# Economic Growth, Income Inequality, and Poverty in Central Sulawesi

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## Abstract

*This study examines the relationship and effect of economic growth with poverty and income inequality in Central Sulawesi Province. The source of data used in this study is secondary data from the Central Statistics Agency (BPS) of Central Sulawesi Province. This study also uses the Granger causality test analysis method to test the relationship between the three variables and then panel data regression is carried out to see the effect of each independent variable on the dependent variable. The data used are panel data on the number of poor people, GRDP (Gross Regional Domestic Product) at Constant Prices 2010, and Gini ratio data by regencies/cities in Central Sulawesi Province during the 2011-2019 period. Based on the empirical findings above, it can be concluded that the variable economic growth (GRDP) has a negative effect on the number of poor people in districts/cities in Central Sulawesi Province. Furthermore, the variable economic growth also has a positive and significant influence on income inequality (GINI), where if there is an increase in economic growth, it will cause an increase in income inequality among people in the local area.*

## I. Introduction

Economic growth is considered the most influential instrument for reducing poverty. In the context of poverty alleviation, economic growth is very important and necessary in providing a quantitative and positive initial impetus. (Škare And Družeta, 2015; Vanegas, 2014). Where, currently Poverty is one of the biggest and fundamental challenges throughout the world (Dauda, 2016). Thus, the fight against poverty is the main goal of 21st century modern economic development (Millennium Development Goals) which have been declared by all countries in various parts of the world. The economic condition of the population is a condition that describes human life that has economic score (Shah et al, 2020). Economic growth is still an important goal in a country's economy, especially for developing countries like Indonesia (Magdalena and Suhatman, 2020).

Kakwani (2001) and Son (2007) show that the elasticity of inequality is always positive, where a decrease in inequality also reduces poverty. As Ravallion (1997) and Son and Kakwani (2004) argue, a high initial inequality is important, because at a high level of inequality, poverty will be increasingly insensitive to growth. The results of empirical studies on the effect of income inequality on economic growth have resulted in a remarkable disparity, resulting in three main positions. the first group of studies or the current dominant view, holds that inequality is not the end result of growth, but plays a central role in determining the pace and pattern of growth (Bourguignon, 2004a, 2004b).

The results of the research presented, Josten (2003, 2004), Ahiuv and Moav (2003), Viaene and Zilcha (2003), Castelló-Climent (2004), Knowles (2001, 2005), Davis (2007), and Pede et al, (2009 ), initial inequality appears to be empirically associated with lower

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growth rates. As Bourguignon (2004a, 2004b) states, several hypotheses can explain why progressive redistribution can promote growth. Namely, first, based on credit market imperfections. They argue that the redistribution of capital from capital-rich firms or individuals to capital-poor and credit-limited individuals increases efficiency, investment and growth. Second, the political economy argument based on redistribution in the context of democracy. It has also been argued that many inequalities in redistributive democracies lead to more redistribution and less accumulation of capital. And third, with regard to redistribution through social conflict: too much inequality can lead to social tensions that are expressed through collective organization or individually led redistribution of violence. Organization must have a goal to be achieved by the organizational members (Niati et al., 2021). In addition, due to credit rationing, the poor are often unable to pay the minimum initial investment in education or other investments, or are unable to obtain insurance for their investments, even if they are profitable, because they lack collateral. The initial distribution of assets has a negative effect on subsequent economic growth (Naschold, 2002).

Meanwhile, Forbes (2000), and Nahum (2005) show that inequality does lead to growth. Meanwhile, finding a positive effect, the study of Barro (2000), Banerjee and Duflo (2003), Pagano (2004), Voitchovsky (2005), Barro (2008), and Castello-Climent (2010) found a non-linear relationship. However, Castelló and Domenech (2002), and Panizza (2002) found no correlation at all, or found inconclusive evidence about the correlation between inequality and economic growth (Charles-Coll, 2013).

Based on data from the Central Statistics Agency of Central Sulawesi Province, where the economy of Central Sulawesi Province in the third quarter of 2020 as measured by Gross Regional Domestic Product (GRDP) at Current Prices (ADHB) reached Rp. 41.90 trillion and GRDP at Constant Prices (ADHK) 2010 reached IDR 28.80 trillion. The economy of Central Sulawesi Province in the third quarter of 2020 was able to achieve growth of 2.82 percent, and when compared with the achievement of the third quarter of 2019 (y-on-y) of 6.15 percent. In terms of production, the highest growth in the business sector was achieved by the Manufacturing Sector at 27.79 percent. In terms of expenditure, the highest growth was exports, which reached 37.18 percent. Furthermore, the economy of Central Sulawesi Province in the third quarter of 2020 compared to the previous quarter or q-to-q grew by 3.98 percent. In terms of production, the highest growth was in the Manufacturing Sector, which reached 17.17 percent. Meanwhile, in terms of expenditure, the highest growth was contributed by Government Consumption Expenditure at 15.70 percent. However, the conditions that occurred where the economy of Central Sulawesi continued to experience growth until the third quarter of 2020 (c-to-c) was 2.51 percent. In terms of production, the highest growth was achieved by the Manufacturing Industry business field of 21.85 percent. In terms of expenditure, the highest growth was achieved by the Export Component of 36.30 percent. Spatially, the economic growth of the Sulawesi, Maluku and Papua (Sulampua) regions in the third quarter of 2020 (y-on-y) contracted, except for North Maluku and Central Sulawesi. The highest growth occurred in North Maluku Province at 6.66 percent and the lowest was in West Sulawesi Province which experienced a contraction of 5.26 percent. Meanwhile, the economy of Central Sulawesi Province in 2020 which was measured based on Gross Regional Domestic Product (GDP) at current prices reached Rp. 197.44 trillion and at constant prices in 2010 reached Rp. 134.15 trillion. The economy of Central Sulawesi Province in 2020 (c-to-c) grew 4.86 percent, slowing down compared to 2019 which was 8.83 percent. In terms of production, the highest growth was achieved by the Manufacturing Industry business field of 23.68 percent. In terms of expenditure, the highest growth was achieved by the Export

component of 27.78 percent. The economy of Central Sulawesi in the fourth quarter of 2020 when compared to the fourth quarter of 2019 (y-on-y) grew by 4.45 percent, slower than the same period in the previous year of 10.92 percent. On the production side, the highest growth was still dominated by the Processing Industry, which grew to 25.25 percent. On the expenditure side, the highest growth was also dominated by foreign exports reaching 28.67 percent. In the fourth quarter of 2020 compared to the previous quarter (q-to-q), it grew by 4.12 percent. In terms of production, the highest growth was contributed by the Construction Sector at 19.89 percent.

Meanwhile, the number of poor people In September 2020, Central Sulawesi had reached 403.74 thousand people or 13.06 percent of the total population. The poor population increased by 5 thousand people compared to March 2020 which was only 398.73 thousand people or 12.92 percent. Meanwhile, if a comparison is made between the poor in urban and rural areas, the percentage of poor people in urban areas in March 2020 was 8.76 percent, increasing to 9.21 percent in September 2020. Meanwhile, the percentage of poor people in rural areas in March 2020 already reached 14.69 percent, an increase to 14.76 percent in September 2020. During the period March 2020 - September 2020, the number of poor people in urban areas increased by 6.7 thousand people (from 80.73 thousand people in March 2020 to 87.43 thousand people in September 2020), while in rural areas it fell by 1.7 thousand people (from 318,000 people in March 2020 to 316.31 thousand people in September 2020).

The size of the income distribution among the people can be seen in September 2020, where the level of inequality in the expenditure of the population of Central Sulawesi as measured by the Gini Ratio is 0.321. The Gini Ratio decreased by 0.009 points, compared to September 2019 which was 0.330. Furthermore, when compared to the Gini Ratio in March 2020, which was 0.326, it decreased by 0.005 points. The Gini Ratio was also compared between urban and rural areas, so in September 2020 urban areas were 0.334, or decreased compared to September 2019 which was 0.339, and did not change compared to March 2020 which was also 0.334. In rural areas the Gini Ratio in September 2020 was still lower at 0.295. This Gini Ratio did not change with the Gini Ratio in March 2020 also at 0.295, but increased compared to the Gini Ratio in September 2019 which was 0.292. Based on the background of the study above, this study examines the relationship and effect of economic growth with poverty and income inequality in Central Sulawesi Province.

## II. Review of Literature

The phenomena of growth and poverty are generally studied separately. The initial debate took place in the second half of the 20th century, it was found that income inequality and poverty are based on a "trickle-down" approach (based on the assumption that growth automatically eliminates poverty), and a trade-off between growth and income inequality. By the end of the years of rapid growth in the 70s and the significant increase in poverty and inequality in the 80s and 90s, it became clear that it was impossible to examine growth in isolation from poverty.

Recent theoretical contributions examining the relationship between economic growth and poverty are the studies of Dollar and Kraay (2002), Adams (2004), Ferreira (2010), and Fosu (2010), where there is evidence in the literature that economic growth is a panacea. to solve the problem of poverty.

The results of a relatively recent empirical study also presented by Haveman and Schwabish (2000), and Freeman (2003) provide strong evidence of the relationship

between economic growth and poverty during the 1990s. The study of Formby et al. (2001, 2004) also examined the relationship between poverty and growth using a poverty headcount and distribution-sensitive measure of poverty using the Sen poverty index (Amartya Sen). Several studies have shown a diminishing effect of growth on poverty over time.

Furthermore, Leblanc (2001) analyzed the time period from 1961 to 1998, and found that over time, growth had a weakening effect on poverty reduction. Furthermore, the research of Formby et al. (2001, 2004), examining poverty with a distribution-sensitive measure of poverty, showed that growth during the 1980s and first half of the 1990s did not have the same impact on poverty reduction as growth during the 1970s.

Similarly, Blank (2000), Haveman and Schwabish (2000) found that the relationship between poverty and growth did weaken during the 1970s and 1980s, but during the period of strong growth from the 1990s, the relationship between the two was very strong. strong. This research uses time series data. Freeman (2003) has an alternative analysis using census panel data with demographic and structural control variables, and also finds stronger evidence of the relationship between poverty and growth over the period 1993 to 1999.

Previous research concluded that poverty and growth had a strong relationship in the 1990s based on a measure of the number of heads of cash income from poor families. Formby et al. (2001, 2004) using the Sen poverty index which is sensitive to the distribution of the poverty index, found no evidence that poverty was more responsive to growth during the first half of the 1990 than in the 1980.

## III. Research Method

The source of data used in this study is secondary data from the Central Statistics Agency (BPS) of Central Sulawesi Province. This study also uses the Granger causality test analysis method to test the relationship between the three variables and then panel data regression is carried out to see the effect of each independent variable on the dependent variable. The data used are panel data on the number of poor people, GRDP (Gross Regional Domestic Product) at Constant Prices 2010, and Gini ratio data by regencies/cities in Central Sulawesi Province during the 2011-2019 period. The model of economic growth and poverty proposed by Dollar and Kraay (2002), Ghura et al., (2002), Berg and Krueger (2003) and empirical studies from Agenor (2004, 2005), Islam (2004), Anyanwu and Erhijakpor (2009, 2010). The panel data regression equation model using three models namely the common effect model, fixed effect model, random effect model in this study can be written in the following form.

**Table 1.** Panel Regression Model

| Model | Regression Panel |
|---|---|
| 1. Model A | $Log\ POV_{it} = \alpha_i + \beta_1 Log\ PDRB_{it} + \varepsilon_{it}$ |
| 2. Model B | $GINI_{it} = \alpha_i + \beta_1 Log\ PDRB_{it} + \varepsilon_{it}$ |
| 3. Model C. | $Log\ POV_{it} = \alpha_i + \beta_1 Log\ PDRB_{it} + \beta_2\ GINI_{it} + \varepsilon_{it}$ |

Note: POV is the number of poor people (poverty) in districts/cities in Central Sulawesi Province in 2011-2019; GRDP is the Gross Regional Domestic Product (GDP) Based on 2010 Constant Prices Districts/Cities in Central Sulawesi Province 2011-2019; and GINI is the Gini ratio to measure the level of income inequality by Regency/City in Central Sulawesi Province in 2011-2019.

# IV. Results and Discussion

## 4.1 Granger Causality Test Results

**Table 2.** Granger Causality Tests Results

| Null Hypothesis | Obs | F-Statistic | Prob. |
|---|---|---|---|
| PDRB does not Granger Cause POV | 91 | 1.97782 | 0.11446 |
| POV does not Granger Cause PDRB | | 4.77347 | 0.0108*** |
| GINI does not Granger Cause POV | 91 | 1.85032 | 0.1634 |
| POV does not Granger Cause GINI | | 0.44744 | 0.6407 |
| GINI does not Granger Cause PDRB | 91 | 2.63168 | 0.0777* |
| PDRB does not Granger Cause GINI | | 0.90944 | 0.4066 |

Information: ***) significant on $\alpha = 1\%$; **) Significant on $\alpha = 5\%$; *) Significant on $\alpha = 10\%$

Referring to the results of the Granger causality tests in Table 2 above, it can be concluded that the results are as follows: 1). The POV variable does not affect the GRDP variable, and conversely the GRDP Variable affects the POV variable (*** significant at = 1%), so there is only a one-way relationship; 2). The GINI variable does not affect the POV variable, and the POV variable also does not affect the GINI variable, so there is no relationship between the two variables; 3). The GRDP variable affects the GINI variable (*significant at = 10%), and the GINI variable does not affect the GRDP variable.

## 4.2 Model A Panel Regression

**Table 3.** Model A Panel Regression Results

| Variabel Independen | Variabel Dependen: Number of Poor People (POV) | | |
|---|---|---|---|
| | Common Effect Model | Fixed Effect Model | Random Effect Model |
| PDRB | 0.129722*** | -0.014227** | -0.013813** |
| R-squared | 0.074645 | 0.986848 | 0.037686 |
| Adjusted R-Square | 0.066599 | 0.985188 | 0.029318 |
| F-statistic | 9.276639 | 594.4939 | 4.503660 |

Information: ***) significant on $\alpha = 1\%$; **) Significant on $\alpha = 5\%$; *) Significant on $\alpha = 10\%$

Referring to the results of the panel regression model in Table 3 above, in the panel regression equation model A in the form of CEM (common effect model), Fixed Effect Model (FEM) and Random Effect Model (REM) there is a GRDP variable that has an influence on the population variable poor (POV). Where this variable is significant at by 1% and by 5%. To determine the best model, testing is carried out using the Chow Test, Hausman Test and Lagrange Multiplier, where the best panel regression model A is the fixed effect model (FEM). So, it can be concluded that the economic growth variable (GRDP) has a negative effect on poverty, where if the increase in economic growth, it will reduce the number of poor people in districts/cities in Central Sulawesi Province.

## 4.3 Model B Panel Regression

**Table 4.** Model B Panel Regression Results

| Variabel Independen | Variabel Dependen: GINI | | |
|---|---|---|---|
| | Common Effect Model (CEM) | Fixed Effect Model (FEM) | Random Effect Model (REM) |
| **PDRB** | 0.014354** | 0.004959 | 0.007925 |
| **R-squared** | 0.037434 | 0.356287 | 0.012055 |
| **Adjusted R-Square** | 0.029064 | 0.275042 | 0.003464 |
| **F-statistic** | 4.472291 | 4.385332 | 1.403269 |

Information: ***) significant on $\alpha$ = 1%; **) Significant on $\alpha$ = 5%; *) Significant on $\alpha$ = 10%

Referring to the results of the panel model regression in Table 4 above, only the panel regression model B in the form of CEM (common effect model) has a significant variable at of 5%. That is, the variable economic growth (GRDP) has a positive and significant effect on the variable income inequality (GINI). The condition shows that if there is an increase in economic growth in the Regency/City in Central Sulawesi Province, there will be an increase in income inequality among the local population.

## 4.4 Model C Panel Regression

**Table 5.** Model C Panel Regression Results

| Variabel Independen | Variabel Dependen: Poor Resident (POV) | | |
|---|---|---|---|
| | Common Effect Model (CEM) | Fixed Effect Model (FEM) | Random Effect Model (REM) |
| **PDRB** | 0.150974*** | -0.014566** | -0.013741** |
| **GINI** | -1.480581*** | 0.068254 | 0.060786 |
| **R-squared** | 0.126160 | 0.986921 | 0.035306 |
| **Adjusted R-Square** | 0.110829 | 0.985126 | 0.018381 |
| **F-statistic** | 8.229333 | 549.7714 | 2.086089 |

Information: ***) $significant\ on\ \alpha$ = 1%; **) Significant on $\alpha$ = 5%; *) Significant on $\alpha$ = 10%

Referring to the results of the panel model regression in Table 5 above, in the panel regression equation model C in the form of CEM (common effect model), In the Fixed Effect Model (FEM) and Random Effect Model (REM) there is a variable economic growth (GRDP) which has a significant influence on the variable number of poor people (POV). Where this growth variable is significant at by 1% and by 5%. In addition, in the CEM model, there is a significant GINI variable at of 1%, the effect on the number of poor people. Therefore, to determine the best model, the Chow Test, Hausman Test and Lagrange Multiplier were tested, where the panel regression model C which was chosen as the best model was the fixed effect model (FEM). So, it can be concluded that the variable economic growth (GRDP) has a negative effect on poverty, where if economic growth increases it can reduce the number of poor people in districts/cities in Central Sulawesi Province.

# V. Conclusion

Based on the empirical findings above, it can be concluded that the variable economic growth (GRDP) has a negative effect on the number of poor people in districts/cities in Central Sulawesi Province. Furthermore, the variable economic growth also has a positive and significant influence on income inequality (GINI), where if there is an increase in economic growth, it will cause an increase in income inequality among people in the local area.

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