

Analysis of the Effect of Economic and Political Variables on Economic Growth in Indonesia

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ARTICLE INFO	ABSTRACT
Article history: Received Feb 11, 2020 Revised Mar 20, 2020 Accepted Apr 30, 2020 Keywords: Investment TPAK APS IDI GRDP	This study aims to determine the effect of economic and political variables on economic growth in Indonesia with a research period of 2011-2016 and as many as 33 provinces. The variables used in this study are Investment, Labor Force Participation Rate (TPAK), School Participation Rate (APS), Indonesian Democracy Index (IDI) and Gross Regional Domestic Product (GRDP). The analytical tool used in this study is the Random Effect Model (FEM). The results of the analysis show that the Investment, APS and IDI variables have a positive and significant effect on economic growth in Indonesia, while the LFPR variable is not statistically significant and cannot explain economic growth in Indonesia.

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1. INTRODUCTION

One of the important indicators in economic development can be indicated from the level of economic growth, where each region declares a high rate of economic growth as one of its regional development goals. The definition of economic growth is the increase in output per capita within a certain period of time where economic growth can be measured using the Gross Domestic Product (GDP) indicator which shows the extent to which the performance of each economic sector in producing an output (finished product), the economic growth of a country will be considered good when GDP every year has increased compared to the previous year, this can be seen from the increase in the number of goods and services that can be produced annually by a country where the increase is caused by the increase in the number and quality improvement in the factors of production. Gross Domestic Product is a combination of all goods and services produced within a certain period of time using production factors belonging to domestic and foreign communities (Sukirno, 2012). Indonesia is one of the developing countries where every year it makes various efforts or changes to increase economic growth, it can be concluded that economic growth in 2011-2016 has increased every year, this shows that Indonesia's Gross Domestic Product is always increasing. In a span of six years, The highest economic growth occurred in 2016 which amounted

to 12,406,809 Trillion Rupiah. Indonesia is one of the developing countries where every year it makes various efforts or changes to increase economic growth, it can be concluded that economic growth in 2011-2016 has increased every year, this shows that Indonesia's Gross Domestic Product is always increasing. In a span of six years, the highest economic growth occurred in 2016 which amounted to 12,406,809 Trillion Rupiah. Based on the explanation of the background above, it can be stated that economic growth in Indonesia has not been maximized where in the last five years it is still fluctuating and seems to have experienced a sharp decline so that the government must be able to encourage economic growth in each province by optimizing factors that can encourage regional economic growth. such as investment, Manpower, Education and Political Stability. The purpose of this study is to analyze how the influence of investment on Indonesia's economic growth during 2011-2016, to analyze how the influence of Labor to Indonesia's economic growth during 2011-2016,

2. RESEARCH METHOD

2.1 Research variable

In this study, the variables used consist of the dependent variable and the independent variable, the dependent variable or the dependent variable, namely the variable that is explained or influenced by the independent variable, while the independent variable or independent variable is the variable that explains or affects other variables. There is one dependent variable, namely economic growth and four independent variables in this study, namely investment, labor, education level and political stability.

2.2 Data Types and Sources

In this study, the data used were obtained from various sources, including:

- 1) GRDP data on constant prices in 2010 by province in Indonesia in 2011-2016 sourced from the 2016 and 2017 Indonesian Statistics books.
- 2) Investment realization data for provincial PMA and PMDN in Indonesia in 2011-2016 sourced from the investment activity report, the Investment Coordinating Board (BKPM) 2017.
- 3) Data on the Labor Force Participation Rate by province in Indonesia for 2011-2016 sourced from the 2016 and 2017 Indonesian Statistics books.
- 4) School Participation Rate by province in Indonesia in 2011-2016 sourced from the 2016-2017 Indonesian Statistics book.
- 5) Indonesian Democracy Index data by province in Indonesia for 2011-2016 sourced from the 2016-2017 Indonesian Statistics book.

2.3 Method of collecting data

In this study, data were obtained using documentation techniques and literature study techniques. The documentation technique is obtained by tracing the data and information related to the object of research, while the literature study technique is to analyze the existing literature.

2.4 Research Analysis Methods.

In panel model analysis there are three kinds of approaches consisting of Common Effect Model approach, Fixed Effect Model approach and Random Effect Model approach. The three approaches above can be explained as follows:

a. Common Effect Model (CEM)

The technique used in the Common Effect Model is considered a simple technique because it only combines cross section and time series. Only by combining the cross section and time series can OLS be used to estimate the panel data model.

b. Fixed Effect Model (FEM)

Definition of Fixed Effect Model is a model that assumes there are intercept differences between companies while the slope remains the same between companies. To overcome the existence of different intercepts between companies, a dummy variable is needed to allow for different parameter values, both differences in cross section or time series, but the addition of this dummy variable turns out to reduce the degree of freedom, this results in reduced parameter efficiency. researched

c. Random Effect Model (REM)

The reduction in degrees of freedom caused by the addition of a dummy variable in the Fixed Effect model can be overcome using a disturbance variable (Error Terms) or also commonly referred to as the Random Effect Model. In this model, to overcome the differences in intercepts, it is accommodated using the Error Terms of each company. The advantage of using this model is that it can eliminate heteroscedasticity. The method used to estimate this model is Generalized Least Square.

2.5 Regression Model Estimation Method Test.

This research is about the analysis of the effect of investment, labor force participation rate, school certainty rate and the Indonesian democracy index on economic growth in Indonesia by using Time Series data for 6 years, namely 2011-2016 and using Cross Section data, namely 33 provinces in Indonesia so that a combination of The data is 198 observations, then the research model that will be observed is as follows:

$$\text{LnYit} = 0 + 1\text{LnX1it} + 2\text{LnX2it} + 3\text{LnX3it} + 4\text{LnX4it} + \text{eit}$$

Where:

Y = Gross Regional Domestic Product (Trillion Rupiah)

X1= Investment (Trillion Rupiah)

X2= Labor Force Participation Rate (%)

X3= School Enrollment Rate (%)

X4= Indonesian Democracy Index (%)

0= Intercept

= Variable Coefficient Value

i = 1, 2, 3, ..., 33 (cross-section data of Provinces in Indonesia)

t = 1, 2, 3, 4, 5, 6 (time-series data, 2011-2016)

e = Error Term

To determine which panel data model will be used in this study, it is necessary to test first. This test is conducted to determine which model will be used as an estimate of the regression model in the study. There are three techniques that can be done, namely:

- 1) The F statistic test is used to choose the best model to be used between the OLS method without variables (Common Effect) or Fixed Effect, this test is also called the Chow test. The F test is used for model significance and is usually explained using analysis of variance or ANOVA. The test procedure can be described as follows:
 - a) Create a null hypothesis (H0) and an alternative hypothesis (Ha) as follows:
 $H_0 : 1 = 2 = \dots = k = 0$
 $H_a : \text{at least one of } k \neq 0 \text{ where } k = 1, 2, 3, \dots, k$
 - b) Find the calculated F value with a formula like in equation $= \frac{R^2/(k-1)}{(1-R^2)/(n-k)}$ and the critical F value from the distribution table F =. The critical F value is based on the magnitude of and df where the magnitude is determined by the numerator (k-1) and denominator (nk).
 - c) The decision to reject or fail to reject H0 is as follows: If F count > F critical then reject H0 and vice versa if F count < F critical then fail to reject H0.
- 2) Hausman test is a test used to choose the best model between Fixed Effect or Random Effect. In determining the best model can see the results of the Chi-Square statistics and compared with the critical Chi-Square. If the Chi-Square statistic is greater than the critical Chi-Square, it rejects the null hypothesis, which means that the correct estimate for this model is the Fixed Effect model, on the other hand, if the Chi-Square statistic is smaller than the critical Chi-Square, it fails to reject the null hypothesis, which means that the correct estimate for this model is the Random Effect model. The Hausman test will follow the Chi-Square distribution as follows:

2.6 Statistical Test

a. Coefficient of Determination (R)

This test is carried out to see how well the regression line can explain the data, if all the data lies on the regression line or with the meaning that the residual value reaches zero then it can be considered that the regression line is perfect but this is very rare, there is only a regression line that is cause the confounding variable to be as small as possible. The coefficient of determination can measure how well the regression line is and also measure the percentage of the total dependent variation described by the regression line.

b. Model Feasibility Test (F Test)

The Model Feasibility Test or F Test is conducted to see whether the independent variables together have a significant effect on the dependent variable. This can be seen by comparing the calculated F with the critical F, if the calculated F is greater than the critical F, then rejecting the null hypothesis means that the independent variable has a significant effect on the dependent variable.

The hypotheses used in the F test are:

$H_0 : 1, 2, 3, 4 = 0$ (no effect)

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To determine the conclusion by using the calculated F value with F table using the following criteria:

- 1) H_0 is accepted if $F\text{-Count} < F\text{-Table}$ then H_1 is rejected, meaning that the independent variables together do not affect the dependent variable.
- 2) H_0 is rejected if $F\text{-Calculate} > F\text{-Table}$ then H_1 is accepted, meaning that the independent variables jointly affect the dependent variable.

c. Significance Test (T Test)

The T test was conducted to determine whether the regression coefficient was significant or not, namely not. T test is used to see whether each independent variable individually can have a significant effect on the dependent variable.

To determine the conclusion by using the T-Calculate value with the T-Table using the following criteria:

$H_0 : 1 = 0$ (no effect)

$H_1 : 1 > 0$ (positive effect)

Conclusion :

- 1) If $T\text{-Calculate} > T\text{-Table}$ then rejecting H_0 means that each independent variable has a significant positive and significant effect on the dependent variable
- 2) If $T\text{-Count} < T\text{-Table}$ then fail to reject H_0 which means that each independent variable has no significant positive effect on the dependent variable.

3. RESULTS AND DISCUSSION

3.1 Panel Data Regression Model Results

a. Selection of Regression Model

In this panel data research there are three models including the Common Effect Model, Fixed Effect Model and Random Effect Model. However, there is only one best model that will be used as the analysis method. Therefore, testing is carried out first to get which model to choose.

1) Chow Test

The Chow Test is carried out to determine the most appropriate model among fixed effects or common effects which will later be used in estimating panel data.

The hypotheses in the chow test are:

H_0 = Common Effect Model is better than Fixed Effect Model

H_a = Fixed Effect Model is better than the Common Effect Model

Significance level = 5% (0.05)

The basis for rejecting the hypothesis above is by comparing the calculation of the F-count with the F-table. If the F-count is greater than the F-table, then the best model is the Fixed Effect Model, while on the other hand, if the F-count is smaller than the F-table, the best model is the Common Effect Model. In addition, there is another way, namely by looking at the p-value with . If the p-value $<$ then rejects H_0 which means that the best model that can be used is the Fixed Effect Model, but if the p-value $>$ then accepts H_0 which means that the best model is the Common Effect Model.

Table 1.

Test Chow with Redundant Test

Effects Test	Statistics	df	Prob.
Cross-section F	95.349403	(32.161)	0.0000
Cross-section Chi-square	592.673604	32	0.0000
Redundant Fixed Effects Tests			

Pool: REG_FIXED

Test cross-section fixed effects

From the Chow Test above, the F-Statistic result is 95.349403, while with the numerator value 32 and the denominator 161 at a significance level of 5%, the final F-Table result is 1.516. From the results of each of the F-Statistics and F-Tables above, it can be concluded that the F-Statistics value is greater than the F-Table value, this indicates that it rejects H0 which means that in the Chow Test the best regression model is the Fixed Effect Model.

2) Hausman Test

Hausman test is conducted to determine the most appropriate model among fixed effects or random effects which will later be used in estimating panel data.

The hypothesis in the Hausman Test is:

H0 = Random Effect Model is better than Fixed Effect Model

Ha = Fixed Effect Model is better than Random Effect Model

Significance level = 5% (0.05)

The basis for rejecting the hypothesis above is by comparing the calculation of the chi-squared-statistics with the chi-squared-table. If the chi-squared-statistics result is greater than the chi-squared-Table then the best model is the Fixed Effect Model, while on the other hand, if the chi-squared-Statistic result is smaller than the chi-squared-Table, the best model is the Random Effect Model. In addition, there is another way, namely by looking at the p-value with . If the p-value < then rejects H0 which means that the best model that can be used is the Fixed Effect Model, but if the p-value > then accepts H0 which means that the best model is the Random Effect Model.

Table 2.

Hausman test

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Cross-section random	59.507581	4	0.6072

Correlated Random Effects - Hausman Test

Pool: REG_RANDOM

Test cross-section random effects

3.2 Fixed Effect Model (FEM) Results

Of the three regression models, Common Effect Model, Fixed Effect Model, and Random Effect Model above, the best result is the Fixed Effect model.

The fixed effect model is based on differences in intercepts between companies but the interpretation is the same over time (Time Invariant). Besides, this model also assumes that the regression coefficient (slope) remains between companies and over time (Widarjono, 2015).

a. Regression Statistics Test

It is concluded that from the two tests that have been carried out, the best regression model is the Fixed Effect Model. To obtain further evaluation results, several tests were carried out, namely the Coefficient of Determination (R2) test, model feasibility test (F test) and significance test (T test).

1) Coefficient of Determination (R2)

Goodness Test The regression line was conducted to determine and measure the success rate of the regression model used in predicting the value of the dependent variable. The coefficient of determination (R2) is a number that gives the proportion or percentage of the total variation in the dependent variable (Y) described by the independent variable (X) (Gujarati and Porter, 2011).

From the results of the Fixed Effect Model regression, a value (R2) of 0.979180, which means that as much as 97% wherein the variation of the independent variables (Investment, Labor, Education Level and Indonesian Political Stability) has a degree of closeness to the dependent variable (Economic Growth), while the remaining as much as 2% is explained by other variables outside the model.

2) Model Feasibility Test (F Test)

The statistic is 210.3345, with a numerator value of 4 and a denominator of 193 at a significance level of 5%, the final result of the F-Table is 2.42. From each of the results of the F-Statistics and F-Table above, it can be concluded that the F-Statistic value is greater than the F-Table value, this indicates that rejecting H0 which means all independent variables (Investment, Labor, Education

Level and Stability) Indonesian Politics.) together have a significant effect on the dependent variable (GRDP)

3) Significance Test (T Test)

T test was conducted to test whether each of these independent variables significantly affected the dependent variable by assuming that the other variables were fixed.

Table 3.
Statistical results t-count

Variable	t-statistics	t-table	Information
LOG(X1)	1.515334	1,285***	Significant
LOG(X2)	0.162233	1,285***	not significant
LOG(X3)	2.401603	1,652**	Significant
LOG(X4)	1.596498	1,285***	Significant

*= significant level =1%

**= significant level = 5%

***= significant level = 10%

3.3 Result Interpretation

a. Regression Coefficient

From the results of the analysis, it is found that the equation model with its estimation is as follows:

$$Y = 3.981278 + 0.031807 X_1 + 0.002273 X_2 + 0.004441 X_3 + 0.004713 X_4$$

From the results of this significance test, it was found that as many as three variables had a significant effect on the Y variable, the significant variables were X1 (Investment), X3 (Education Level) and X4 (Political Stability) which had a significant and positive effect. Variable X2 (Labor) which has no significant effect on variable Y (GDP). From the results of testing the panel data above, it was found that the X1 (Investment) variable has a positive and significant effect on the Y variable (GRDP), this is in accordance with the initial hypothesis. The magnitude of the coefficient value of the X1 variable is 0.031807, so it can be concluded that if the investment value increases by 58 by 1 trillion rupiah, it will increase the value of GRDP by 0.

3.4 Cross Effect Distinguishing Intercept

This test is intended to see how big the gap in economic growth is obtained by each province in Indonesia, while the results are as follows:

Table 4
Economic Growth Gap

province	Intercept	Coefficient
ac4eh	-0.091594	3.888.684
Bali	-0.144317	3.836.961
Banten	0.967692	494.897
Bengkulu	-1.219.661	2.761.617
DIY	-0.514289	3.466.989
DKI Jakarta	2.266.598	6.247.876
Gorontalo	-1.589.347	2.391.931
West Java	2.168.409	6.149.687
Jambi	-0.048616	3.932.662
Central Java	1.790.862	577.214
East Java	2.246.053	6.227.331
West Kalimantan	-0.193645	3.787.633
South Kalimantan	-0.163868	381.741
Central Kalimantan	-0.563282	3.417.996
East Kalimantan	103.937	5.020.655
Kep. Bangka Belitung	-1.008.971	2.972.307
Riau Islands	0.086451	4.067.729
Lampung	0.432855	4.414.133

province	Intercept	Coefficient
Maluku	-1.616.172	2.365.106
North Maluku	-1.859.089	2.122.189
NTB	-0.458877	3.522.401
NTT	-0.794036	3.187.242
West Papua	-0.887694	3.093.584
Papua	0.006364	3.987.642
Riau	1.219.317	5.200.595
West Sulawesi	-0.737266	3.244.012
South Sulawesi	-0.408505	3.572.773
Central Sulawesi	0.374853	4.356.131
Southeast Sulawesi	-1.579.888	240.139
North Sulawesi	-0.552558	342.872
West Sumatra	0.074513	4.055.791
South Sumatra	0.60358	4.581.636
North Sumatra	1.157.974	5.139.252

4. CONCLUSION

Based on the research results from the analysis of the influence of Investment, Labor, Education Level and Political Stability in Indonesia in 2011-2016, the following conclusions can be drawn:

1. Investment is important in economic growth in Indonesia, it can be seen from the realization data of Domestic Investment (PMDN) and Foreign Investment (PMA) from 2011-2012 have a positive and significant impact on economic growth in Indonesia. This indicates that if the investment value increases by 1 trillion rupiah, it will increase the value of GRDP by 0.031807, it means that if the investment value increases, the value of Indonesia's GRDP will also increase. On the other hand, if the investment value decreases by 1 trillion rupiah, it will decrease the GRDP value by 0.031807.
2. Manpower as depicted from the Labor Force Participation Rate data for 2011-2016 has no influence and is not significant on economic growth in Indonesia. This is because Indonesia is a developing country where most of the Indonesian people are not permanent employees, many people are casual employees so they are not administratively registered, besides that investment in Indonesia is still limited in the capital city or big cities so that the urbanization rate increases. and this actually increases the unemployment rate in Indonesia.
3. The level of education depicted from the School Enrollment Rate (APS) data for 2011-2016 has a positive and significant influence on growth in Indonesia. This shows that if the level of education increases, economic growth will increase. It can be concluded that if the APS value increases by 1 percent, the GRDP value will increase by 0.004441. Conversely, if the APS value decreases by 1 percent, the GRDP value will decrease by 0.004441. Political Stability in Indonesia as illustrated by the Indonesian Democracy Index (IDI) data for 2011-2016 has a positive and significant impact on economic growth in Indonesia. This shows that if the level of political stability increases, economic growth will also increase. It can be concluded that if the IDI value increases by 1 percent, the GRDP value will increase by 0.004713, and vice versa if the IDI value decreases by 1 percent, the GRDP value will decrease by 0.004713.

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