

Determinants of the Gross Regional Domestic Product of East Kalimantan Province: Macroeconomic Variable Review

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— *Review of* —
**Integrative
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ABSTRACT

The purpose of this study is to analyze several macroeconomic variables that influence the Gross Regional Domestic Product (GRDP) by Type of Expenditure in East Kalimantan Province. Types of secondary data based data with the 2014-2018 quantitative approach obtained. Data was obtained from the Central Statistics Agency and the Regional Investment and Licensing Agency of East Kalimantan Province. The hypothesis testing tool uses the Partial Least Square (PLS) analysis model with the SmartPLS 3.0 program. The results of the analysis show Population Growth, Inflation, Gross Fixed Capital Formation, and Changes in Inventory, Government Consumption Expenditure have a positive (significant) effect on GRDP. Other variables such as: Investment, the Household Consumption Expenditure, Consumption of Non-Profit Household Institutions, Export and Import (Goods - Services) have a positive (not significant) effect on the GRDP of East Kalimantan Province.

Keywords: GRDP; Population growth; Inflation; investment.

1. INTRODUCTION

Domestic demand can be in the form of household consumption, consumption of non-profit private institutions, government consumption and gross fixed capital formation. Meanwhile, demand from outside the domestic area is in the form of exports, to fulfill the demand for goods and services from an area is not sufficient, it is fulfilled from outside the region (import). In GDP (Gross Domestic Product) according to usage, exports of goods and services are reduced by imports of goods and services, called net exports (Indonesian Central Bureau of Statistics, 2010).

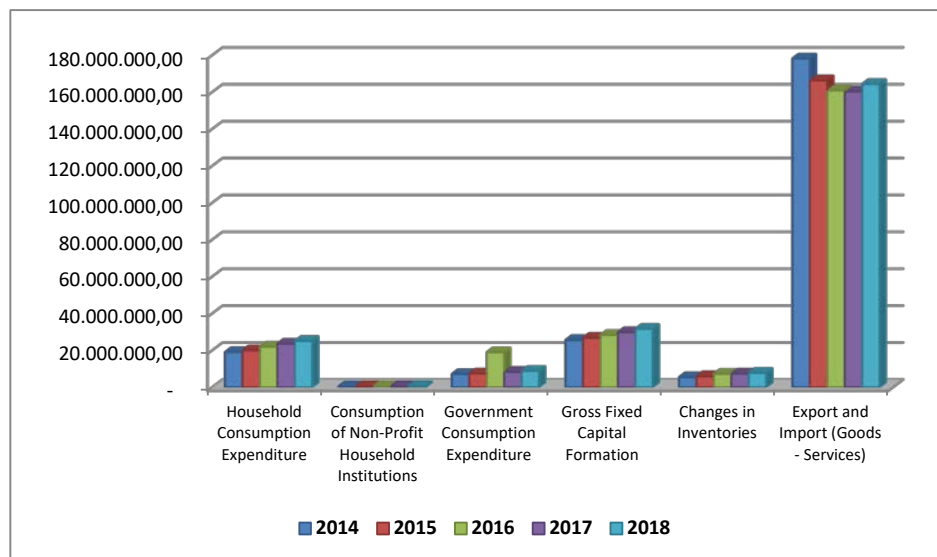
Mankiw (2006) argues that one other important indicator in economic growth is human resources in a region. Increasing population over time can be a driver and a barrier to economic growth. Increasing population will increase the number of workers and these additions allow an area to increase production. However, the adverse effects of population increases that are not matched by employment opportunities will cause economic growth to be inconsistent with improving community welfare.

In an effort to improve the product of a region, capital is needed or investment is called investment which can also be called an investment. Economic theory defines or defines investment as expenditure for buying capital goods and equipment for production equipment. It aims to replace, especially adding capital goods in the economy that will be used to produce goods and services in the future.

In addition, in the economic development of a region or region can not be separated from the effects arising from an economic activity, these influences are beneficial and some are harmful, one of which is inflation. One of the starting points for the birth of macroeconomics is the existence of short-term economic problems that

cannot be overcome by classical economic theory. The short-term economic problems are inflation, unemployment, and balance of payments.

Diagram 1 Gross Regional Domestic Product at 2010 Constant Market Prices by Type of Expenditure in Kalimantan Timur Province (Million Rupiahs), 2014–2018.



Source: Central Statistics Agency of East Kalimantan Province, 2019 (processed)

The value of the GRDP of East Kalimantan Province according to usage in the past 5 years has increased with a positive trend. In 2014 the total GRDP amounted to 236,274,892.77 million rupiahs and soared until 2018 reaching 238,858,224.97 million rupiah. The increase occurred because of the existence of residents who were the subject of development activities, causing economic activity to occur (see Diagram 1).

With the increase in GDP based on expenditure, without being offset by the addition of investment realization, as well as the stability of the population and inflation rate in East Kalimantan Province in these 5 years, it will lead to inequality in the distribution of additional income (*ceteris paribus*), which in turn creates a condition connected GRDP. Fulfillment of the need for investment, population, and the rate of inflation can only be achieved by increasing aggregate or aggregate output from GRDP continuously. In understanding the regional economy, economic growth generated by the total accumulation of GDP is an increase in the value of GRDP itself, which means an increase in regional income in East Kalimantan.

Based on the data and explanations that have been stated before, the purpose of this research is how the relationship between several economic variables (population growth, investment, and inflation rate) to GRDP according to its use refers to regional and national development, so that the development of East Kalimantan Province can be implemented harmoniously and integratedly, in order to realize harmony and balance of development. Thus, the process of regional development to improve community welfare can be achieved and felt by the entire community of East Kalimantan Province.

This research is supported and is a development of previous research. Khan et al. (2013), the paper focuses on relationship and collision of inflation and population growth with GDP. the results show negative relation of inflation and positive relation of population growth with GDP. The positive relation of GDP with population growth could have comes true if marginal productivity increases so supplementary human

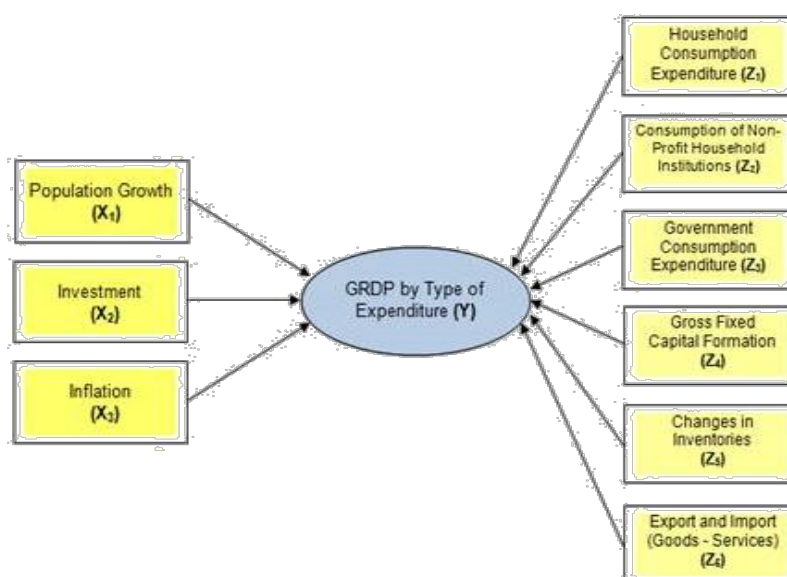
capital can improve economy. Meanwhile, research by Irsania & Ana Noveria (2014), the rest of them which are unemployment rate and FDI (Foreign Direct Investment) also have a significant influence toward the economic growth. If FDI and unemployment rate increase, then Indonesia's economic growth will also increase. Indonesia as a developing country shows an increase in the influence of FDI toward economic growth and allow it to continue to rise in the future, but for now all of the macroeconomics factors that observed in this research have a significant influence toward Indonesia's economic growth.

2. METHODOLOGY

Based on the research objectives, the design of this study was determined by the variables used in the study. There are four variables, namely: GRDP at 2010 Constant Market Prices by Type of Expenditure, population growth, investment, and inflation. Then, data analysis was performed with the Partial Least Square (PLS) model. The purpose of PLS is to test theories and weak data, such as small number of samples or the existence of data normality problems, predict the influence of variable X (exogenous variables) on Y (endogenous variables), and explain the theoretical relationship between the two variables (Abdi, 2003).

This research was conducted in 2019, especially on prospective data availability in East Kalimantan Provincial Government institutions that have data sources to support analysis. Publication data for 2014-2018. Whereas, the scope of research includes variables that reflect GRDP according to usage which consists of 3 (three) dimensions, namely: Population Growth, Investment, and Inflation. GRDP by type of Expenditure in this study consisted of: (1) Household Consumption Expenditure; (2) Consumption of Non-Profit Household Institutions; (3) Government Consumption Expenditure; (4) Gross Fixed Capital Formation; (5) Changes in Inventories; and (6) Export and Import (Goods - Services).

Illustration modeling and conceptual framework of research based on variables are as follows:



Picture1 Research Framework

3. EMPIRICAL RESULTS

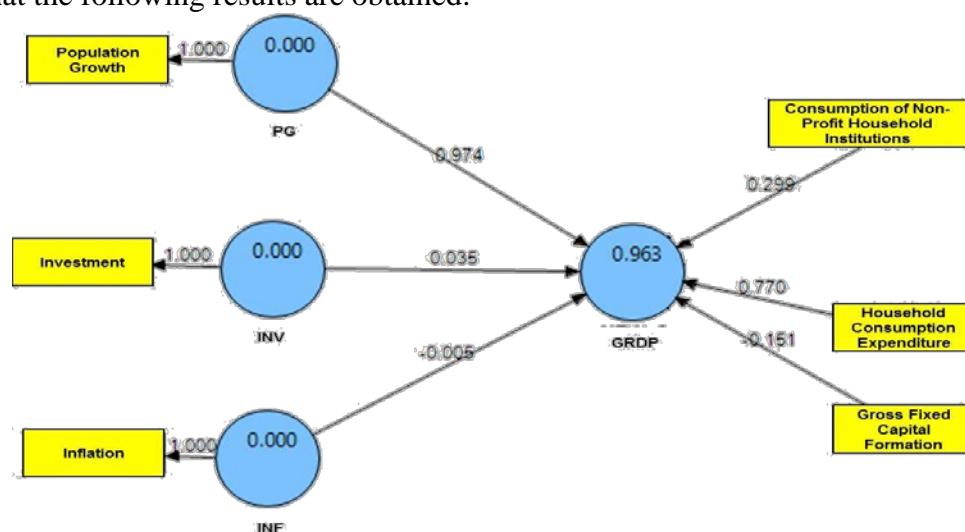
Convergent validity tests in PLS are assessed based on loading factors (correlations between variables) indicators that measure these variables. Next is the first phase outer loading table.

Table 1 Phase 1 Outer Loadings Results (Convergent Validity)

Variable	PG	INV	INF	GRDP
Population Growth	1.000000			
Investment		1.000000		
Inflation			1.000000	
Household Consumption Expenditure				0.986754
Consumption of Non-Profit Household Institutions				0.961040
Government Consumption Expenditure				0.520660
Gross Fixed Capital Formation				0.874055
Changes in Inventory				0.033189
Export and Import (Goods - Services)				0.324961

Source: Output of SmartPLS 3.0

The indicator is considered valid if it has a loading value above 0.7. If there is an indicator that is <0.7, then the indicator will be excluded from the model and then the second stage will be calculated. Based on the results of phase 1 outer loading in Table 1 above, it is found that there are indicators that are invalid because they have a loading value of <0.7, namely: GRDP by Export and Import (Goods - Services), Government Consumption Expenditure, and Changes in Inventories. So, we need to do the calculation of the second stage by removing the three variables or items from the model so that the following results are obtained:



Picture 2 PLS Phase 2 Output Results (Convergent Validity)

Based on the results of the second phase of outer loading, from Figure 1 it is found that all indicators are valid because they have a loading value of > 0.7 , so the third step calculation is not needed.

Table 2 Cross Loading Results (Discriminant Validity)

Variable	JP	INV	INF	GRDP
Population Growth	1.000000	0.183188	-0.050665	0.980800
Investment	0.183188	1.000000	-0.154768	0.214040
Inflation	-0.050665	-0.154768	1.000000	-0.059556
Household Consumption Expenditure	0.968635	0.185101	-0.080386	0.986754
Consumption of Non-Profit Household Institutions	0.940226	0.275383	-0.030699	0.961040
Government Consumption Expenditure	0.515437	-0.021287	-0.025597	0.520660
Gross Fixed Capital Formation	0.852243	0.324599	-0.074670	0.874055
Changes in Inventory	0.027488	0.139498	-0.068484	0.033189
Export and Import (Goods - Services)	0.312908	0.236749	0.014198	0.324961

Source: Output of SmartPLS 3.0

The value of cross loading shows that the indicator of the latent variable is smaller or < 0.50 is GRDP based on Changes in Inventories and Export and Import (Goods - Services). Meanwhile, from the other four variables has a value greater than 0.50 consisting of: GRDP by of Household Consumption Expenditure, Consumption of Non-Profit Household Institutions, Government Consumption Expenditure, and Gross Fixed Capital Formation, so that the research instrument is said to be invalid discriminant (see Table 2).

In Table 3, the AVE (Average Variance Extracted) value shows more than 0.50, meaning that the instrument variable is said to be valid discriminant.

Table 3 AVE Value

Variable	AVE
GRDP by Type of Expenditure	1.000000
Population Growth	0.867858
Investment	0.659917
Inflation	0.893237

Source: Output of SmartPLS 3.0

From Table 4, it can be seen that the Cronbach's Alpha coefficient is >0.60 , so that all data components in the sample items are research variables (GRDP by Type of Expenditure, Population Growth, Investment, and Inflation) is reliable.

Table 4 Variable Reliability Test Results

Variable	Composite Reliability	Cronbach's Alpha	Notation
GRDP by Type of Expenditure	1.000000	0,970	Reliable
Population Growth	1.000000	0,881	Reliable
Investment	1.000000	0,834	Reliable
Inflation	1.000000	0,947	Reliable

Source: Output of SmartPLS 3.0

Examination of the model can be seen from R^2 (R Square) of each exogenous variable in the structural equation described below:

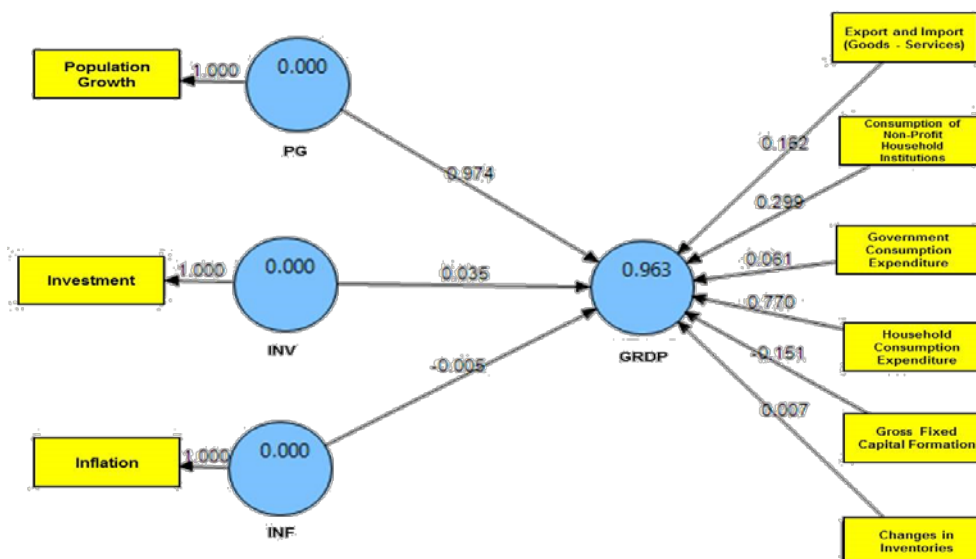
- R^2 on Population Growth is 0.958, meaning that the model can explain the phenomenon or variation of X_1 influenced by Population Growth variables on GRDP by Type of Expenditure of 95.8%.
- R^2 on Investment is 0.944, meaning that the model can explain the phenomenon or X_2 variation influenced by Investment variables on GRDP by Type of Expenditure of 94.4%.
- R^2 on Inflation is 0.978, meaning that the model can explain the phenomenon or X_3 variation influenced by the Inflation variable on GRDP by Type of Expenditure at 97.8%.

Table 5 Value of R^2 (Inner Model)

Variable	R Square
GRDP by Type of Expenditure	-
Population Growth	0.958295
Investment	0.944978
Inflation	0.978050

Source: Output of SmartPLS 3.0

In the first part, there are two variables that positively influence the GRDP of East Kalimantan Province, which are population growth and investment. Meanwhile, the inflation variable has a negative effect with a coefficient value of -0.005. The conclusion in this section is population growth as the dominant variable in influencing GRDP by type of Expenditure which is 0.974.



Picture 3 Outcome of Outer PLS Model

The magnitude of the influence of each variable in the second section proves that five variables contribute positively to GRDP by type of Expenditure. These variables are Export and Import (Goods - Services), Consumption of Non-Profit Household Institutions, Government Consumption Expenditure, Household Consumption Expenditure, and Changes in Inventories. As is known, the Household Consumption Expenditure is a variable that has a dominant impact with a coefficient of 0.770. There are differences in the results of the Gross Fixed Capital Formation variable which actually has a negative effect on East Kalimantan GRDP with a coefficient of -0.151.

Table 6 Goodness of Fit Result

Variable	R Square
GRDP by Type of Expenditure	0.963213
Population Growth	-
Investment	-
Inflation	-

Source: Output of SmartPLS 3.0

The magnitude of the influence of each variable in the second section proves that five variables contribute positively to GRDP by type of Expenditure. These variables are Export and Import (Goods - Services), Consumption of Non-Profit Household Institutions, Government Consumption Expenditure, Household Consumption Expenditure, and Changes in Inventories. As is known, the Household Consumption Expenditure is a variable that has a dominant impact with a coefficient of 0.770. There are differences in the results of the Gross Fixed Capital Formation variable which actually has a negative effect on East Kalimantan GRDP with a coefficient of -0.151.

The SmartPLS output states that the R square value is 0.963, which indicates that exogenous variables are used, namely: Population Growth (X_1), Investment (X_2), and Inflation (X_3) with a very strong correlation category. R^2 also explains the model of

96.3% of GRDP (Y) in East Kalimantan Province, while the remaining 0.037 or 3.7% is an error term of other variables not included in the research model.

To test hypotheses in the smartPLS 3.0 program carried out by t-statistics on each path according to the development of hypotheses made by researchers. Testing is done by t-test, when obtained p-value 0.05 (alpha 5%), it is concluded significant.

Table 7 Estimation of Structural Model Parameters

Variable	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics ((O/STERR))
X1 --> Y	1.000000	1.000000	0.000000	0.068205	5.927085
X2 --> Y	1.000000	1.000000	0.000000	0.119405	1.046741
X3 --> Y	1.000000	1.000000	0.000000	0.106512	2.888911
Z1 --> Y	0.770007	0.742748	0.118722	0.118722	1.001902
Z2 --> Y	0.299259	0.302407	0.068657	0.068657	0.925456
Z3 --> Y	0.060709	0.078752	0.060593	0.060593	4.358730
Z4 --> Y	0.150965	0.146450	0.075119	0.075119	6.485805
Z5 --> Y	0.007178	0.010510	0.019028	0.019028	2.009695
Z6 --> Y	0.162168	0.152747	0.056135	0.056135	0.377226

Source: Output of SmartPLS 3.0

The size of the significance of the support of hypotheses can be used by comparison of t-table and t-statistics. If the t-statistic value is higher than the t-table value, it means that the hypothesis is supported. For the 95% confidence level (alpha 5%), the t-table value for the two-tailed hypothesis is >1.96 . Thus, if the t-statistic value is >1.96 , then the research hypothesis is proven. Following are the results of hypothesis testing:

- The first hypothesis states Population Growth has a positive and significant effect on the GRDP type of Expenditure of East Kalimantan Province. The results of hypothesis testing produce a coefficient of 1.000 and a t-statistic of 5.927, so that the proposed hypothesis can be accepted or proven true.
- The second hypothesis states that Investment has a positive and significant effect on GRDP type of Expenditure in East Kalimantan Province. The results of hypothesis testing produce a coefficient of 1.000 and a t-statistic of 1.046, so that the proposed hypothesis can be accepted or proven correct.
- The third hypothesis states inflation has a positive and significant effect on the GRDP type of Expenditure of East Kalimantan Province. The results of hypothesis testing produce a coefficient of 1.000 and a t-statistic of 2.888, so the proposed hypothesis can be accepted or proven true.
- The fourth hypothesis states that the Household Consumption Expenditure has a positive and not significant effect on the GRDP type of Expenditure of East Kalimantan Province. The results of hypothesis testing produce a coefficient of

0.770 and a t-statistic of 1.001, so the proposed hypothesis is rejected or proven wrong.

- The fifth hypothesis states that the Consumption of Non-Profit Household Institutions has a positive and not significant effect on the GRDP type of Expenditure of the East Kalimantan Province. The results of hypothesis testing produce a coefficient of 0.299 and a t-statistic of 0.925, so the proposed hypothesis is rejected or proven wrong.
- The sixth hypothesis states that the Government Consumption Expenditure has a positive and significant effect on the GRDP type of Expenditure of the East Kalimantan Province. The results of hypothesis testing produce a coefficient of 0.060 and a t-statistic of 4.358, so that the proposed hypothesis can be accepted or proven correct.
- The seventh hypothesis states Gross Fixed Capital Formation has a positive and significant effect on the GRDP type of Expenditure of East Kalimantan Province. The results of hypothesis testing produce a coefficient of 0.150 and a t-statistic of 6.485, so that the proposed hypothesis can be accepted or proven correct.
- The eighth hypothesis states that Changes in Inventories have a positive and significant effect on the GRDP type of Expenditure of the East Kalimantan Province. The results of hypothesis testing produce a coefficient of 0.007 and a t-statistic of 2.009, so that the proposed hypothesis can be accepted or proven correct.
- The ninth hypothesis states that Export and Import (Goods - Services) have a positive and not significant effect on the GRDP type of Expenditure of East Kalimantan Province. The results of hypothesis testing produce a coefficient of 0.162 and a t-statistic of 0.377, so the proposed hypothesis is rejected or proven wrong.

4. CONCLUSION

The results showed several macroeconomic variables namely Population Growth and Inflation had a positive and significant effect on GRDP. In addition, from the outer model it is known that the Government Consumption Expenditure, Gross Fixed Capital Formation, and Changes in Inventories have a positive and significant effect on the GRDP of East Kalimantan Province in 2014-2018.

Based on these conclusions, a recommendation can be given to the Government, related to GRDP type of Expenditure, which is a large total of human resources (population), will not mean if it is not able to be absorbed, and utilized properly as a factor of production. The provision of labor-intensive employment will be effective in absorbing labor and reducing the amount of unemployment for production capacity (input) in GRDP or economic growth. The East Kalimantan Provincial Government can determine policy choices that stimulate an increase in investment in Regencies and Cities, for example by increasing cooperation with neighboring countries or provinces in offering investment packages, actively exposing potential areas.

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