
1	Bengkulu (7)	I	II
2	West Sulawesi (30)	I	II
3	DI Yogyakarta (14)	II	I
4	DKI Jakarta (11)	III	IV
5	West Nusa Tenggara (18)	III	IV
6	West Kalimantan (20)	III	IV
7	South Kalimantan (22)	III	IV
8	West Sumatera (3)	III	IV
9	North Sulawesi (25)	IV	III
10	Central Sulawesi (26)	IV	III

Source: Processed data (2022)

Then the role of regional economic growth in reducing the poverty rate is still in many provinces that are in quadrant III in 2015 and quadrant II in 2021. Based on these developments, regional economic growth has not had a positive effect on reducing the poverty rate. The government needs to optimize the economic sector which can increase economic growth so that it will have an impact on labour input. When the local government increases the potential economic sector, it needs to provide infrastructure such as expanding employment opportunities so that poverty is expected to decrease.
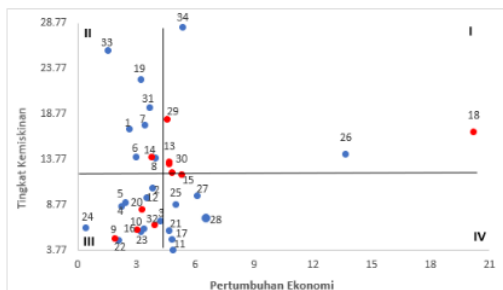
Source: DJPK and BPS, data processed.

Figure 8 Quadrant Analysis of Economic Growth to Poverty Rate in 34 Provinces in Indonesia in 2015
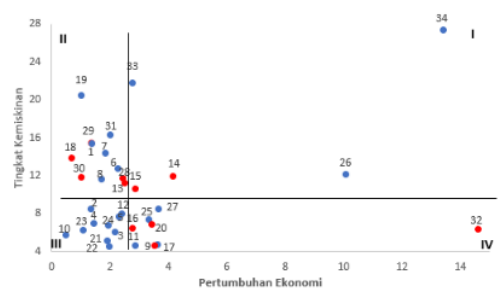
Source: DJPK and BPS, data processed.

**Figure 9 Quadrant Analysis of Economic Growth to Poverty Rate in 34 Provinces in Indonesia in 2021**

In 2021 there will be a change in the position of the province in the quadrants. Four provinces experienced a shift from quadrant III to quadrant IV. Indicates a positive change in which economic growth can reduce poverty (quadrant IV). The other provinces have not shown the effect of economic growth on reducing poverty rates, as can be seen in the table below.

Table 11. Changes in the Province's Position in the Quadrant of Economic Growth to the Poverty Rate

No	Province	2015	2021
1	Central Java (13)	I	II
2	West Nusa Tenggara (18)	I	II
3	Gorontalo (29)	I	II
4	West Sulawesi (30)	I	II
5	D.I Yogyakarta (14)	II	I
6	Bangka Belitung Island (9)	III	IV
7	Banten (16)	III	IV
8	West Kalimantan (20)	III	IV
9	North Maluku (12)	III	IV
10.	East Java (15)	IV	I

Source: Processed data (2022)

The next variable is unemployment and poverty rate, as seen from the quadrants. Provinces in Indonesia tend to be in quadrant II, low unemployment does not necessarily reduce poverty. The development of declining unemployment has not been able to meet the necessities of life in line with the high cost of living. This could result from the low regional minimum wage.
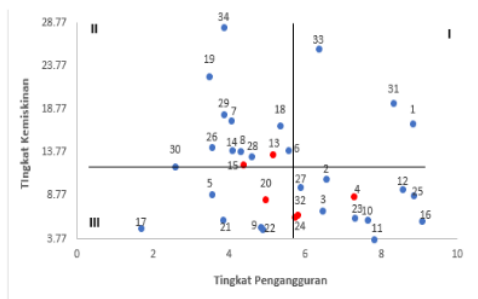
Source: DJPK and BPS, data processed.

Figure 10 Quadrant Analysis of Unemployment to Poverty Rate in 34 Provinces in Indonesia in 2015
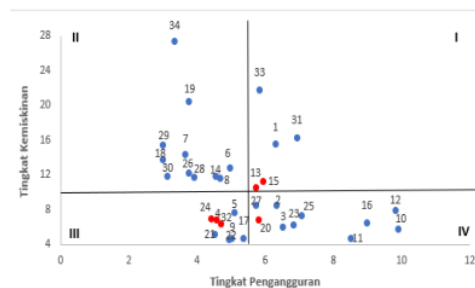
Source: DJPK and BPS, data processed.

Figure 11 Quadrant Analysis of Unemployment to Poverty Rate in 34 Provinces in Indonesia in 2021

Provinces that have experienced changes for the better are in quadrant III. Provinces that are in quadrant III in 2021 are Riau, North Kalimantan, and North Maluku. These three provinces have shown low unemployment and reduced poverty rates. Employment is important for each region to reduce unemployment and poverty rates.

Table 12. Changes in Province Position in the Quadrant of Unemployment Rate to Poverty Rate

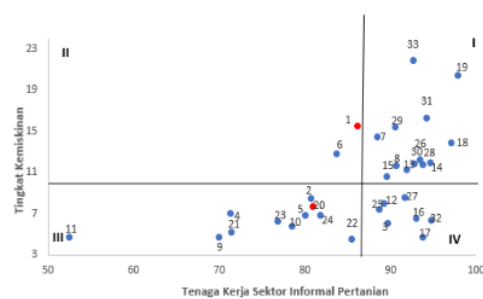| No	Province	2015	2021
1	Central Java (13)	II	I
2	West Java (15)	II	I
3	West Kalimantan (20)	III	IV
4	Riau (4)	IV	III
5	North Kalimantan (24)	IV	III
6	North Maluku (34)	IV	III

Source: Data processed (2022)

Informal agricultural workforce and the poverty rate on a provincial scale is mostly in quadrant II in 2015 and 2021. In general, people who are classified as poor work in the informal agricultural sector, when the informal agricultural sector declines, it will have an impact on increasing poverty. Many poor people rely on this sector, so the poverty rate is unlikely to decrease significantly.
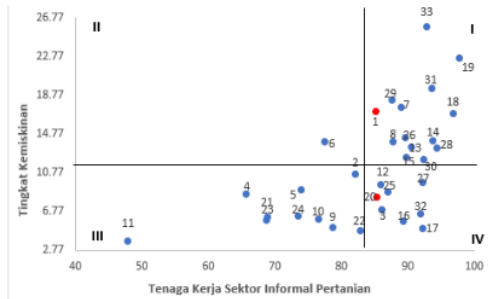
Source: DJPK and BPS, data processed.

Figure 12 Quadrant Analysis of Informal labor of the agriculture t to Poverty Rate in 34 Provinces in Indonesia in 2015

Source: DJPK and BPS, data processed.

Figure 12 Quadrant Analysis of Informal labor of the agriculture to Poverty Rate in 34 Provinces in Indonesia in 2021

Even though it is in quadrant II between the informal agricultural workforce and the poverty rate, several regions show better results than other provinces. Only two provinces experienced positive changes in reducing poverty, namely the provinces of Aceh and West Kalimantan. The government needs to think about labour policies in the agricultural sector in the presence of people who work informally. The government needs to take steps for workers in the informal agricultural sector such as farmers by providing training, information, and knowledge of agricultural technology efficiently.

Table 13. Changes in the Province's Position in the Quadrant of Informal Labour of Agricultural Sector to Poverty Rate

No	Provinsi	2015	2021
1	Aceh (1)	III	IV
2	West Kalimantan (20)	IV	III

Conclusion

Government expenditure is very important for the implementation of policies to reduce poverty. This study analyses how government expenditure on health, education, and social protection affect poverty reduction. Using panel data for 2015-2021 with the method fixed effect estimated generalized least square (EGLS) obtained results of this study shows that the variables of government expenditure on health and government expenditure on education have a significant effect, on the other hand, government expenditure on social protection has no significant effect on the poverty rate. As for the control variable, namely economic growth has a negative effect while unemployment and labor in the informal agricultural sector have a positive and significant effect.
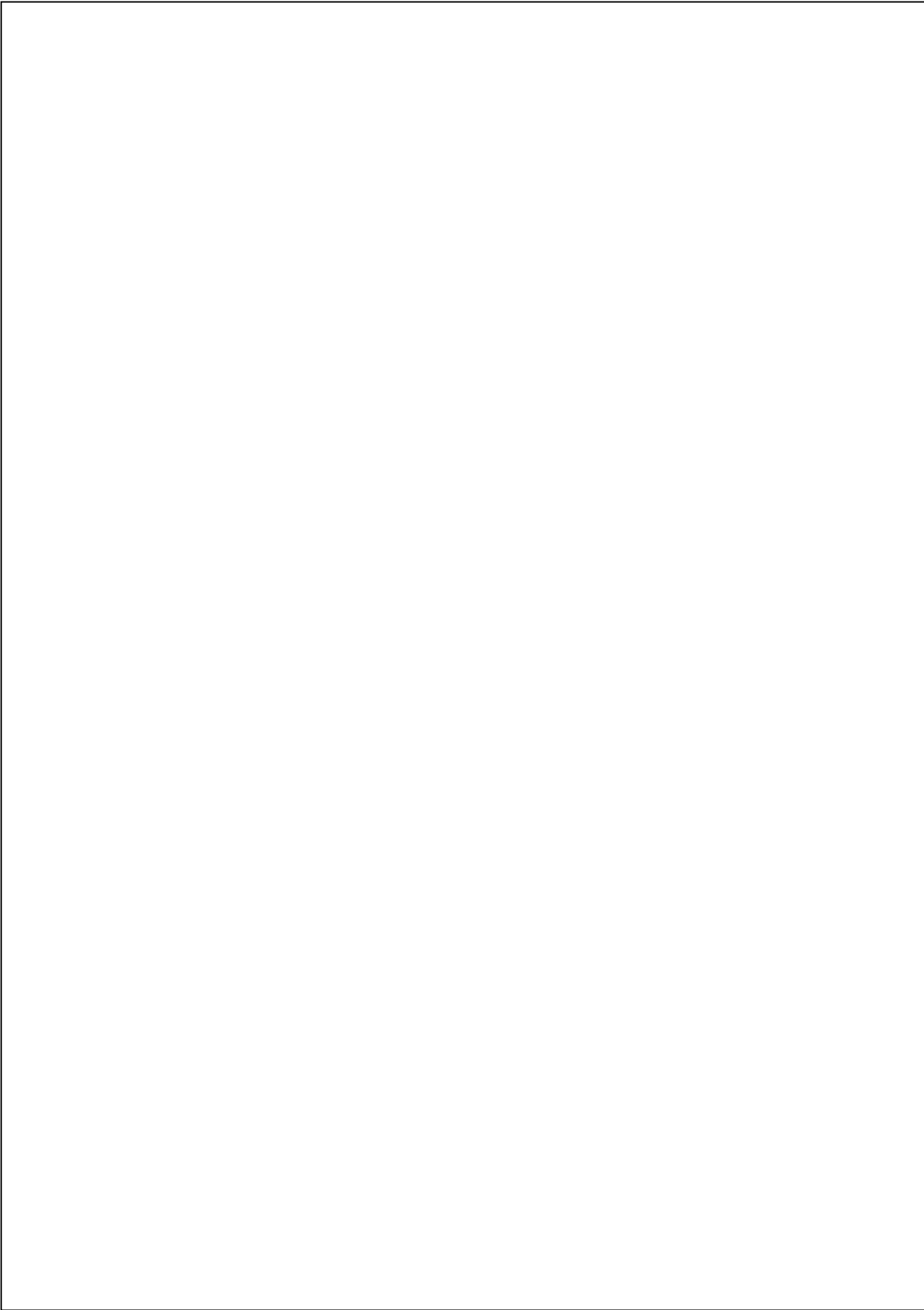
The government's role in tackling the poverty rate through regional government expenditure is an appropriate policy because poverty alleviation is one of the matters handed over to the regions based on Law no. 23 of 2014 concerning Regional Government. However, there is something the government needs to pay attention to, namely improving the quality of regional expenditure, in this case especially local government expenditure on social protection. Evaluation of data management

and updating of data is a required base for people who are vulnerable and need protection so that they are more targeted. In addition, it is felt that the socialization of protection programs that are specific to the area and efforts to approach the community more effectively also need to be improved. Other policies to reduce unemployment and informal employment in the agricultural sector are being carried out and are running well, it is hoped that the government's goal of reducing the poverty rate can be achieved more quickly.

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PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15

PAGE 16