

Analysis of the Effect of Domestic Gross Fixed Capital Formation (DGFCF) and Population on the Gross Regional Domestic Product (GRDP) in Southeast Sulawesi

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Abstract: This research aimed to analyze the effect of DGFCF and population growth on GRDP in Southeast Sulawesi Province. This study used descriptive and quantitative methods, namely describing a problem by analyzing data and things related to numbers or calculation formulas used to analyze the problem being studied. The analytical method used by researchers was the OLS method. The results of the study show that simultaneously the variables of DGFCF and population growth have a significant and positive effect on GRDP. Partially, the variables of DGFCF and population growth have a significant and positive effect on economic growth. From the regression results, the R square value (R^2) was 0.891. This means that the independent variable was able to explain variations in economic growth in the Province of Southeast Sulawesi by 89 percent while the remaining 11 percent is related to other variables.

Keywords: Investment, Population Growth, and GRDP.

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I. Introduction

Economic development is a major problem and has become an agenda every year aimed at creating a prosperous and just society. One success parameter of a country can be assessed based on the development of economic variables. Gross domestic product (GDP) is part of economic variables that support the development of a country and traditionally, development is defined as an increase in a country's GDP continuously or sustainably. Declining of per capita income levels tend to be caused by a rapid increase in population in most developing countries, especially those whose basic conditions are still poor, dependent on the agricultural sector, and covered by limited natural resources and land (Todaro, 2003: 326) in (Julfiansyah, 2013).

Economic development requires investment support which is part of the main source of economic growth. The continued increase in capital stock is caused by investments generated through various activities. Then there is an increase in productivity, capacity, and quality of production, which in turn can increase the rate of economic growth and absorb labor.

Table 1.1

Growth of Domestic Gross Fixed Capital Formation (DGFCF), Population, and Growth of GRDP in 2014-2018

Year	Growth of DGFCG (%)	Population (people)	Growth of GRDP (%)
2014	15.86	2,448,081	6.26
2015	4.22	2,499,540	6.88
2016	7.65	2,551,008	6.51
2017	8.74	2,602,389	6.76
2018	5.85	2,653,654	6.42

Source: (Badan Pusat Statistik (BPS), 2019a) and (Badan Pusat Statistik (BPS), 2019b)

Table 1.1 shows that in the 2014-2018 period, the domestic gross fixed capital formation (DGFCF) growth declined significantly. The lowest point of investment growth reached 4.22 percent in 2015. Similarly, GDP growth in Southeast Sulawesi also declined significantly despite a significant increase in the same year reaching 6.88 percent. On the other hand, the population of Southeast Sulawesi increased every year during the same period. Research conducted by Rahman et al. (2016) found that investment had a positive and significant

effect on the gross regional domestic product (GRDP) growth as the increase of the amount of investment affects the amount of GRDP.

The study aimed to analyze whether DGFCF growth and the population have a significant effect on GRDP growth in Southeast Sulawesi.

II. Literature Review

Investment Theory

Investment is a net positive addition of capital goods. Types of investments can be categorized into two, namely financial and real investment. Financial investment is an investment in the form of securities including the purchase of bonds, shares, and other debt proof documents. Meanwhile, real investment is an investment in capital goods or durable goods that will be used to produce goods (Hellen et al., 2018).

The level of national income is determined by investment (capital stock). Investment encourages the community to increase economic activity, which will absorb labor as well as increase national income and welfare (Sukirno, 2000). Investment can expand employment opportunities and create jobs that will absorb labor so that it can reduce unemployment. As a result, there will be new income, an increase in output to these factors of production, and the increase of national output, which will drive economic growth. The allocation of investment in the economic sector should lead to sectors that stimulate the regional economy, reduce inequality in income distribution, and reduce poverty. Therefore, the allocation of capital stock should be devoted to the agricultural sector and the agricultural product processing industry. However, these investments are still considered to be less profitable for both private and government revenue outcomes. This has resulted in investment in the agriculture and industry sectors each year tending to decline, even though investment is needed to support economic growth (Rauf et al., 2012).

Population Theory

Malthus explains that "the number of the population tends to increase faster than food supplies". This issue has also been expressed by other experts such as Benjamin Franklin and Adam Smith. The population can develop similar to a series of measurements and supplies such as arithmetical so that the resources available on the Earth cannot meet the needs of a population that is growing faster. This situation results in misery and poverty (Mustika, 2011).

Adam Smith explains that the number of people increases if the level of subsistence wages or the level of wages that are only able to meet the necessities of life is lower than the prevailing wage level. If the subsistence wage level is lower than the prevailing wage level, it will cause most of the population to get married early so that there will be an increase in fertility and the population. Meanwhile, the amount of labor demand determines the level of wages. If the workforce demanded is greater than the workforce (population) offered, this can result in high wages, and vice versa.

Economic Growth Theory

Todaro (2000) in Sulistiawati (2012) state that there are three main factors or components in the economic growth of each country, namely:

1. Capital formation, which includes all types of new forms of investment allocated to physical equipment, capital or human resources and land;
2. Population growth, which will increase the number of workers in the next few years; and
3. Technological development, which is regarded as the most important source of economic growth and is categorized into three namely: (a) Technological development that is neutral; (b) Technological development that uses little labor; (c) Technological development with little capital.

All countries in the world agree that the value of gross national product per capita is an indicator used to measure the economic welfare of a nation. The greater the value of a country's gross national product per capita, the more prosperous the country is. Economic growth is a prerequisite for an increase in the welfare of a nation.

III. Research Methods

Scope and Research Object

This study only observed the effect of the domestic gross fixed capital formation (DGFCF) and the population on the growth of the gross regional domestic product (GRDP) of the Southeast Sulawesi Province.

Research Site

The study was conducted at Kendari City, Southeast Sulawesi Province.

Data Collection

The procedures of data collection are as follows (Anggoro & Soesatyo, 2015).

- (1) Secondary data in various reports in related institutions or offices, including Statistic Indonesia, were collected.
- (2) The data were complemented from supporting data from the literature study, namely by studying and analyzing data from various literature and economic journals covering the issues to be examined;
- (3) Information from the internet media and other various media was also gathered.

The collected data were reprocessed using a mathematical analysis tool that suits the problem and research objectives. The analysis techniques used in the study were: (1) descriptive analysis; (2) multiple regression analysis.

Operational Variables Definition

Three variables used in this study were as follows.

1. DGFCF growth (X_1) referred to in this study is a physical and financial investment based on GRDP Expenditures calculated in percent.
2. The total population (X_2) referred to in this study is the number of male and female residents in the Southeast Sulawesi Province.
3. The GRDP (Y) growth referred to in this study is the changes in GRDP in the Southeast Sulawesi Province calculated in percent.

Data Analysis Method

This study used multiple linear regression analysis with ordinary least square (OLS) method, which is formulated in the following equation.

$\gamma = \beta_0 + \beta_1 x_1 + \beta_2 x_2 \dots \dots \dots \beta_n x_n$ (Equation.....1) which was modified to suit the research variables, which resulted in the following equation.

$\gamma = \beta_0 + \beta_1 x_1 + \beta_2 x_2$ (Equation.....2)

with:

- γ = GRDP growth (%)
- x_1 = DGFCF growth (%)
- x_2 = Population (person)
- β_0 = Constant
- $\beta_1 \beta_2$ = Regression coefficients

Multiple regression analysis was done using the classic assumption test and calculated in the SPSS program using:

- (1) normality test;
 - (2) multicollinearity test;
 - (3) heteroscedasticity test;
 - (4) autocorrelation test;
 - (5) linearity test.
- (Anggoro & Soesatyo, 2015)

IV. Results and Discussion

Hypothesis Test Result

a. Partial

Hypothesis 1 (H1) in this study was "Investment has a positive and significant effect on GRDP of Southeast Sulawesi". The SPSS calculation results of hypothesis 1, are as follows.

Table 3
Partial Test Results
Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-35.683	1.643		-21.717	.000
DGFCF	7.610	.290	.905	26.243	.000
Population	.074	.022	.118	3.427	.003

a. Dependent Variable: GRDP

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-35.683	1.643		-21.717	.000
DGFCF	7.610	.290	.905	26.243	.000
Population	.074	.022	.118	3.427	.003

The results show that the growth of DGFCF (X1) significantly influenced GRDP growth (Y) or **H1 was accepted**. The conclusion was drawn based on two provisions, namely:

- 1) The sig. value of investment output (X₁) on GRDP (Y) was 0.000 (lower than 0.05).
- 2) The t_{count} (26.243) of investment output (X₁) on GRDP (Y) was higher than t_{table} (2.1098)

Hypothesis 2 (H2) in this study was "Population has a positive and significant effect on GRDP of Southeast Sulawesi". The SPSS calculation results in Table 3 show that the population growth (X2) significantly influenced GRDP growth (Y) or **H2 was accepted**. The conclusion was drawn based on two provisions, namely:

- 1) The sig. value of population output (X₁) on GRDP (Y) was 0.003 (lower than 0.05).
- 2) The t_{count} (3.427) of population output (X₂) on GRDP (Y) was higher than t_{table} (2.1098)

b. Simultaneous Test

The F Test was done to analyze the effect of DGFCF and population growth on GRDP growth in Southeast Sulawesi Province simultaneously. The results show that the simultaneous significance value was 0.000 with the F_{count} of 905.421. In the numerator df 2 and the denominator df 18, the F_{table} was 3.63. Since the value of F_{count} > F_{table} (905.421 > 3.55), it can be concluded that there is a simultaneous influence between DGFCF and population growth on GRDP growth in Southeast Sulawesi Province or, **Ha was accepted**.

Table 4
Simultaneous Test Results
ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	4.699	2	2.350	905.421	.000 ^a
Residual	.044	17	.003		
Total	4.743	19			

a. Predictors: (Constant), investment, population growth

b. Dependent Variable: GRDP

V. Discussion

The Effect of DGFCF on GRDP

The results of multiple linear analysis show that there is a positive and significant effect between economic growth and domestic gross fixed capital formation (DGFCF), which means that DGFCF has an important role in increasing the GRDP growth. If DGFCF rises, then GRDP growth will also increase and vice versa. The results of the study are supported by research conducted by Danawati et al. (2016), which explains that the level of output is actively determined by the element of the production, which is an investment. Investment can be the foundation for the success and sustainability of development in the future because it will absorb labor, which in turn will open up employment opportunities. This will increase people's income. At any time, capital stock is the main determinant of economic output because the capital stock can change at any time, and this change tends towards economic growth. It is known that two forces are affecting the capital stock, namely depreciation and investment. Investment refers to spending on new plants and equipment, and that causes inventories to increase (Saptomo, 2008). The justification that can support this research is the value of DGFCF that continues to increase from year to year, especially in the period 2014-2018, where the value increased from 31.3 M in 2014 to reach 47.3 M in 2018.

The Effect of Population on GRDP Growth

The results show that the population has a significant and positive effect on the GRDP of Southeast Sulawesi Province. The yearly increase in the population affects the growth of GRDP. This is also supported by

Julfiansyah (2013). He explains that the population and the large workforce indicate the potential for productive business to produce goods and services to meet daily needs. On the other hand, this also creates problems in terms of the availability of food, clothing, housing, educational facilities, health, and employment. Population growth, especially concerning the increase of the workforce's number, has traditionally been considered a positive thing in driving economic growth. However, this depends on whether or not the economic system can absorb and employ additional labor force. This capability also depends on the quantity and type of capital accumulation as well as the availability of other supporting factors, such as managerial and administrative expertise (Saptomo, 2008).

VI. Conclusions And Suggestions

The conclusions of this study are: (1) DGFCF growth variable (X_1) significantly and positively influences GRDP growth in Southeast Sulawesi Province; (2) Population variable (X_2) significantly and positively related to GRDP growth in Southeast Sulawesi Province; (3) DGFCG (X_1) and population (X_2) growth simultaneously have a significant effect on GRDP growth in Southeast Sulawesi Province.

The suggestions from this study are: 1) The local government should encourage investment that is labor-intensive so that it absorbs a lot of labor because it is supported by a significant increase in the number of the population each year. 2) The community needs to be equipped with training to improve skills so that they can be easily absorbed in various fields of business.

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