

Does Gross Regional Domestic Product (GRDP) Affect Poverty in South Sulawesi? Two-Stage Least Squares (2SLS) Approach

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Abstract

This research aims to determine the simultaneous relationship between poverty and GRDP variables in South Sulawesi. This type of research is quantitative which focuses on revealing simultaneous relationships between variables. The population is Poverty and GRDP data for districts/cities in South Sulawesi Province in 2020. The sample used is a saturated sample of 24 districts/cities sourced from the central statistics agency. Next, this research data was analyzed using the Two-Stage Least Square (2SLS) method. The results of this research show that the poverty variable has a significant effect on GRDP at 5%. Meanwhile, the GRDP variable has a significant effect on poverty at 5%. Hence, it can be concluded that there is a simultaneous relationship between GRDP and Poverty at 5%. Control variables, namely Income, Education and Expenditure do not influence poverty. Control variables, Population, PAD and HDI have a significant influence on poverty. The suggestion in this research is that regional governments, especially the province of South Sulawesi, should pay more attention to the equal distribution of income in each region to increase GRDP and pay attention to other factors such as population, local original income and the Human Development Index (HDI).

Keywords: Poverty, GRDP 2SLS Method, Distribution

INTRODUCTION

Poverty in Indonesia is an ongoing problem that is felt by the country from year to year. As a result, poverty impacts other elements of life, including health, education, and so on. Based on data, it is known that the poverty rate in Indonesia in 2020 increased in 2021, namely from 9.78% to 10.14% (Central Statistics Agency, 2022)

Province South Sulawesi is one province in Indonesia that experiences fluctuations in poverty every year. The poverty level in South Sulawesi increased further when affected by Covid 19. This caused the people in South Sulawesi to be hampered in increasing their income, which impacted the welfare of the people in South Sulawesi. The data shows that the poverty rate in South Sulawesi in 2019 was 767.80 thousand people, in 2020 it was 776.83 thousand people and 784.98 thousand people in 2021 (Central Statistics Agency, 2022).

The size of the Gross Regional Domestic Product (GRDP) influences poverty in Indonesia and South Sulawesi in particular. Poverty will decrease if the GRDP is high. According to Tambunan, if economic expansion is not

accompanied by increasing employment opportunities, then the additional income will be distributed unequally (*ceteris paribus*), resulting in a situation where economic progress is accompanied by an increase in poverty (Novriansyah, et al. 2018). There is a strong relationship between poverty and unemployment. Poverty is also influenced by factors such as geographical location, population, and income level (Tisnawati, 2012).

The Gross Regional Domestic Product (GDP) is a measure of the economic health of a country. GRDP can be used to determine the level of prosperity (GDP) of a country. It is reasonable to conclude that when a country's GDP increases, its level of welfare also increases. However, economists have warned against using GDP as a measure of general welfare since its inception in the 1930s (Costanza, et al. 1997). According to the Organization for Economic Cooperation and Development (OECD), GDP not only fails to reflect the real welfare of society but also skews global political goals towards the pursuit of economic growth alone (Rustia, et al. 2011). Based on these facts, researchers used the Two Stage Least Square (2SLS) approach to determine whether GDP or GRDP has a relationship with poverty as proposed by the Tambunan theory and Suryono theory or vice versa.

METHOD

Variables and Construction

This research uses GRDP as the independent variable and poverty as the dependent variable. Apart from that, this research uses control variables, namely population, education, income, government expenditure, local original income and human development index (HDI).

Data sources

This research uses data sourced from the Central Statistics Agency, with the unit of analysis, namely 24 regencies/cities in South Sulawesi in 2020.

Table 1.1. Population and Sample

1. Bantaeng	13. Pangkajenne and Islands Regency
2. Barru	14. Pinrang Regency
3. Bone	15. Sidenreng Rappang Regency
4. Bulukumba	16. Sinjai Regency
5. Enrekang	17. Soppeng Regency
6. Gowa	18. Takalar Regency
7. Jeneponto	19. Tana Toraja Regency
8. Selayar Islands	20. North Toraja Regency
9. Luwu Regency	21. Wajo Regency
10. East Luwu Regency	22. Makassar City
11. North Luwu Regency	23. Parepare City
12. Maros Regency	24. Palopo City

Source: Central Statistics Agency (2022)

Model Specification

$$Poverty_i = \beta_0 + \beta_1 PDRB_i + \beta_2 Pop_i + \beta_3 Edu_i + \beta_4 Inco_i + e_{it} \dots \dots \dots (1)$$

$$PDRB_i = \beta_0 + \beta_1 Poverty_i + \beta_2 Expend_i + \beta_3 PAD_i + \beta_4 IPM_i + e_{it} \dots \dots (2)$$

Poverty is the dependent variable in the first equation. GRDP variable as the independent variable. Then, population, education and income are control variables. Meanwhile, in the second equation, GRDP is the dependent variable, and poverty is the independent variable. The control variables used are government expenditure, local revenue and human development index.

Method

This research uses Two-Stage Least Squares (2SLS) data analysis to overcome the endogeneity problem in the estimation model. The analysis steps used are as follows: (1) Create a structural equation model; (2) Identification of models with order conditions to determine parameter estimates can be done through reduced-form equations from a system of simultaneous equations so that the appropriate method can be determined; (3) Estimating Parameters with the 2SLS Method.

RESULTS AND DISCUSSIONS

Descriptive Analysis

Table 1. Descriptive Analysis

Characteristics	Minimum	Maximum	Mean	Std. Deviation
Poverty (%)	7.96	81.33	32.36833	18.67556
GDP (Billions of rupiah)	6392.74	178333	21091	34264.86
Population (People)	136871	1545373	372000.2	297496.2
Income (Billions)	20.86	43	32.2025	4.911679
Education (Years)	6.59	11.21	8.147917	1.176468
HDI (%)	64.26	82.25	70.52708	4.009586
PAD (Billions of rupiah)	64.26	82.25	70.52708	4.009586
Expenditure (Billions of rupiah)	7217	16873	10901.46	2050,529

Source: Processed by primary data, STATA

Based on this table, it can be seen that the average GRDP value of 24 districts in South Sulawesi in 2020 was 21,091 billion Rupiah. The district with the lowest GRDP is Selayar District, namely 6392.74 billion Rupiah. Meanwhile, the highest GRDP is Makassar City with a total GRDP of 178,333 billion Rupiah. Meanwhile, the average poverty rate in South Sulawesi in 2020 was 32.36833%. The district with the highest poverty rate is Bone District with 81.33 thousand people. Meanwhile, the lowest poverty rate in 2020 was in Parepare City at 7.96 thousand people.

Two-Stage Least Squares (2SLS) Analysis

Table 2. Hypothesis Testing

Model	Variable	P Value
Model 1 (Poverty)	Constant	0.553
	GRDP	0,000
	Population	0.001
	Education	0.457
	Income	0.769
Model 2 (GRDP)	Constant	0,000
	Poverty	0,000
	Expenditure	0.123
	PAD	0.037
	HDI	0,000

Source: Secondary data processing, STATA

Based on this table, it is known that in the poverty model, the Income and Education variables do not have a significant effect at the 5% significance level. Meanwhile, the population and GRDP variables have a significant effect at 5%. In the GRDP model, the variables Poverty, PAD and HDI have a significant effect at the 5% significance level. Meanwhile, the Expenditure variable does not influence GRDP. Furthermore, the simultaneous model shows that the poverty variable has a significant effect on GRDP at 5%. The GRDP variable has a significant effect on poverty at 5%. Therefore, it can be concluded that there is a simultaneous relationship between GRDP and Poverty at 5%.

Discussion and Theoretical Implications

Based on the results of the Two Stage Least Square (2SLS) regression, it shows that the poverty variable has a significant effect on GRDP. Meanwhile, the GRDP variable has a significant effect on poverty, so it can be concluded that there is a simultaneous relationship between GRDP and poverty. The results of this research illustrate that the poverty variable has a causal or cause-effect relationship with the GRDP variable. Hence, these two variables can be used as endogenous variables. The results of this research are in line with the results of research conducted by Bintang and Woyanti (2018) that the GRDP variable has a positive and significant influence on poverty.

Based on the existing hypothesis test, the results obtained are that in model equation 1, namely the poverty model, the Income and Education variables, which act as control variables, do not have a significant effect. Meanwhile, the population variable has a significant effect. The results of this research are in line with those conducted by Elda Wahyu Azizah, et al. (2018) that education has a negative and significant effect on poverty, per capita income has a negative and significant effect on poverty in the districts and cities of East Java Province and population has a positive and significant effect on poverty.

Based on existing hypothesis tests, results were also obtained, namely in equation model 2, namely the GRDP model, the PAD and HDI variables which act as control variables have a significant effect. The results of this research are in

line with those conducted by Desmintari and Aryani (2017) with the research results namely that Regional Original Income has a significant effect on Poverty Rates and the independent variable Human Development Index Value has a significant effect on the Poverty Rate. Meanwhile, the Expenditure variable does not influence GRDP. The results of this research are in line with research conducted by Ezra Kaligis, et al. (2017) that capital expenditure directly has a negative effect on poverty, capital expenditure directly has a positive effect on economic growth,

Furthermore, the research results show that GRDP has a positive and significant influence on poverty levels in South Sulawesi. The higher the GRDP of a region in South Sulawesi, the greater the poverty. This is due to regional inequality in income distribution. As in the theory put forward by Arsyad, income distribution can show differences in the level of welfare of each region or region. The causes of differences in income distribution include ownership of natural resources, availability of infrastructure, and the quality of human resources (Arsyad, 2010). Inequality in the distribution of GRDP in South Sulawesi is the main problem resulting from unequal regional income distribution. This main problem is very closely related to the problem of poverty that occurs in South Sulawesi.

Income distribution and poverty are closely related from the aspect of economic development. Problems that occur in income distribution can impact the reality of existing poverty. Vice versa, a portrait of poverty in an area may be a sign that something is wrong with the income distribution mechanism there. According to Haughton (2009), inequality is related to poverty. Inequality focuses on the distribution of attributes, such as income or consumption, across a population. In the context of poverty analysis, inequality requires examination if one believes that an individual's well-being depends on their economic position relative to others in society.

Bourguignon (2004) states that changes in poverty in a country are strongly influenced by changes in growth and income inequality. The relationship between the three is considered a real challenge for building development strategies. The Poverty-Growth-Inequality Triangle (PGI) model looks at the interaction between economic growth and inequality as a whole in formulating strategies to reduce poverty. This model suggests that poverty alleviation requires a combination of policies that focus on economic growth and also reducing inequality, rather than just focusing on one policy (Bourguignon, 2004).

Based on poverty data in districts/cities in South Sulawesi province, to measure poverty, BPS uses the concept of the ability to meet basic needs (basic needs approach). With this approach, poverty is seen as an economic inability to meet basic food, and non-food needs as measured in terms of expenditure. So the Poor Population is the population whose average monthly per capita expenditure is below the poverty line. Whereas for calculating GRDP figures, BPS uses three approaches. First, the production approach. GRDP is the amount of value added to goods and services produced by various production units in a country's territory within a certain period (usually one year). In this presentation, the production units are grouped into 9 business fields (sectors), namely (1) Agriculture, Animal Husbandry, Forestry and Fisheries; (2) Mining and excavation; (3) Processing industry; (4) Electricity, Gas and Clean Water; (5) Construction; (6) Trade, Hotels and Restaurants; (7) Transport and Communications; (8) Finance, Real Estate and Corporate Services; (9) Services include government services. Each sector is further broken down into sub-sectors.

Second, according to the Income Approach. GRDP is the amount of remuneration received by production factors that participate in the production process in a country within a certain period (usually one year). The remuneration for production factors in question is wages and salaries, land rent, capital interest and profits, all before deducting income tax and other direct taxes. In this definition, GRDP also includes depreciation and net indirect taxes (indirect taxes minus subsidies).

Third, Expenditure Approach. GRDP is all components of final demand, which consist of (1) household consumption expenditure and private non-profit institutions; (2) government consumption expenditure; (3) gross domestic fixed capital formation; (4) inventory changes, and (5) net exports (exports minus imports).

Conceptually, these three approaches will produce the same numbers. So, the amount of expenditure will be the same as the amount of final goods and services produced and must also be the same as the amount of income for production factors. The GRDP produced in this way is referred to as GRDP based on market prices because it includes net indirect taxes.

CONCLUSION

Based on the results of research and discussion using the Two Stage Least Square (2SLS) method, this research obtained results namely that the poverty variable has a significant effect on GRDP at 5%. Meanwhile, the GRDP variable has a significant effect on poverty at 5%. Hence, it can be concluded that there is a simultaneous relationship between GRDP and Poverty at 5%.

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