

## Analysis of the Impact Regional Expenditures on Poverty in Indonesia



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**ABSTRACT:** The purpose of this study was to determine the effect of government spending (Education, Health, Housing and Public Facilities, and Social Protection), GRDP, DAU, and population on the poverty of the provinces in Indonesia. The method in this study uses the Regression Vector Error Correction Model (VECM) panel model with 32 provinces. The data used is secondary data with a period of 2010-2020 sourced from the Central Statistics Agency (BPS), the Directorate General of Fiscal Balance (DJPK), and provincial sites from each region.

The results of the study indicate that in the short term poverty itself, education, and PFU have a significant influence on the poverty of the provinces in Indonesia. In the long term, the estimation results show that Education, PFU, DAU, and Population have a significant effect on Poverty. The advantage of the results from this VECM panel is that it can predict in the long term through the trend of these variables in the future Variance Decomposition (VD) and Impulse Response Function (IRF) shock effects.

**KEYWORDS:** Regional Expenditure, Dynamic Panel, Balance Fund, Poverty, Variance Decomposition.

JEL C53, E17, E62, H50

### A. BACKGROUND

Indonesia is a country that has the 4th largest population in the world, where from the large population it has complex problems, one of which is poverty. Poverty does not only occur in developing countries such as Indonesia but developed countries also experience poverty problems, but what distinguishes the two is the high poverty that occurs in developing countries compared to developed countries, it cannot be denied that poverty is like a tangled thread of problems that cannot be avoided. has an end in every country.

The World Conference (World Summit for Social Development) in March 1995, explained in broad and detailed the definition of poverty, in which poverty has various forms, which include low levels of income and productive resources that ensure a sustainable life; hunger and malnutrition; low level of health; limited and lack of access to education and other basic services; unnatural conditions and death due to disease that continues to increase; homeless life and inadequate housing; unsafe environment; and discrimination and social alienation. Poverty is also characterized by low levels of participation in decision-making processes and in civic life (Suyanto, 1995).

Consciously or not, poverty occurs because of the nature of individuals who are unwilling or unable to come to a structured effort that is intentional. Whereas in the Al-Qur'an itself explains the prohibition of behavior causing poverty in Surah Al-Muddassir verses 42-44 which means: "What caused you to enter (hell) Saqar?" (42) They replied, "We used to not including those who pray,(43) and we (also) do not feed the poor,(44).

Often greed in property directly or indirectly causes poverty itself, because in the property owned there are other people's rights. In the Qur'an has explained how to eliminate poverty by giving some of the property owned to the poor. In line with the Qur'an, the main goal of the economy is clearly to eliminate poverty, but the side that is focused on the economy is as stated by (Ames et al. 2001) that economic growth has a very influential role in poverty, but eliminates it. This is too idealistic so that what developed countries do is more to suppress poverty at a safe point, Indonesia is no exception (Todaro, 2000).

### B. LITERATURE REVIEW

This study (Mehmood & Sadiq, 2010) examines the long-term and short-term relationship of the fiscal deficit in Pakistan, which is the result of high government spending above the level of tax revenue collection, and poverty. The results reveal a negative

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relationship between government spending and poverty based on time series data from 1976 to 2010. Short-term and long-term relationships between poverty and other variables were identified by the ECM model and the Johnson Cointegration test, respectively. The results show that there is a short-term and long-term relationship between poverty and government spending.

Research (Birowo, 2011) Researchers use spending growth as a proxy variable, overall government spending does not have a negative relationship with poverty levels. The study showed the opposite results with previous studies. It is possible that the opposite result will come as the growth in government spending is studied rather than the actual amount of government spending. Based on the reclassification of the expenditure sector, from 9 functions, government spending on the functions of public services and order and security shows a significant negative relationship with the poverty level. Expenditure on education is the only expenditure that has a stable negative relationship with the poverty level. Population growth and economic growth are control variables that have a strong negative relationship with the poverty level because the relationship between the two is always significant.

Research (Imal, 2012) This research uses DAU as variable X and Poverty as variable Y, which the results are not significant in reducing poverty. This result is evidenced by only 3.9% of the change. This means that the decrease or increase in DAU is not significant for poverty. In addition, only about 6.2 percent of the effect of DAU on poverty, and the rest is influenced by other variables.

Research (Anwar, 2018) Research Another thing that can be explained from the output results is the contribution of the physical sector and the role of the government, namely physical investment in population growth, and government spending which has no statistically significant value. This illustrates that the contribution of the physical sector is not too dominant for better economic growth, but the contribution of the non-physical sector such as human capital will provide better value. On the other hand, the government's role through development funding tends not to be able to contribute. The tendency for government activities to use funds allocated for routine activities is one thing that has happened, the government should be able to support economic growth with sector-oriented allocations of funds that have implications for economic development.

Research (Sala, 2014) Research The results of the added growth equation including the poverty indicator show a negative and statistically significant effect of poverty on growth. This result implies that countries with high poverty rates will experience lower growth compared to those with lower poverty rates. However, the results are showing that poverty inhibits or reduces growth but does not fully offset economic development.

In the second part of the analysis this study attempts to identify the transmission channel of this effect. For this reason, the previously discussed candidates (education, health, credit market and infrastructure) are regressed against poverty indicators using an instrumental variable approach. Research has found that education, health and infrastructure are negatively impacted by poverty. To test whether this effect is further transmitted to economic growth, this study estimates the same growth equation and incorporates these variables into the regression. As expected, the coefficient on the poverty indicator loses its significance.

Research (Omodero, 2019) This study uses the ordinary least squares technique and the regression results show that government spending on agriculture, building and construction, education and health does not have a significant impact on poverty alleviation in Nigeria. Therefore, this study concludes that government spending on these key economic sectors is insufficient and recommends that more funds be budgeted to encourage these sectors to eradicate the specter of poverty in the country.

Research (Sasana & Kusuma, 2018) The results of the study found that economic growth had a positive effect on poverty in Indonesia. Meanwhile, government spending, per capita income, labor force participation and negatively affect poverty in Indonesia. Based on the conclusions above, there are many suggestions: First, the contribution of quality economic growth should be encouraged through the production sector, for example by building road infrastructure. Second, higher governance results in a decline in the level of poverty that continues to increase. The allocation of government spending must be carried out on a pro-poor principle, so that public access to facilities can be felt by the poor, such as schools, health, and sanitation. The third provision of labor-intensive employment can absorb the poor due to not having a job. In addition, it shows the increasing role of the Government in helping the poor through microfinance. This is because the majority of the poor have skills in the informal labor sector.

Research (Mahembe & Odhiambo, 2020) This study investigates the causal relationship between foreign aid and poverty reduction in 82 developing countries during the period 1981-2013. The study used Pedroni's (2004) panel cointegration and Granger dynamic VECM causality test in a trivariate setting with real GDP per capita as the intermittent variable. The main finding of Granger's VECM panel of causality analysis is that in the short term, there is evidence of a) a two-way causal relationship between GDP per capita and the poverty level of employment; b) causal unidirectional relationship of GDP per capita with foreign aid; and c) unidirectional causality of poverty rates for foreign aid.

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In the long term, the study finds that (i) foreign aid tends to converge on a long-run equilibrium path in response to changes in GDP per capita, and employment poverty and (ii) both GDP per capita and poverty rate together Granger causes foreign aid in the long term. There is no evidence of a long-term relationship or causality when poverty rates and GDP per capita are dependent variables. Finally, the study finds a strong combined causal flow of poverty rates and GDP per capita for foreign aid. Lack of long-term relationship between poverty rate and foreign aid, when changes in poverty rate as the dependent variable indicate that foreign aid is not a long-term solution to poverty

Research (Elia et al., 2020) Research shows the relationship between variables. The results show that poverty has a significant effect on government spending in eight new districts in Central Kalimantan Province. Poverty also has an impact on government spending through the provision of employment and Gross Regional Domestic Product (GDP). The local government is expected to be able to manage regional finances more effectively, which focuses on people's economic activities. The policy also opens up investment opportunities to increase economic activity and create jobs based on regional superior products such as the agricultural, plantation and mining sectors. Investment can increase employment and indirectly reduce poverty.

Firmani and Aif (2020) research shows that economic globalization has a significant positive relationship to poverty in seven OIC member countries. Meanwhile, the human development index has a significant negative effect on poverty in the seven OIC member countries. The population has no significant effect on poverty in the seven OIC member countries. This is because the vulnerable time used is not so long. While the population affects the level of poverty in the long term. To overcome the problem of poverty in the OIC countries, the most important thing to emphasize is improving the quality of human resources. Through quality human resources, poverty in the OIC country will be overcome. For this reason, this needs to be the focus of government attention. Some of these things are in line with the results of research where only the human development index is in accordance with the hypothesis

### C. RESEARCH METHOD

The analysis model in this study is a qualitative method with the use of dynamic panel regression analysis. In this case, the use of this model combines the vector autoregressive model (VAR) and the vector error correction (VEC) model. The VAR model was used to explore the dynamic impact of random disturbances on a system of variables and the strength of their impact on each effect (Tang et al., 2021). The use of this model not only simulates the relationship and interrelationships between ecological variables, but also measures the effect of response time lags among many concurrent variables. The purpose of this research is clear from the outset to know the effect of Gross Regional Domestic Product, Regional Expenditures, Population, and General Allocation Funds on poverty in the provinces of Indonesia. So that it forms an equation model, matrix, and research stages as follows.

Table 1

VECM Panel Model Matrix

$$\begin{pmatrix} \Delta POV \\ \Delta PDRB \\ \Delta POP \\ \Delta DAU \\ \Delta PEND \\ \Delta KESE \\ \Delta PFU \\ \Delta BPERU \end{pmatrix} = \begin{pmatrix} \beta 1.1 \\ \beta 1.2 \\ \beta 1.3 \\ \beta 1.4 \\ \beta 1.5 \\ \beta 1.6 \\ \beta 1.7 \\ \vdots \end{pmatrix} Ecm(-1) + \begin{pmatrix} \beta 2.1 & \beta 3.1 & \beta 4.1 & \beta 5.1 & \beta 6.1 & \beta 7.1 & \beta 9.1 \\ \beta 2.2 & \beta 3.2 & \beta 4.2 & \beta 5.2 & \beta 6.2 & \beta 7.2 & \beta 9.2 \\ \beta 2.3 & \beta 3.3 & \beta 4.3 & \beta 5.3 & \beta 6.3 & \beta 8.3 & \beta 9.3 \\ \beta 2.4 & \beta 3.4 & \beta 4.4 & \beta 5.4 & \beta 6.4 & \beta 8.4 & \beta 9.4 \\ \beta 2.5 & \beta 3.5 & \beta 4.5 & \beta 5.5 & \beta 6.5 & \beta 8.5 & \beta 9.5 \\ \beta 2.6 & \beta 3.6 & \beta 4.6 & \beta 5.6 & \beta 6.6 & \beta 8.6 & \beta 9.6 \\ \beta 2.7 & \beta 3.7 & \beta 4.7 & \beta 5.7 & \beta 6.7 & \beta 8.7 & \beta 9.7 \end{pmatrix} X \begin{pmatrix} \Delta POV(-1) \\ \Delta PDRB(-1) \\ \Delta POP(-1) \\ \Delta DAU(-1) \\ \Delta PEND(-1) \\ \Delta KESE(-1) \\ \Delta PFU(-1) \\ \Delta PS(-1) \end{pmatrix} + \begin{pmatrix} \beta 3.1 & \beta 4.1 & \beta 5.1 & \beta 6.1 & \beta 7.1 & \beta 9.1 & \beta 10.1 \\ \beta 3.2 & \beta 4.2 & \beta 5.2 & \beta 6.2 & \beta 7.2 & \beta 9.2 & \beta 10.2 \\ \beta 3.3 & \beta 4.3 & \beta 5.3 & \beta 6.3 & \beta 8.3 & \beta 9.3 & \beta 10.3 \\ \beta 3.4 & \beta 4.4 & \beta 5.4 & \beta 6.4 & \beta 8.4 & \beta 9.4 & \beta 10.4 \\ \beta 3.5 & \beta 4.5 & \beta 5.5 & \beta 6.5 & \beta 8.5 & \beta 9.5 & \beta 10.5 \\ \beta 3.6 & \beta 4.6 & \beta 5.6 & \beta 6.6 & \beta 8.6 & \beta 9.6 & \beta 10.6 \\ \beta 3.7 & \beta 4.7 & \beta 5.7 & \beta 6.7 & \beta 8.7 & \beta 9.7 & \beta 10.7 \end{pmatrix} X \begin{pmatrix} \Delta POV(-2) \\ \Delta PDRB(-2) \\ \Delta POP(-2) \\ \Delta DAU(-2) \\ \Delta PEND(-2) \\ \Delta KESE(-2) \\ \Delta PFU(-2) \\ \Delta PS(-2) \end{pmatrix}$$

The VECM model above aims to explain the dynamic connection between poverty variables on regional spending (education, health, social protection, as well as housing and public facilities), general allocation funds (DAU), economic growth using (GRDP), and population. The eight variables are treated by the system as a function of the lag value of the endogenous variables in. The next stage, the endogenous variables that will be used in the VECM Panel equation system in this study are formulated as follows.

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$$Y_t = [\Delta POV, PEND, KESE, PFU, PS, PDRB, DAU, POP]^{-1} \dots \dots \dots (1)$$

Description:

- $POV_{it}$  = Number of Poor People
- $\beta_2 P_{end}_{it}$  = Regional Expenditure on Education
- $\beta_3 K_{ese}_{it}$  = Expenditure on Health
- $\beta_4 P_{S}_{it}$  = Expenditure for Social Protection
- $\beta_5 P_{FU}_{it}$  = Expenditure for Housing and Public Facilities
- $\beta_6 P_{DRB}_{it}$  = Gross Regional Domestic Product
- $\beta_7 D_{AU}_{it}$  = General Allocation Fund
- $\beta_8 P_{opu}_{it}$  = Population

$$POV_{it} = \beta_0 + \beta_1 Y_{i,t-1} + \beta_2 P_{end}_{it} + \beta_3 K_{ese}_{it} + \beta_4 P_{FU}_{it} + \beta_5 P_{S}_{it} + \beta_6 P_{DRB}_{it} + \beta_7 D_{AU}_{it} + \beta_8 P_{opu}_{it} + v_i + \tau_t \epsilon_{it} \dots \dots \dots (2)$$

Based on the above function (Gujarati, 2008), the variables used as independent in this study are regional expenditures for educators, health, social protection, housing and public facilities, GRDP or regional economic growth, general allocation funds, and population. The use of dynamic panel regression model uses the dependent variable lag as a regressor.

### D. RESULTS AND DISCUSSION

#### 1. Unit Root Test

The first step in the VECM test is to ensure that the data is in a stationary state, where stationary data will produce data that has a visible pattern or it can be said that there is an average value and there is no extreme fluctuation in the variance. In the unit root test (Greene, 2003: 636), there are many methods in the test, such as Augmented Dicky Fuller (ADF), Philip Peron (PP) and Levin, Lin & Chu t\*. But usually in general people use ADF for unit root test testing. The level used in this study is = 5%, if the value of ADF, PP and Levin, Lin & Chu t\*. In testing a variable smaller than the MacKinnon critical value, it can be said that the data is stationary or does not have a unit root in it. Testing is carried out from level to first difference (Basuki, 2017). The hypothesis in this test is as follows:

**Table 2. Stationary Test Results on 1st Difference Data with Levin's Method, Lin & Chu t\* and AD**

Metode Levin, Lin & Chu t*				Metode ADF		
Variable	Prob	Statistic	Conclusion	Prob	Statistic	Conclusion
Pov	0.0000	-18.412	Stasioner	0.0000	350.766	Stasioner
PDRB	0.0000	-6.038	Stasioner	0.0001	116.195	Stasioner
Pend	0.0000	-19.799	Stasioner	0.0000	393.935	Stasioner
Kese	0.0000	-7.205	Stasioner	0.0000	125.863	Stasioner
PFU	0.0000	-19.604	Stasioner	0.0000	349.407	Stasioner
PS	0.0000	-17.114	Stasioner	0.0000	315.071	Stasioner
DAU	0.0000	-18.408	Stasioner	0.0000	260.080	Stasioner
Pop	0.0000	-8.459	Stasioner	0.0000	127.268	Stasioner

Source: Results of data processing (2022)

Furthermore, it can be seen in Table 2 above in the 1st Difference, the variables of poverty, regional expenditures (Education, Health, Housing and Public Facilities, and Social Protection), General Allocation Funds, and Population using all methods are free from the unit root or all variables have been stationary at the 1st Difference level, based on a p-value (probability) of less than 5%. Because all variables have passed the unit root at the first difference level, it can be continued in the VECM estimation stage, namely the Lag Length Criteria or Determination of Lag Length.

#### 2. Lag Length Criteria

After testing the unit root test, the next test is to find out the optimal lag in the model or what is called the Lag Length Criteria. This lag test is carried out to find the most optimum lag, which is the search for lag to reduce the occurrence of autocorrelation in the VAR model. To find the optimum lag in the VAR model, we need recommendations from standards

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such as likelihood ratio (LR) Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quin (HQ). The value of each of these standards can be seen in the test results in the following table.

**Table 3. VAR Lag Length Test**

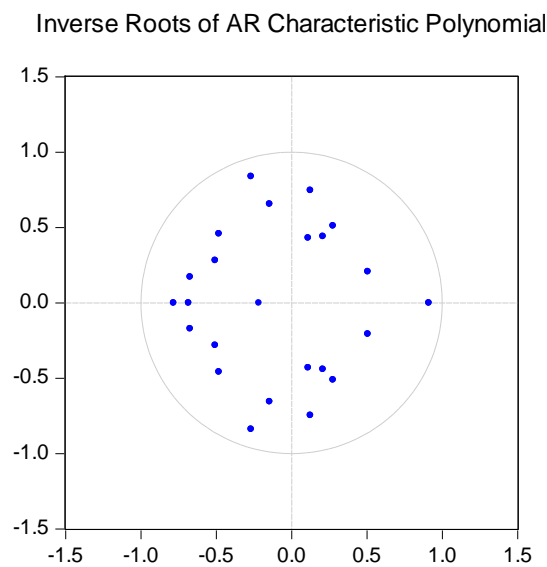
Lag	LogL	LR	FPE	AIC	SC	HQ
0	686.20	NA	3.24e-13	-6.06	-5.93*	-6.01
1	855.41	324.80	1.27e-13	-6.99	-5.89	-6.55*
2	941.79	159.66	1.04e-13	-7.19	-5.12	-6.36
3	1036.48	168.23*	7.94e-14*	-7.47*	-4.42	-6.24

**Source:** Results of data processing (2022)

Optimum lag in the model is lag 3, where the determinant sees the most asterisks (\*) and asterisks (Basuki and Prawoto, 2015). In standards such as AIC, SC, and HQ, the selection is done by looking at the smallest number whose value is -7.468573 in lag 3, the rest is -5.933541 lag 1, and -6.552055 lag 2, while in FPE it is seen from the largest number, namely 7.94e-14 and LR is selected. but the value is determined by the presence of a star in the optimal lag position. So that the most optimal lag on the existing model is 3.

### 3. Test the VAR Stability Model

The VAR stability test can be seen in Figure 1 Inverse Roots of AR Characteristic Polynomial and the results of the image show that there are no points that come out of the circle or touch the circle, this can mean that the VAR model has stabilized at Lag 3 and testing for the VECM model can be followed up.



**Figure 1 VAR Stability Test Results**

### 4. Cointegration Test

The Engle-Granger cointegration test (Enders & Siklos, 2001). is based on a false regression residual assessment using the I (1) variable. If the variables are grouped then the residue must be I (0). On the other hand, if the variables are not grouped then the residue will be I (1). Pedroni (Neal, 2014). and Kao (1999) extend the Engle-Granger framework to test cointegration by involving panel data. The Kao test follows the same basic approach as the Pedroni test, but determines a cross-section with specific intercepts and homogeneous coefficients on the first-stage regressor.

Cointegration testing is a test to see whether the model experiences stability in the long term and is also tested to see if there is movement and stability of each relationship between variables. Before carrying out the Johansen cointegration test, one must first see which assumptions are more appropriate in the model, and the assumption test results in the following:

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**Table 4. Determining the Assumptions of the Cointegrity Test**

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	8	7	8	6	8
Max-Eig	8	7	8	6	6

*\*Critical values based on MacKinnon-Haug-Michelis (1999)*

*Selected (0.05 level\*) Number of Cointegrating Relations by Model*

The determination of the assumption of the integrity test in which there are 5 assumptions from the table above produces the right assumptions for the model, namely assumption 3, in this case the most traces are found in assumptions 1 and 3 and the Max-Eignya are in 1 and 3, but in the use of research data the recommendations are in assumptions 3 and 4. This is because assumptions 1 and 2 are non-linear regression which makes assumptions 1 and 2 unsuitable for use in the model, therefore assumption 3 is an appropriate cointegrity equation and there is an intercept but without a trend. Further testing is carried out to see if there is a rank variable in the model and the results of the cointegrity test are as follows:

**Table 5. Johansen Cointegration Test Results**

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.504839	613.6162	159.5297	0.0000
At most 1 *	0.454172	478.6648	125.6154	0.0001
At most 2 *	0.415483	362.4180	95.75366	0.0000
At most 3 *	0.386956	259.3197	69.81889	0.0000
At most 4 *	0.323322	165.3705	47.85613	0.0000
At most 5 *	0.303941	90.38309	29.79707	0.0000
At most 6 *	0.071676	20.81750	15.49471	0.0072
At most 7 *	0.033477	6.537607	3.841466	0.0106

Source: Results of data processing (2022)

The results of the cointegrity test in Table 5 above show that there are 8 vectors whose values in Trace are below the critical value of 0.05, in this case it can be interpreted that poverty, Regional Expenditures (Education, Health, Housing and Public Facilities, and Social Protection), General Allocation Fund, and Population have balance and cointegration or long term influence. Furthermore, Granger Causality testing can be done to see the influence between variables.

### 5. Panel Vector Error Correction Model Estimation

If the variable has passed stages such as stationary on the 1st Difference, determination of the optimum lag, stability of the VAR model, and cointegration testing, then the next step can be vector error correction regression modeling or called the VECM Panel. The use of logarithms in the VECM model is not recommended, because it causes the cointegrity test to not be fulfilled. The condition for the fulfillment of the VECM panel is that there is co-integrity in the variables, so that all tests use no logs. The results of the VECM panel regression are shown in Table 6 and Table 7.

**Table 6. Short-Term VECM Panel Regression Output**

Variable	Description	Coefficient	t-Statistic
ContEq1	Short Term and Long Term Relationship	-0.001083	<b>-1.9335*</b>
POV(-1)	Changes in the Number of Poor People Last Year	-0.307298	<b>-4.3283***</b>
POV(-2)	Changes in the Number of Poor People 2 Years Ago	-0.075988	-1.1422
PDRB(-1)	Last Year's GDP Change	-0.009977	-0.0618
PDRB(-2)	Changes in GDP 2 Years Ago	0.092914	0.5274



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Variable	Description	Coefficient	t-Statistic
PEND(-1)	Changes in Education Spending Last Year	-0.019141	<b>-2.3098**</b>
PEND(-2)	Changes in Education Spending 2 Years Ago	0.000315	0.0429
KESE(-1)	Changes in Health Spending Last Year	0.003452	0.1727
KESE(-2)	Changes in Health Expenditure 2 Years Ago	0.003321	0.1602
PFU(-1)	Changes in Housing and Public Facilities Spending Last Year	-0.005729	-0.6534
PFU(-2)	Changes in Housing and Public Facilities Last Year	0.023158	<b>2.2628**</b>
PS(-1)	Changes in Last Year's Social Protection Expenditure	0.017878	1.4517
PS(-2)	Changes in Social Protection Spending 2 Years Ago	-0.003432	-0.2762
DAU(-1)	Last Year's DAU Change	-0.001273	-0.0823
DAU(-2)	DAU Change 2 Years Ago	0.002316	0.1825
POP(-1)	Last Year's Population Change	-0.150428	-0.5751
POP(-1)	Changes in Population 2 Years Ago	0.377171	1.3756
C	constant	-0.011900	-0.8258

**Source:** Results of data processing (2022)

Description : [ ] t count \*\*\* significant 1% \*\* significant 5% \* significant 10%

To look at the short term, the poor population (POV change) is negatively affected (-) by last year's change in poverty (POVt-1), education spending last year. Meanwhile, in the short term, the only positive (+) impact was on housing and public facilities spending 2 years ago. In addition to looking at the effect of the independent variable on the dependent variable, there is a conjecture on the error correction parameter which is significant and provides evidence of an alignment mechanism in the short and long term. And the value of the alignment is -0.001083 percent.

The coefficient value of the change in the poor population last year (POVt-1) was -0.307298 in the short term, and from this coefficient it means that when there was an increase of 1 percent in the poor last year, the poor experienced a decrease of -0.307 percent in the poor in 2013. this in the short term. The poverty variable 1 year ago experienced a significant impact on the current year's poverty with a probability value of 0.0000 or can be stated below the 1%, 5, and 10% confidence levels, so that H0 is rejected and H1 is accepted because it is smaller than alpha.

Another negative variable is education last year (PENDt-1) with a coefficient of -0.01914, meaning that if there was a 1 percent increase in education last year, there was a decrease in poverty this year by 0.019 percent in the short term. Last year's education variable experienced a significant impact on poverty this year with a probability value of 0.0210 or included in the 5% and 10% significance, so that the H0 was rejected and the H1 was accepted because it was smaller than alpha.

Not all existing variables have a negative effect on poverty, there is 1 variable that has a positive effect, namely Housing and Public Facilities 2 years ago (PFU2) with a coefficient value of 0.023158, meaning that if housing and public facilities 2 years ago experienced an increase of 1 percent, then poverty this year will increase by 0.0231 percent in the short term. The variable housing and public facilities 2 years ago experienced a significant impact on poverty this year with a probability value of 0.0238 or included in the significance of 5% and 10%, so that H0 is rejected and H1 is accepted because it is smaller than alpha.

**Table 7 . VECM Panel Estimated Output in the Long Run**

Variable	Description	Coefisien	T-Statistic
POV(-1)	Last Year's Poor	1.000000	
PDRB(-1)	Last Year's Gross Regional Domestic Product	0.441070	0.35151
PEND(-1)	Last Year's Government Education Expenditure	-12.23635	<b>-14.6149**</b>
KESE(-1)	Last Year's Government Health Expenditure	1.334485	1.37176*
PFU(-1)	Government Housing and Public Facilities Spending Last Year	3.572827	<b>3.52813**</b>

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PS(-1)	Last Year's Government Social Protection Expenditure	-1.288860	-0.98913
DAU(-1)	Last Year's General Allocation Fund	4.363636	4.43529**
POP(-1)	Last Year's Population	5.507723	4.47066**
C	constant	5.121223	

Source: Results of data processing (2022)

Description : [ ] t count \*\*\* significant 1% \*\* significant 5% \* significant 10%

The results of the long-term VECM Panel listed above, there are 4 variables that have significance at the level of =5%. To see which variables passed the significance by comparing the t-table with t-count, in this case the t-table was found with a magnitude of 1.648 (df = n-1 with a significant 5% / df = 352 -2 is 350 (df = 350)). The variables are Education last year (PEND(-1)), Housing and Public Facilities last year (PFU(-1)), General Allocation Fund last year (DAU(-1)), and Population last year (POP(-1)) and the rest has no effect because the significance is greater than significant 5% or the t-count is smaller than the t-table.

The first significant variable at the 5% confidence level in the long term is Education last year, where the coefficient value is -12,236. This value means that if there was a 1 percent increase in government education spending last year, poverty would decrease by 12.23 percent. This is in line with the research carried out previously by (Mehmood and Sadiq, 2010), there is a negative and significant relationship between government education spending and poverty in the long term. The opposite will happen if local governments reduce government spending on education, a 1 percent reduction in local government spending results in an increase in the poor by 12,236 percent. The important thing from this finding is that the importance of government spending in the education sector is the key to poverty alleviation, it can confidently be said that government spending on the education sector has an impact on poverty reduction, besides the problem of increasing local government spending has a negative side if it is not accompanied by an increase productivity in the education sector.

The second variable that passes the 5% confidence level in the long term is Housing and Public Facilities last year, the coefficient is 3.572827. This means that when there is an increase in the PFU of 1 percent, poverty will increase by 3.57 percent. In this case it can be interpreted that the increase in local government spending in the housing and public facilities sector triggers an increase in the poor population, on the other hand a reduction in PFU spending will reduce the poor.

The third variable that passes in the long term is the General Allocation Fund, the magnitude of the DAU coefficient is 4.363636. This means that if there is a 1 percent increase in the DAU, the poor will increase by 4.36 percent. On the other hand, a 1 percent reduction in the DAU will have the effect of reducing the number of poor people.

The fourth variable that passes the 5% confidence level in the long term is the Population (POP) last year, the magnitude of the POP coefficient itself is 5.507723. This means that POP increases by 1 percent, then the poor will increase by 5.5 percent. The opposite is the same if there is a decrease of 1 percent in last year's POP, then the poor will decrease by 5.5%. If we refer to the theory, this is supported by the theory presented by previous researchers, in which an increase in population results in an increase in the number of poor people.

### 6. Variance Decomposition

Decomposition variance prediction is a prominent tool in interpreting linear and non-linear multivariate time series models along with impulse responses (Lanne and Nyberg 2014). Decomposition variation aims to estimate the contribution of each variable due to changes in the system. Forecast Errors Variant Decomposition has a function as a forecast of independent variables in influencing the composition of the dependent in the future, the model is interpreted through a linear and non-linear multivariate time series with response impulses. (Basuki and Yusuf, 2018). The independent variables put themselves into the dependent variable for changes and their effects in the future. Following are the results of the decomposition of the poor population by other variables.

Table 8. Variance Decomposition Result

Variance Decomposition of POV:									
Period	S.E.	POV	PDRB	PEND	KESE	PFU	PS	DAU	POP
1	0.063	100.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.077	98.675	0.022	0.048	0.047	0.295	0.581	0.031	0.301
3	0.090	96.326	0.469	0.287	0.038	1.010	0.435	0.055	1.379
4	0.101	96.601	0.381	0.341	0.037	0.846	0.441	0.048	1.305



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5	0.111	96.560	0.362	0.414	0.168	0.807	0.515	0.041	1.132
6	0.120	96.629	0.380	0.422	0.146	0.720	0.462	0.045	1.196
7	0.128	96.644	0.358	0.500	0.132	0.645	0.432	0.056	1.232
8	0.136	96.734	0.333	0.543	0.142	0.576	0.453	0.054	1.166
9	0.144	96.762	0.343	0.573	0.133	0.518	0.440	0.054	1.177
10	0.151	96.795	0.331	0.604	0.124	0.474	0.424	0.057	1.191

Source: Results of data processing (2022)

It can be seen from Table 8, that in the first period, the variability of the poor population has a shock effect on itself of 100 percent. While the variables of local government spending (education, health, housing and public facilities), GRDP, General Allocation Fund, and Population do not have shocks to affect the variable of the poor population. The second period that occurred was that the poor had a shock themselves to 98.6 percent, then their influence decreased until in the 10th period the amount reached 96.7 percent. Although the shocks are getting smaller, the proportion of the shocks is still quite large and even other variables have not been able to reduce more than 5 percent.

In the first period, the GRDP variable does not have shocks for the poor. However, it was only seen in the second period, where the shock effect was quite small at 0.0217 percent, then in the third to tenth periods the impact of the shock was no more than 1 percent and the shock carried out by GRDP in the third period was 0.47 percent.

The third variable is Education, the same thing happened in the first period without any influence, the shock effect began to have an effect in the second period with a magnitude of 0.048 percent. The effect of education shocks until period ten did not reach 1 percent, but what distinguishes it from GRDP is that its value continues to increase from each period, and seeing the pattern of IRF education continues to increase in influencing the poor in the future.

The fourth variable is Health, the effect in the first period is still non-existent, the effect of shocks begins in the second period with a magnitude of 0.047. The biggest health shock to the poor occurred in the fifth period with a magnitude of 0.168. Overall, the health shocks provided to the poor have not yet reached 1 percent.

The fifth variable is the Housing and Public Facilities variable, where the influence begins to occur in the second period of 0.29 percent. The third period was the peak for PFU in shaking up the poor, with a rate of 1 percent. In the period 4 to 10, the PFU still gave shocks to the poor, but its value decreased each period.

The sixth variable is the Social Protection variable, which begins its shocking effect in the second period with a magnitude of 0.58 percent and makes the biggest shock by the Social Protection variable for 10 periods. Even so, the Social Protection shock has not been able to reach 1 percent to affect the poor until the tenth period.

The seventh variable is the General Allocation Fund, the period of the shock effect starting in the second period with a magnitude of 0.031. The shock of the influence of the DAU itself has an upward pattern and every year the shock gets bigger, the biggest shock in period 10 with a magnitude of 0.57 percent.

The last variable is Population, in which the population has the greatest impact on the poor, in the second period 0.3 percent. After that, the biggest shock in 10 periods was in the third period with a magnitude of 1.38 percent. The pattern of population shocks is at 1 percent

### E. CONCLUSION

The GRDP variable is not significant but has a negative effect on the poor in the short term, and the same thing is not significant in the long term. Theoretically, the relationship between GRDP and the poor is negative, but this study has not been able to read the real effect of GRDP on poverty alleviation, because the GRDP variable in the study is not significant.

The Local Government Expenditure Variable Education Function has a negative and significant effect on the poor in the short term. In the long term, education also has a negative and significant effect, because in theory education spending can reduce the poor, therefore this study is in line with theory. In fact, education is one of the key sectors to reduce poverty, where better education will increase human quality and reduce the number of poor people.

The variable of local government expenditure on the Health function has a positive and insignificant effect in the short term and the long term has a positive and insignificant effect. This is not in accordance with previous research which stated that health was significant and had a negative effect. Health spending in this study has not been able to read its effect on the poor, possibly due to cross-sectional and time-series data, whose research time is short enough to see the effect dynamically and in real terms.

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The variable of local government spending on Housing and Public Facilities has a positive and significant effect in the short term, in the long term it has a positive and significant effect. This means that if the increase in PFU spending will increase the poor. The PFU in this study had the opposite result with the previous study, in which the PFU had an impact on reducing the poor and had a negative effect.

The variable of local government spending on the Social Protection function had a positive effect last year and negative in the last 2 years, but still not significant in the short term. In the long term, the PS is not significant and the effect is negative, meaning that an increase in social protection spending will reduce the number of poor people. In terms of long-term and short-term effects are negative, this is the same as other studies that social protection has a negative and significant effect. Social protection is the key to poverty reduction because this sector deals directly with the poor.

The General Allocation Fund variable has a negative effect in the last year and positive in the past 2 years, but the DAU is not significant at all for the poor. In the long term, the DAU is significant for the poor and has a positive effect, in which an increase in the DAU will cause the poor to increase. In previous studies, DAU had a negative and significant effect, and this was in contrast to this study, which had a significant and positive effect.

The population variable in the short term was not significant 1 year ago and 2 years ago, while the effect last year was negative and 2 years ago positive. For the long term population has a positive and significant effect, meaning that an increase in population will lead to an increase in the poor. In theory, population has a positive and significant influence on the poor, because an increase in population will affect an increase in the poor.

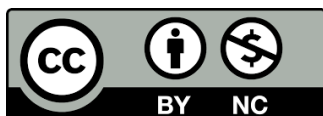
Looking at the results of the analysis and conclusions above, it can be drawn a red line from the findings of this study as follows: First, increasing education spending is the key to reducing poverty, but the government must provide it fairly and equitably to regions that are primarily underdeveloped. In the 1945 constitution, it is written that the central and regional governments are obliged to budget and allocate education costs of at least 20% of the APBN and 10% of the APBD to provide education services to all the people. Education spending is not optimal so far because the highest allocation is on employee salaries and there are still quite a number of regions whose budgets are still below 20%. Equitable distribution of education is the main focus for improving education, with this it is hoped that it will improve the quality of education so that it can directly or indirectly reduce poverty. Second, spending on housing and public facilities has an impact on increasing poverty rates, the government should reduce spending on housing and public facilities to reduce poverty. This is influenced by the government's large expansion in infrastructure spending, but current government spending is more for the upper middle class. The government should provide a larger portion

## BIBLIOGRAPHY

- 1) Ames, B., Brown, W., Devarajan, S., & Izquierdo, A. (2001). Macroeconomic policy and poverty reduction.
- 2) Anwar, A. (2018). *Pendidikan, Kesehatan dan pertumbuhan ekonomi regional di Indonesia: Pendekatan model panel dinamis*. 19(April). <https://doi.org/10.18196/jesp.19.1.2727>
- 3) Basuki, A. T. (2017). *Analisis Data Panel Penelitian*.
- 4) Basuki, A. T., & Prawoto, N. (2015). Analisis Regresi dalam Penelitian Ekonomi dan Bisnis. *Depok: PT Rajagrafindo Persada*, 1–239.
- 5) Basuki, A. T., & Yusuf, A. I. (2018). Pengaruh Variabel Ekonomi Makro Dan Indeks Harga Saham Dunia Terhadap Jakarta Islamic Index. *Buletin Ekonomi*, 16(1), 81-98.
- 6) Birowo, T. (2011). *Relation Between Government Comparison of Budget Classifications Before and After Budget Management Reform in 2004 By Tejo Birowo GRADUATE SCHOOL OF ASIA PACIFIC STUDIES*.
- 7) Elia, A., Tiawon, H., & Indrajaya, K. (2020). *Government expenditure and poverty reduction in the proliferation of new administrative areas of Central Kalimantan, Indonesia*. 3(2), 145–155.
- 8) Enders, W., & Siklos, P. L. (2001). Cointegration and threshold adjustment. *Journal of Business & Economic Statistics*, 19(2), 166-176.
- 9) Firman, I., & Aif, M. T. (2021). Jurnal Ekonomi dan Bisnis. *Jurnal Ekonomi dan Bisnis*, 24 (Poverty), 8–16.
- 10) Greene, W. H. (2003). *Econometric analysis*. Pearson Education India.
- 11) Gujarati. (2008). *Mh09 Gujarati BasicEco5wm*.
- 12) Imal, I. (2012). *Dampak dana alokasi umum (dau) terhadap kemiskinan di kota tangerang*. 1(1).
- 13) Kao, C. (1999). Spurious regression and residual-based tests for cointegration in panel data. *Journal of econometrics*, 90(1), 1-44.
- 14) Lanne, M., & Nyberg, H. (2014). *Generalized forecast error variance decomposition for linear and nonlinear multivariate models*. School of Economics and Management.

## Analysis of the Impact Regional Expenditures on Poverty in Indonesia

- 15) Mahembe, E., & Odhiambo, N. M. (2020). *Development aid and its impact on poverty reduction in developing countries A dynamic panel data approach*. 19(2), 145–168. <https://doi.org/10.1108/IJDI-08-2019-0144>
- 16) Mehmood, R., & Sadiq, S. (2010). [www.econstor.eu](http://www.econstor.eu).
- 17) Neal, T. (2014). Panel cointegration analysis with xtpedroni. *The Stata Journal*, 14(3), 684-692.
- 18) Omodero, C. O. (2019). *Government Sectoral Expenditure and Poverty Alleviation in Nigeria Government Sectoral Expenditure and Poverty Alleviation in Nigeria*. June. <https://doi.org/10.5430/rwe.v10n1p80>
- 19) Sala, L. K. (2014). *Is poverty an obstacle for economic growth ? A dynamic panel data approach*. June 2014.
- 20) Sasana, H., & Kusuma, P. (2018). *Government Expenditure and Poverty in Indonesia*. 2018(2009), 142–153. <https://doi.org/10.18502/kss.v3i10.3125>
- 21) Suyanto, B. (1995). *Perangkap Kemiskinan (Problem dan Pengentasannya)*. Universitas Airlangga Press.
- 22) Tang, W., Liu, S., Kang, P., Peng, X., Li, Y., Guo, R., Jia, J., Liu, M., & Zhu, L. (2021). Quantifying the lagged effects of climate factors on vegetation growth in 32 major cities of China. *Ecological Indicators*, 132(October), 108290. <https://doi.org/10.1016/j.ecolind.2021.108290>
- 23) Todaro, M.P. (2000). *Economic Development*, New York, Addition Wesley Longman.



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