

## THE EFFECTIVENESS OF HEALTH BUDGET IN REDUCING POVERTY: EVIDENCE IN INDONESIA

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### **Abstract**

The purpose of this study is to analyze the effectiveness of health expenditures in reducing poverty in Indonesia. The data used was panel data from three specific autonomous regions: Aceh, Papua, and West Papua, data from 2006-2017. The method of analysis used in the study was the ARDL Panel model. The results of the study show that in the short term, health expenditures do not affect poverty in the autonomous regions. The results from each region showed no short-term effect. Long-term estimates show that health spending can reduce poverty by up to 6 percent assuming *ceteris paribus*. Adjustments of these impacts will occur every 9.6 months. This study recommends that the government increases the health budget so that the poor can get protection and avoid health problems. The study also recommends increased regulation of health expenditures to make it more effective and have an impact in the short term.

**Keywords:** Health Budget, Poverty, ARDL Panel, Special Autonomy

**JEL classification:** C23, H51, I38

### **1. Introduction**

Throughout Indonesian history, poverty has prevented millions of children from getting quality education and exacerbated difficulties in financing healthcare. A widespread lack of savings investment, access to public services, employment opportunities, social security and a social safety net for families, along with increasing urbanization to the city, has caused millions of people to have limited resources to meet the needs of food, clothing, and shelter. Poverty causes rural communities to sacrifice anything for the security of their lives by risking physical labor to receive wages that are not commensurate with the labor costs incurred (Nano, 2009).

Strategic development efforts have long been implemented in Indonesia in hopes of achieving high economic growth. However, as development has progressed, new problems have appeared, including an uneven distribution both on a regional and national level. This leads to a *trade-off* between growth and equity. High economic growth is expected to produce a *trickle-down effect* from the upper economic classes to the economic layers below it. The fact is that such an effect does not occur, and poverty and inequality actually increase.

If we use the poverty line value used by the World Bank, which classifies the percentage of Indonesians living on less than USD 1.25 per day as those living below the poverty line (in other words, *poor*), the percentages in the table above will look inaccurate because the value is increased by a few percentage points. Furthermore, if we calculate the number of Indonesians living on less than USD 2 per day, according to the World Bank, the image for the percentage of the population living in poverty will increase even more sharply. This shows that most of the Indonesian population lives almost below the poverty line. About

a quarter of Indonesia's population (around 65 million people) live just a little above the national poverty line.

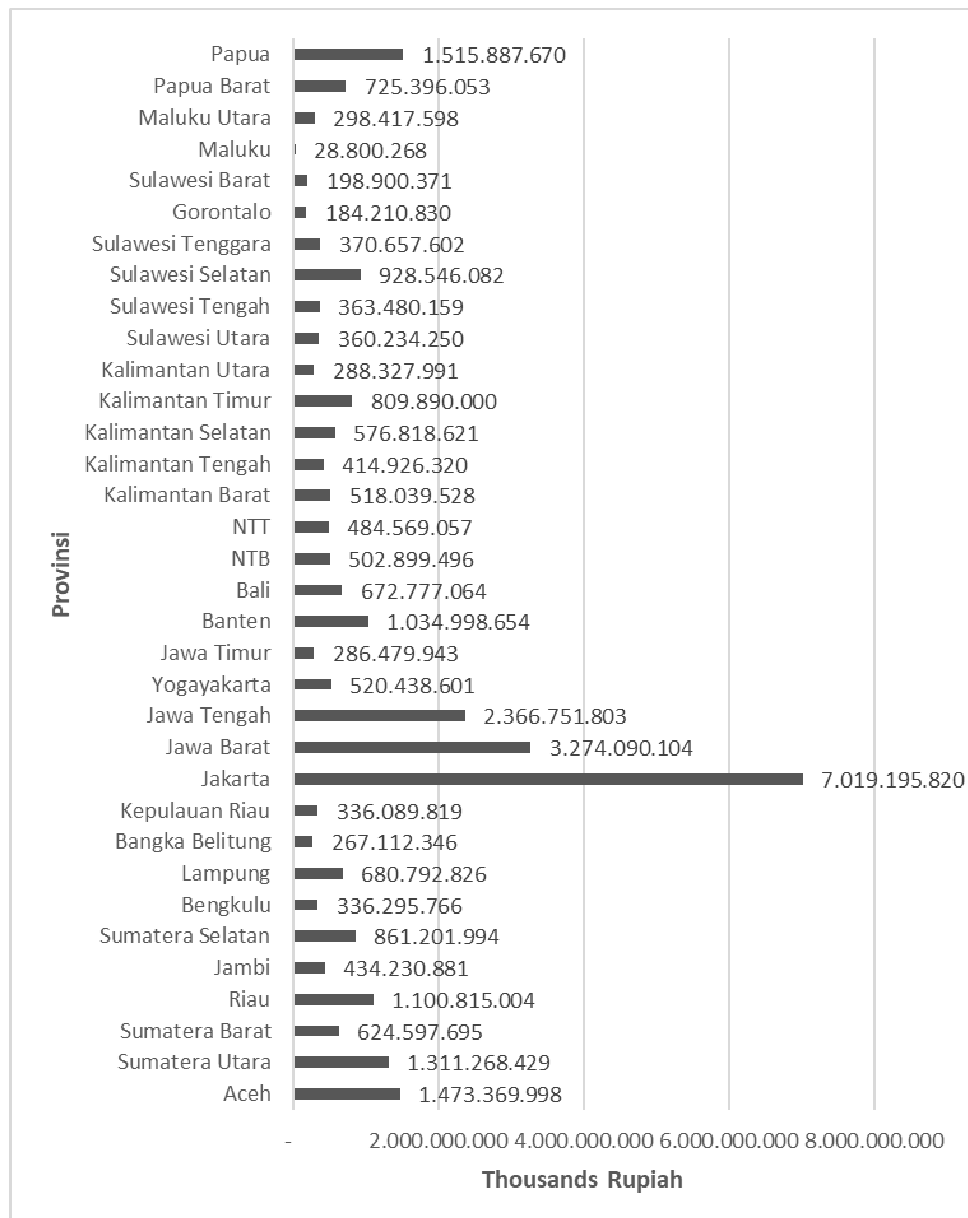
The government has implemented poverty reduction efforts in the form of poverty reduction policies, programs, and spending. These efforts have been able to reduce the number of poor people in a real way, but the targets of policies and programs have not been fully achieved. This is because the programs have not been implemented in an integrated manner, so that some programs overlap, hampering efficiency (Mulyani, 2007).

Today, the Indonesian government's policy to reduce poverty is to increase health budget allocations for the entire community. One of these efforts, the Health Insurance program, is a strategy to reform the health service financing system in Indonesia. All poor people are exempt from financial burdens when accessing health service facilities at the Puskesmas, district/city general hospitals (RSUD), provincial hospitals, and referral center hospitals in and outside the region, all of which are adequate medical facilities and health services (National Team Acceleration of Poverty Reduction: 2012)

Although economic growth at the desired target has still not been achieved, the government continues to strive to reduce the poverty rate to 1 digit. The Finance Ministry continues to increase the budget allocations for poverty reduction and to fight inequality in low-income communities, through various programs such as Family Hope Program (PKH), Program Indonesia Pintar (Smart Indonesia Program), National Health Insurance (JKN), food aid, Bidik Misi Scholarships [a scholarship program for low-income families], and village funds. The government has budgeted IDR 25.5 trillion for the health budget for 2018 (Sicca, 2018).

The government has also allocated a certain amount of its budget for health funds allocated for APBD funds in each province. Provincial contributions to health funds can be seen in Image 1. Health problems are a critical concern for all people, as health is the number one key to life. Most Indonesians are vulnerable to poverty. They live only slightly above the national poverty line and have revenue of less than the US \$2 per day. That income is only enough to meet the necessities of life (eating, drinking, shelter). An income of this level will be insufficient to cover health needs. In the health sector, the government has sought to increase the level of public health more evenly by increasing the reach and quality of health services. The government has implemented various initiatives with this goal, such as Askeskin [a health insurance program for the poor], Jamkesmas [National Healthcare Scheme] and free medical treatment. However, the question now is whether increasing the healthcare budget can reduce poverty in Indonesia.

The level of public health can be seen in home sanitation systems. The government has so far paid little attention to this factor. Currently, there is a crisis in the supply of sanitation facilities. The government budget is insufficient for the development of proper sanitation facilities. The effects of this crisis are experienced by poor people who tend to use water from polluted rivers. Even in the capital city or in big cities, poor people tend to be those residents who live near a waste disposal site. There are several options for addressing this crisis, including holding a national consensus to discuss financing sanitation facilities and encouraging local governments to build facilities through special allocation funds (DAK). To find a comprehensive solution, there must be a review of budgets and policies that focus on health issues and sanitation. A proportion of the APBN budget must be allocated in order to solve this problem. The development of good infrastructure must be carried out in tandem with increasing community social awareness on the importance of health (Zaenuddin, 2007).

**Image 1: All Provincial Health Budgets in Indonesia, 2017**

Source: BPS 2018

## 2. Literature Review

Poor can be interpreted as *having little money and few possessions; not having enough money for the basic things that people need to live properly*, which means not having enough money for the basic things that people need to live right (Stevenson, 2010). The above statement contains two causal forms in interpreting the word poor, that is: (i) poor as in having a minimal amount of something; and (ii) poor as not good in terms of quality or condition (Griffith, 2011).

Chambers (1997) argues that the notion of poverty is very dependent on who asks, how it is understood, and who responds. This perspective groups the meanings of poverty into several groups. One of the groups interprets poverty as a broad concept, including multidimensional deficiencies. Further, it is explained that poverty describes twelve dimensions, with each one interrelated. These twelve dimensions consist of: (1) education/ability, (2) institutional access, (3) time, (4) season, (5) residence/location, (6) security, (7) physical disability, (8) material, (9) social relations, (10) legal, (11) political power, and (12) information. Various studies reduce these dimensions so that the concept of poverty is defined more narrowly as individuals who live in poor conditions, are vulnerable, marginalized, and who lack or have minimal access to institutions such as education, law, and other resources.

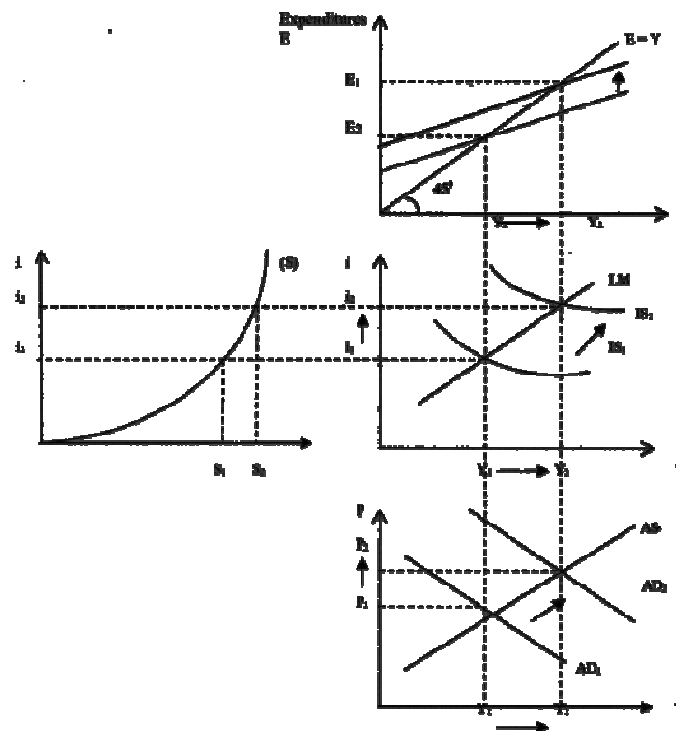
The term “government expenditure” can be used as an indicator of the amount of government activity financed by government funds. The more prominent and numerous the government’s activities, the higher the government expenditure concerned (Suparmoko, 2004). Boediono (2001) reveals that in macroeconomic theory, government expenditure consists of three main categories, which can be classified as follows:

- 1) Government expenditures on the purchase of goods and services.
- 2) Government expenditures on employee salaries. Changes in employee salaries influence macroeconomic processes, as changes in employee salaries will indirectly affect the level of demands.
- 3) Government expenditures on transfer payments.

The influence of health expenditures on poverty can be examined using two approaches. First, an increase in the health budget will shift government expenditure ( $E$ ) from  $E_1$  to  $E_2$  with the difference  $\Delta G$ , affecting income through the formula  $\Delta G (1 - MPC)$ . Increasing the health budget, as a fiscal expansion policy, will increase state expenditures, so the IS curve will shift to the right as seen in Image 2. As a result, national output will increase from  $Y_1$  to  $Y_2$ .

As national production increases, there is an increase in income, followed by an increase in interest rates from  $i_1$  to  $i_2$ . The savings function ( $S$ ) has a positive correlation with interest rates, so if the interest rate rises, this will encourage people to consume less and save more. Increasing savings will increase people's income, which will lead some residents to cross the poverty line, which means the number of poor people will decrease. So it can be concluded that increasing health subsidies can reduce the number of poor people.

**Image 2: Impact of Health Expenditures on Poverty**



Source: (Mankiw, 2007) (modification)

Oriavwote (2018) investigates the relevance of government spending on poverty reduction in Nigeria. The results show that government spending on buildings and construction has a significant and positive impact on per capita income, but the elasticity is very low. The results of the Granger causality test show there is no causal relationship between government spending on health and education. However, there is a causal relationship between government spending on education and per capita income.

Keane (2018) explains that India has a high level of expenditures on out-of-pocket health care (OOP), and a lack of development in the health insurance market. As a result, measures to alleviate poverty and inequality that treat medical spending symmetrically with consumer

goods outside the boundary. Poverty level to show how OOP health costs affect all forms of consumption distribution.

Furthermore, Bahtera (2018) explains that government spending in the education and health sectors have an influence on poverty in Aceh Province, , but that there are differences between districts and cities. The estimation results show that education expenditures in a city area have a significant influence on reducing poverty, while the development of new areas does not affect reducing poverty.

Musyoka (2018) explains that one of the world's goals is to increase health so that productivity will also increase. In Kenya, the government attempts to reduce poverty by improving the health of its citizens. The estimation results show that poverty reduction can be seen from the use of perfect health, it can be seen that the increase in household expenditure from health reporting is one-factor measuring poverty.

Wherry (2017) explains that over the past thirty years, there had been a significant expansion in public health insurance for low-income children in the US through Medicaid. The results of the study show that public health insurance provides essential financial benefits for low-income families. Expansions in public health insurance for low-income children and adults is associated with reduced medical expenses, increased financial stability, and increased material well-being for families.

Umeh (2017) describes unfairness in access to health insurance by examining a poor community-based health insurance program. The results of this study show that rich people are generally more willing to pay for insurance than poor people, and thus socioeconomic status will affect access to healthcare services. The most frequent reason why people opted out of this insurance program was the lack of money to pay premiums.

Rapiuddin (2017) conducted research on the technical efficiency of the education sector and the health sector in 24 districts/cities in South Sulawesi Province. The results of this study indicate that in general, most districts/cities in South Sulawesi Province are still not efficient in terms of technical costs and technical systems. This indicates that there is still a large amount of waste in education spending and much health spending, but it is not followed by education and health services and facilities, and there have been no efforts to improve the system to improve the level of education and public health.

Omari (2016) showed the effect of sectoral government spending on poverty levels in Kenya. The regression results show that expenditures on the agricultural sector and the health sector have a positive and significant effect on poverty levels, while infrastructure sector spending has a negative and significant effect on the poverty level. The effect of education sector expenditures on poverty levels was not significant. It was recommended that the government in Kenya increase the allocation of expenditures for the agriculture and health sector.

In terms of the effects of health insurance on poverty, Korenman (2016) examined the impact of Massachusetts's health reform. . The results of the study indicate that the benefits of public health insurance and premium subsidies provide a significant and substantial reduction of one third in the poverty level. Among low-income families who bought individual insurance, premium subsidies reduced poverty by 9.4 percentage points.

Vilcu (2016) studied trends in subsidized health insurance in Asian countries. According to this research, there are currently 8 countries with a total of 14 subsidy schemes. The groups most often given health subsidies are the poor, elderly, and children. The membership systems are in different tiers, where many participants get insurance fully subsidized by the government and some get half of the full subsidy. Even so, in most cases, the subsidy is higher compared to those who do not have health insurance, but still lower than insured formal sector employees.

Ganguly (2016) conducted a study examining the effects of a reduction in fuel subsidies on poverty and equality in India. This study showed a positive relationship between crude oil prices and the level of poverty and inequality in India. It further showed that the elimination of subsidies for fuel such as gasoline, diesel, and Liquefied Petroleum Gas (LPG), even when carried out during a period of decline in crude oil prices, had detrimental effects on the poor. It is crucial that the abolition of subsidies be combined with targeted pro-poor policies.

Lubotsky (2016) conducted research on health insurance and income inequality in the US. This research analyzed economic inequality by focusing on wage rates, income, or income.

Health insurance and other forms of compensation and government benefits are usually not included in income measures and inequality analysis. Health spending in 2014 accounted for more than 17 percent of GDP, and almost 70 percent of this expenditure was for public or private health insurance plans. Given the large and ever-increasing health care costs in the United States and the presence of large government health insurance programs such as Medicaid and Medicare, it is imperative to understand how health insurance and related public policies contribute to economic well-being and inequality.

The Special Administrative Region of Yogyakarta (DIY) poverty reduction policy is an effort to eradicate poverty with policies and funds from both central and regional governments. The results of the study found that the DIY government continues to improve the economic welfare of poor people in the regions, but because of the limitations and powerlessness of poor people, in addition to regional fiscal limitations, it is challenging to improve the welfare for the population in poverty in the DIY. Policy recommendations that can be made include empowering existing local economic potential, creating jobs, and building productive businesses such as small businesses for community members to increase their income. In addition, coordinating pro-poor programs with the central government is a step that must be taken (Saragih, 2015).

Ahmed Shoukry Rashad (2015) analyzes who benefits from public health subsidies in Egypt. The results of the study show several levels of inequality in the benefits of public health services, which vary according to the type of health care provided. In particular, subsidies associated with university hospitals are generally beneficial to the rich and have the effect of increasing inequality, while subsidies related to outpatient and inpatient care provided by the Ministry of Health and Population have not been pro-poor but have the effect of reducing inequality. Measures for poverty reduction and health service reform in Egypt were recommended to not only focus on expanding the coverage of health benefits, but also on increasing distribution.

Çevik (2013) analyzes the effects of government spending on health care on health outcomes using cross-national comparisons. This study uses cross-sectional regression to estimate the strength of the relationship between child and infant mortality rates and public health expenditures in countries throughout the world. This study demonstrates statistically significant and strong results with various specifications. Government health expenditure as a fraction of GDP was negatively correlated with under-five mortality rates, with an elasticity of -0.17 to -0.22. The elasticity was -0.20 for infant mortality. The income level is slightly less significant, and public health expenditure becomes a little more empirically significant.

Misdawita (2013) conducted an analysis of the impact of subsidies and government spending in the fields of education and health on poverty in Indonesia. Poverty, in addition to unemployment and social inequality, is a significant and fundamental problem in Indonesia. This study found that government spending in education was effective in reducing poverty, but subsidies and government spending in the health sector were not, due to inappropriate targeting of subsidized users in the field.

Bynoe (2012) claimed that public spending on education and health care is necessary for human development and to achieve other benefits such as economic growth. The most important public goal is to use public expenditure to reduce poverty and to help create an enabling environment where the private sector can become a growth engine (Swaroop, 1996). Most of the variables used by this model were selected according to the previous literature. However, unlike most literature that assesses the Caribbean, this model tried to explain the quality of interpreting educational attainments.

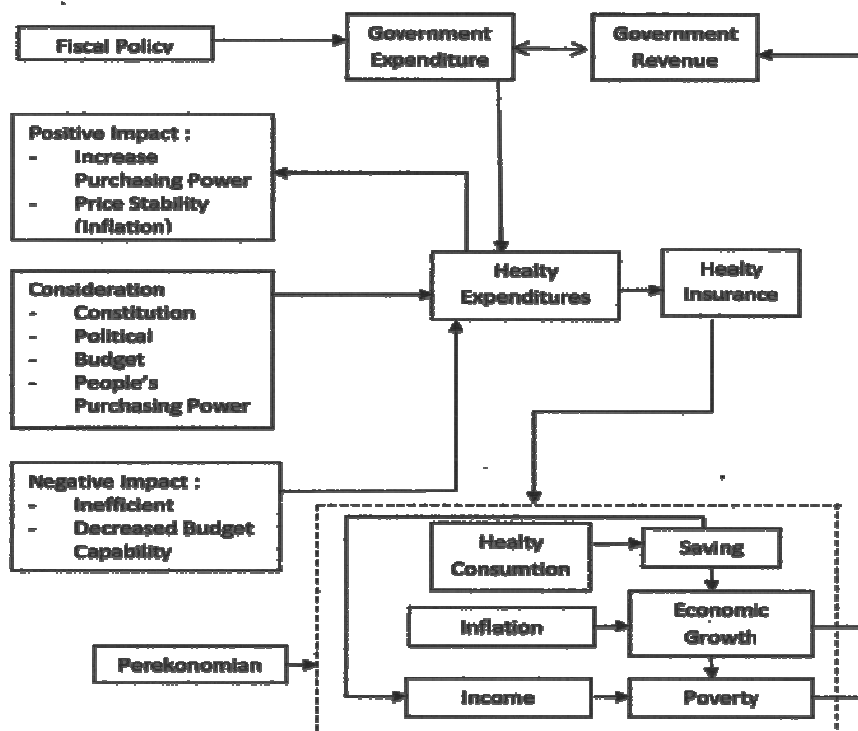
Andrés Ramírez Hassan (2013) studied the impact of health insurance on the poor in Medellín, Colombia. This study used binary data models and numbers with endogenous dummy variables to evaluate the effects of subsidized health care programs in Medellín. Subsidized programs, which mainly target the poor, were found to have a significant impact on the use of medical care and hospitalization, which might have a negative impact on the program's financial resources. In particular, econometric estimates from the utilization of health services indicate that there is a selection. These facts imply that the program can increase its scope if a mechanism is made to reduce the effects of individual moral hazards.

Maipita (2010) conducted a study of the impact of fiscal policy on economic performance and poverty rates in Indonesia, as the government has continuously designed policies to

accelerate economic growth and reduce poverty. However, the government faces several obstacles, such as increasing deficits, that have the potential to affect the priority scale as well as the pros and cons that occur in it. Based on these considerations, economic policies must be revised and redesigned to be pro-growth, pro-job vacancies, and pro-poor. In general, this study aims to examine the impact of the expansion and contraction of fiscal policy on economic performance in Indonesia.

To evaluate the gap in income distribution, Decaluwe et al. (1999) used the beta distribution function. The results of this study indicate that increasing subsidies had a better impact than the two previous fiscal policies. Although the income transfer policy had a positive impact on increasing household income in rural areas and reducing poverty, this policy had the negative effect of reducing GDP.

**Image 3: Conceptual Framework for the effect of Health Expenditures on Poverty**



Using nationally representative data from India, Flores (2008) revealed that if the government allocates some expenditures to finance the cost of hospital care, one of them is about three-quarters of the cost of inpatient care issued by the community. Because poverty is highest in India to pay for hospital care, 24% of individuals admitted to hospitals have inadequate funds to pay for care. If the government covers 30% of medical costs of poor people who are hospitalized, this will reduce their household expenses so that they can save their money for other needs. The government pays 10% of the costs of inpatient care, which reduces household expenditures on health costs. This can reduce the burden on the household and can increase household income.

More broadly, health expenditures will also lead to increased incomes in the community because people's spending on healthcare is funded by government expenditures, which means that people can save the money that they would have spent. Another thing that arises due to health budget policies is the problem of opportunity costs. Increasing budget allocations for health will reduce budget allocations for other activities, which can increase economic output and also reduce inflation.

### 3. Method of Analysis

#### 3.1. The scope of the Study

This study analyzes the effectiveness of health expenditures for poverty reduction in Indonesia's Autonomous Regions, namely Aceh, Papua, and West Papua, from 2006-2017.

#### 3.2. Source and Type of Data

The data used are data from 3 provinces in Indonesia, Aceh, Papua, and West Papua, that receive special autonomy funds. The type of data used in this research is panel data for the years 2006 to 2017 on government expenditures on health and poverty.

#### 3.3. Analysis Model

In the ARDL regression analysis, the data used is time series data, but in this study, researchers used the ARDL model with panel data. This ARDL model is used to see the role of time, the justification of the theory, and the relationships between variables (Gujarati, 2003).

The ARDL model uses panel data as follows:

$$Y_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^p \theta_i Y_{t-i} + \beta' X_t + \sum_{i=0}^{q-1} \beta^{*i} \Delta X_{t-i} + u_t \quad (3.1)$$

$$\Delta X_t = P_1 \Delta X_{t-1} + P_2 \Delta X_{t-2} + \dots + P_i \Delta X_{t-i} + \varepsilon_t \quad (3.2)$$

$$Y_{j,t} = \alpha_0 + \alpha_1 t + \sum_{i=1}^p \theta_i Y_{j,t-i} + \beta' X_{i,t} + \sum_{i=0}^{q-1} \beta^{*i} \Delta X_{j,t-i} + u_{j,t} \quad (3.3)$$

To facilitate the calculations, the researcher then substituted equation (3) for the research variable and transformed it into the form of a natural logarithm for each variable, so:

$$\begin{aligned} \Delta \ln AK_{j,t} = & \alpha_{0i} + \sum_{i=1}^n \alpha_{1i} \Delta \ln AK_{j,t-i} + \sum_{i=1}^n \alpha_{2i} \Delta \ln BK_{i,t-i} + \beta_{11} \ln AK_{j,t-1} \\ & + \beta_{21} \ln SK_{j,t-1} + u_{j,t} \end{aligned} \quad (3.4)$$

Where AK is poverty, BK is health expenditures,  $\alpha_1$  to  $\alpha_3$  are short-term coefficients,  $\beta_1$  to  $\beta_3$  are long-term coefficients,  $t$  is years (i.e. 2006-2017),  $j$  is region, the options for which are three autonomous regions,  $i$  is the order of lag, and  $u$  is an error term.

#### 3.4. Data Stationarity Test

The data stationarity test is conducted to determine whether the time series data used has a stable (stationary) or non-stable (nonstationary) pattern on each variable. The test methods for the presence or absence of root units in the data were the Levin, Lin & Chu (LLC) method, the Im method, the Pesaran and Shin (IPS) method, the ADF Fisher Chi-square (ADF Fisher), and the PP-Fisher unit root.

#### 3.5. Cointegration Test

The researchers used the Levin, Lin & Chu (LLC), Im, Pesaran, and Shin (IPS) integration, ADF Fisher Chi-square (ADF Fisher), and the PP-Fisher unit root. Cointegration methods used Pedroni and KAO-based panels.

#### 3.6. Determination of Optimal Lags

Determining the optimal lag length is needed for the time-series model stationarity test. To select lag order, various criteria can be used, namely Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ). In this study the determination of optimal lag was done using the Akaike Information Criterion (AIC) criteria. The smallest AIC value to be chosen aims to minimize the number of the residual sum of squares (RSS) or increase the value of  $R^2$  so that the error rate is the smallest model (Gujarati, 2003).



### 3.7. Short-Term Testing

Short term estimates can be seen below:

$$\Delta \ln K_{jt} = \alpha_{0it} + \sum_{i=1}^n \alpha_{1i} \Delta \ln K_{j,t-i} + \sum_{i=1}^n \alpha_{2i} \Delta \ln AK_{j,t-i} + \theta_1 ECT_{t-1} + u_{2it} \quad (3.5)$$

Short-term testing:

$$H_0 : \alpha_{11} = \alpha_{21} = \alpha_{31} = \alpha_{41} = \alpha_{51} = 0$$

There are no short-term influences

$$H_a : \alpha_{11} \neq \alpha_{21} \neq \alpha_{31} \neq \alpha_{41} \neq \alpha_{51} \neq 0$$

There are short-term influences

Where  $\alpha_{1i}$  and  $\alpha_{3i}$  are short-term dynamic coefficients for the speed of adjustment, and the Error Correction Term (ECT) is a short-term dynamic coefficient for the speed of balance adjustment. The ECM values are from 0 to -1.

## 4. Study Results and Discussions

### 4.1. Root Unit Panel Test Result

Levin (2002) introduced different unit root unit tests that have different specifications depending on assumptions about specific entity interception requirements and time trends. The LLC test increases homogeneity in the autoregressive coefficient (interception and trends can vary between individual series), which indicates the presence or absence of a unit root. This test, which is based on the ADF regression, is used to check unit root problems.

The level of integration and stationary properties of each variable was determined using the ADF (LLC) panel test proposed by Levin (2002) by assuming homogeneity in autoregressive coefficient dynamics for all panel units. Also, we used a nonparametric test (Maddala GS, 1999) as well as the Fisher-ADF test and Fisher-PP, taking into account the heterogeneity between units. Finally, we conducted the cross-sectional dependence unit root (CIPS) test. These tests show that poverty has a unit root at the level marked with ADF. PP and IPS values were more significant than the significance value of 1 percent, while health expenditures has ADF and IPS values above 5%. For the Fisher test, however, the PP value was not significant at 5 percent or 1 percent (Table 1).

**Table 1. Root Unit Panel Test Result**

Variabel	LLC	Fisher ADF	Fisher PP	IPS
Poverty	-19,6271**	23,3676**	4,07025	-3,61691**
Δ Poverty	-9,62987**	25,6430**	26,6175**	-2,67809**
Healty Budget	-4,61042**	14,9240*	4,13073	-2,02530*
Δ Healty Budget	-6,58165**	13,0318*	12,5522	-1,00933

Note: \* Prob < 0,05 , \*\* Prob < 0,01 Lag

### 4.2. Panel Cointegration Test

In the second stage, we proceeded to panel cointegration tests after the specification of order of integration for the series. Pedroni test is the most popular among panel cointegration tests. Pedroni tests includes seven different statistic : four of them belong to the within dimension, which are v -statistic, p-statistic, PP-statistic and ADF-statistic: three of them belong to the between dimension which are group p-statistic, group pp-statistic and group ADF-statistic. both kinds of test focus on the null hypothesis of no cointegration. these statistic are distributed asymptotically as standard normal.

**Table 2. Cointegration Tests, Pedroni Tests and Kao Tests**

Pedroni Cointegration Result			
Within Dimension Test Statistics		Between Dimension Test Statistics	
Panel v-Statistics	0,393250	Group rho-Statistics	1,160976
Panel rho-Statistics	0,259165	Group PP-Statistics	-0,316121
Panel PP-Statistics	-0,723314	Group ADF-Statistics	-3,271220**
Panel ADF-Statistics	-0,970415**		
Kao Test			
ADF			-3,571165**
Residual variance			3,831109
HAC Variance			3,620672

Catatan: \* Prob < 0,05 , \*\* Prob < 0,01

Table 2 shows the cointegration panel test statistics. This statistical test is based on the individual autoregressive coefficient average associated with the unit root test of the residue for all panel data. All seven-panel cointegration tests rejected the null hypothesis without cointegration at a significance level of 1%. Table 2 shows cointegration with a significance level of 1 percent for the poverty model and health expenditures where cointegration occurs at a significance level of 1%., Therefore, the conclusions drawn indicate that  $H_a$  should be accepted, or, in other words, that there is a relationship in the short term and long term.

#### 4.3. Model Estimation with Short and Long Term ARDL

Autoregressive Distributed Lag can be used to see the long-term and short-term effects of health expenditures on the poverty model. The influence of long-term and short-term health expenditures on poverty can be seen in Table 3.

**Table 3. The long-term and short-term effects of ARDL on Poverty**

Variabel	Coefficient	Prob
<b>Long Run Education</b>		
Kemiskinan	-6,110243**	0,0000
<b>Short Run Education</b>		
COINTEQ01	-0,800000	0,0000
D(KS)	0,883963	0,7998
D(KS(-1))	0,813724	0,8168
C	87,32809	0,0000

Note: \* Prob < 0,05 , \*\* Prob < 0,01

Table 3 displays the results of the ARDL long-term and short-term coefficient estimates of poverty. The short-term coefficient of the poverty model shows a non-significant effect. This can be seen from the probability value of  $0.80 > 0.05$ , which explains that there is no effect of health expenditures on poverty in the short term. The speed of balance adjustment (ECT) is -0.800000 and is significant at the level of 1 percent and negative, as expected. This means that 80 percent of imbalances that occur in the short term will be adjusted in each quarter.

In the long term, the poverty coefficient shows a significant effect, with an elasticity coefficient of -6.11. This means that an increase in the health budget of 1 percent will reduce poverty by 6.11 percent in the long term. If we look at the coefficient value of  $0.0000 < 0.01$ , it explains the influence of health expenditures on poverty in the long term.

#### 4.4. Results of Estimation of Each Special Autonomy Recipient Region

Short-term estimation and the Error Correction Term (ECT) were found in order to determine the equilibrium that occurs between the dependent variable and the independent variable, where ECT functions to determine the rate of adjustment in the short-term balance towards the long term. In this case, when ECT is significant and has a negative sign, the

situation indicates that there is a balance at the long-term level. The magnitude of the ECT coefficient indicates the level of speed of adjustment in correcting imbalances in each variable so that the economy can return to the equilibrium point. The coefficient of ECT is 0 to -1.

**Table 4. ARDL Panel Estimation Results of Aceh**

Variabel	Coefficient	Std. Error	t-Statistics	Prob
COINTEQ01	-0,531542	0,029570	-17,97602	0,0004
D(KS)	2,698873	6,337889	0,425832	0,6989
D(KS(-1))	-2,988365	5,003999	-0,597195	0,5924
C	54,68131	386,5205	0,141106	0,8967

Table 4 shows that short-term poverty has an elasticity coefficient of 2.70, which means that an increase in the Aceh health budget of 1 percent in the short term increases poverty by 2.70 percent. The coefficient value of  $0.6989 > 0.05$  shows that there is no effect of Aceh health expenditures on poverty in the short term. The speed of balance adjustment (ECT) is -0.532542, which is significant at the level of 1 percent and negative, as expected, meaning that 53.25 percent of the imbalance that occurs in the short term will be adjusted in each quarter.

**Table 5. ARDL Panel Estimation Results of West Papua**

Variabel	Coefficient	Std. Error	t-Statistics	Prob
COINTEQ01	-0,967612	0,065666	-14,73534	0,0007
D(KS)	2,410306	14,35557	0,167900	0,8773
D(KS(-1))	7,736007	13,54813	0,571002	0,6080
C	103,1885	982,8195	0,104992	0,9230

Table 5 shows a coefficient value of 2.41, which means that an increase in the West Papua health budget of 1 percent in the short term increases poverty by 2.41 percent. The coefficient value found was  $0.8773 > 0.05$ , which shows West Papua's health expenditures have no effect on poverty in the short term. The speed of balance adjustment (ECT) for West Papua Province is -0.967612, which is significant at the level of 1 percent and is negative, as expected, meaning that 96.76 percent of the imbalances that occur in the short term will be adjusted in each quarter.

**Table 6. ARDL Panel Estimation Results of Papua**

Variabel	Coefficient	Std. Error	t-Statistics	Prob
COINTEQ01	-0,967612	0,065666	-14,73534	0,0007
D(KS)	2,410306	14,35557	0,167900	0,8773
D(KS(-1))	7,736007	13,54813	0,571002	0,6080
C	103,1885	982,8195	0,104992	0,9230

For Papua the coefficient value was found to be -7.74, which means that an increase in the Papua health budget of 1 percent in the short term reduces poverty by 7.74 percent. The coefficient value was found to be  $0.8327 > 0.05$ . This shows that in Papua, health expenditures have no effect on poverty in the short term. The speed of balance adjustment (ECT) is -0.900845, which is significant at the level of 1 percent and negative, as expected, meaning that 96.76 percent of the imbalances that occur in the short term will be adjusted in each quarter (table 6).

#### 4.5. Study Result Implications

One of the objectives of the Indonesian government's special autonomy funds is poverty alleviation. Tables 3 - 6 show the results of this study in terms of the relationship between government healthcare expenditures and the poverty level in in the three regions in Indonesia that receive special autonomy funds.

The poverty coefficient shows that health expenditures have a non-significant effect. This can be seen from the probability value of  $0.80 > 0.05$ , which shows that there is no effect of health expenditures on poverty in the short term. ARDL estimates in the short term show that

Aceh Province has a coefficient value of  $0.6989 > 0.05$ , West Papua has a coefficient value of  $0.8773 > 0.05$ , and Papua's coefficient is  $0.8327 > 0.05$ . This is contrary to the research presented by Michael Keane (2018), which explained that health care spending by insurance companies can reduce expenditures and increase consumption and by these methods poverty can be reduced. The same conclusion was reached in Laura R. Wherry's (2017) study, which found that public health insurance provided financial benefits for low-income families. Expansion of public health insurance for children and low-income adults will reduce medical expenses, which can improve material well-being for families and have the effect of reducing poverty.

Misdawita (2013) found that government expenditures in the field of education were effective in reducing poverty, but government spending and subsidies in the health sector were not, due to inappropriate targeting of subsidized users in the field.

In the long term, the ARDL estimation results in a poverty coefficient with a significant effect, with an elasticity coefficient of  $-6.11$ . This means that a 1 percent increase in health expenditures reduces poverty by 6.11 percent in the long term. The coefficient value of  $0.0000 < 0.01$  shows that health expenditures have a significant effect on poverty. This is consistent with an economic theory where an increase in health expenditures can reduce poverty.

This is consistent with research conducted by Mahadi Bahtera (2018). The results of the study show that if the education budget is 20 percent of the total APBD and health expenditures are 10 percent of the total APBD budget; poverty in Aceh Province will decrease by an average of 49 percent per year. District/city governments are expected to be able to set the education budget and health budget through education and health Laws each year.

Musyoka's (2018) research also showed estimation results indicating that poverty reduction could be achieved through effective use of health insurance, which can reduce household health expenditures. This can be used as a factor in measuring poverty.

As discussed above, health expenditures do not affect poverty reduction; these results are troubling because they were unexpected. Supposedly, an increase in the health budget in three regions receiving special autonomy funds can reduce poverty. The findings in this study are caused by the lack of good governance of the special autonomy funds and income inequality, which results in high levels of poverty.

## **5. Conclutions**

Based on the results of the data analysis and discussion, several conclusions can be drawn that in 2011 there was an increase in the health budget aimed at the Jamkesmas and Jampersal programs. The government also expanded the coverage of healthcare programs to cover the poor, the homeless, beggars, neglected children, and poor people with no identities. The poverty rate in 2006 was 17.75% due to an increase in inflation caused by the government raising the price of domestic fuel oil, followed by an increase in rice prices during this period.

The short-term poverty coefficient has a probability value is  $0.80 > 0.05$ , which shows that health expenditures have no effect on poverty in the short term. However, when viewed in the long term, the coefficient value is  $0.0000 < 0.01$ , meaning health expenditures have a significant effect on poverty in the long term. The long-term poverty coefficient showed a significant effect, with an elasticity coefficient of  $-6.11$ . This means that an increase in the health budget by 1 percent in the long-term reduces poverty by 6.11 percent, according to the theory presented in the hypothesis. Short term estimation results indicate that health expenditures from special autonomy funds do not have an effect on poverty reduction. This unexpected result gave a troubling picture of the situation. This is likely due to a lack of oversight of special autonomy funds and income inequality, which results in high levels of poverty.

Because this research is limited to only regions that receive special autonomy funds, it is hoped that subsequent studies can add other variables so that the research will be broader. In the long term, this study found a significant influence of health spending on poverty. Because of the chronological nature of the findings, it is suggested to increase the number of budget years studied. To accelerate the reduction of poverty, allocations for education expenditures by provincial governments must be at least 20 percent of the APBD, especially in regions with the highest poverty rates in Indonesia.

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