

Analysis of Human Capital, Infrastructure Spending Allocations, Economy Openness, and Formation of Fixed Capital on Economic Growth in Indonesia

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Abstract

This study entitled Analysis Influence of Quality of Human Capital, Gross Fixed Capital Formation, Infrastructure Expenditure Budget Allocation, and the economy openness on Indonesia's Economic Growth aims to analyze the influence of these macroeconomic variables on Indonesia's economic growth both in short and long term. The method used in this study is a secondary data analysis method by using quantitative error correction correction mechanism (ECM), cointegration test and Granger causality test. The result showed During analysis period 2000-2018 Indonesia's economic growth in the short term was positively and significantly affected by the quality of human capital and economic openness, while in the long run, 4 macroeconomic variables such as the quality of human capital, gross fixed capital formation, allocation of infrastructure spending and economic openness significant effect on economic growth, although two of them namely gross fixed capital formation and the allocation of infrastructure spending negatively and significantly.

Keywords: Economic growth and ECM

Introduction

Indonesian economic growth over past few years has been quite fluctuated. Statistics Bureau (2018) and Bank of Indonesia (2018) recorded Indonesian economic growth rate in 2014 of 5.01 percent, this figure decreased to 4.88 percent in 2015, while for the next two years, 2016 and 2017 the rate of economic growth in Indonesia increased to 5.03 percent and 5.07 percent respectively. At the same time, the Asian Development Bank (2018) predicts Indonesian economic growth rate will only grow by 5.0 percent in 2014, then in 2015 and 2016, Indonesian economic growth rates 4.9 percent and 5.0 percent, whereas in 2017, that number increased to 5.1 percent. The rate of economic growth released by the Asian Development Bank does not differ significantly from the figures for the rate of economic growth put forward by Statistics Bureau and Bank of Indonesia.

The World Economic Outlook (2018) also displayed Indonesian economic growth rate in 2014 of 5.0 percent, while for 2015 and 2016, Indonesian economic growth rate was 4.9 percent and 5.0 percent. Meanwhile in 2017, the World Economic Outlook predicted Indonesian economic growth rate will only increase slightly to 5.1 percent. In general, there were no significant differences in the prediction of Indonesia's economic growth rate issued by Statistics Bureau, Bank of Indonesia, or from international institutions such as Asian Development Bank and International Monetary Fund (IMF).

The economic growth rates above are basically lower compared to previous years. The fluctuation in Indonesian economic growth rate is clearly related to the fluctuations in global economy during 2010 to 2018 ago. Fluctuations in oil prices and prices of a number of primary commodities in world markets and international interest rates followed by the strengthening of the US dollar exchange rate helped trigger the emergence of global economic stagnation which in turn will affect the domestic economic growth of many countries. The trade war

between the US and China this past year also had an extraordinary influence on the world economy including developing countries. Indonesia also experienced significant pressure where the prices of non-oil and gas export mainstay commodities such as petroleum, coal, rubber and crude palm oil (crude palm oil), experienced a significant decline.

Domestic economic variables such as gross fixed capital formation, performance of international trade measured through the degree of the economy openness, allocation of government spending specifically for infrastructure, quality of domestic resources, especially natural resources and human resources, continue to be developed in order to contribute significantly to domestic economic growth while remaining can support and encourage the process of national economic development. However, since the last ten years these variables have actually shown less encouraging development. Regarding this phenomenon the question arises how the influence of the variable quality of human capital, the allocation of infrastructure spending, economic openness, the formation of gross fixed capital on Indonesia's economic growth. This article aims to analyze the influence of the quality of human capital, allocation of infrastructure spending, economic openness and gross fixed capital formation on Indonesia's economic growth.

Methods

This research utilizing secondary data analysis method. The data obtained will be analyzed both descriptively quantitative and qualitative descriptive. A qualitative descriptive approach attempts to explain the phenomenon of research by using qualitative descriptive analysis which is usually done using narratives supported by tables, graphs and diagrams. Quantitative descriptive analysis was carried out using quantitative method tools (in this study econometric analysis).

Types and Data Source:

The data used in this study are the following types of data:

- a. Gross fixed capital formation data
- b. Data on the quality of human capital
- c. Data on economic openness
- d. Infrastructure expenditure allocation data

Those data were obtained from the Statistics Bureau, Bank of Indonesia, Asian Development Bank (ADB)'s publications in the form of Key Economic Indicators and World Economic Outlook published by the International Monetary Fund (IMF). The observation period is 2000-2017

To answer the research problem, quantitative data analysis is used Error Correction Mechanism (ECM) Approach, Co-integration Test and Granger Causality Test. This ECM model was used to see the short-term balance and the long-term balance of the factors that affect Indonesia's economic growth during the period 2000 to 2017. (Junaidi, 2012; Hakim, 2014; and Winarno, 2011)

The long-term model for Indonesian economic growth is:

$$L_n E_{gt} = \alpha + \beta_1 MM_t + \beta_2 PMTB_t + \beta_3 ABI_t + \beta_4 KE_t + \mu_t$$

Dimana :

- | | | |
|----------|---|---|
| α | = | Constant |
| $PMTB_t$ | = | log natural human capital quality |
| KE_t | = | log natural gross fixed capital formation |
| ABI_t | = | log natural Infrastructure Spending |
| MM_t | = | log natural The economy openness |

β_1 s/d β_4 = Coefficient of Regression

μ_t = disturbance error

The operational definitions of the variables used in this study are as follows: Human capital is the number of workers based on education levels from elementary school graduates to universities recorded by statistics bureau (stated in person). Gross fixed capital formation is total domestic investment which includes all investments in Indonesia which are recorded in GDP based on expenditure side for a certain period (expressed in billions of rupiah). Infrastructure expenditure budget is the expenditure budget issued by the government through the APBN to build education and health infrastructure for a certain period (expressed in billions of rupiah). Economic growth is the real GDP growth rate at constant prices calculated by the Central Statistics Agency periodically (expressed as a percentage).

The economy openness is the ratio between total exports plus total imports divided by GDP multiplied by 100 percent. The total international trade figures recorded by BPS are referred to as official sources for calculating the ratio.

Results and Discussion

From the results of the processed data, for long term period the economic growth model is obtained as follows:

$$Y = -10.69602 + 0.000000208X_1 - 0.000000758X_2 - 0.006508X_3 + 0.080340 X_4$$

t_{test}	(5.66)	(-2.61)	(-2.64)	(3.79)
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$Prob$	(0.001)*	(0.0203)*	(0.0194)*	(0.0020)*
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$$R^2 = 0.770528$$

$$F_{test} = 11.75237$$

Significance Level $\alpha = 1\%$

It means: in the long term all variables have a significant effect on economic growth in Indonesia where each increase in the quality of human capital (X_1) by 1 percent will increase economic growth by 0.00000028 percent (significant positive effect), the formation of gross domestic fixed capital (X_2) by 1 percent will decrease economic growth by 0.000000758 percent (significant negative effect), then variable expenditure infrastructure allocation (X_3), where each increase by 1 percent, then economic growth will decrease by 0.006508 percent (significant negative effect) and every increase in economic openness (X_4) by 1 percent, it will increase economic growth by 0.080340 percent (positive and significant effect). Whereas for the short-term model, the results of the processed data obtained the Indonesian economic growth model as follows:

$$Y = 0.075109 + 0.000000177dX_1 - 0.00000117dX_2 - 0.001621dX_3 + 0.081158dX_4$$

t_{test}	(3.825)	(-1.402)	(-1.411)	(3.808)
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$Prob$	(0.0021)*	(0.1843)	(0.6876)	(0.0022)*
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$$R^2 = 0.757009$$

$$F_{test} = 10.12500$$

Significance level $\alpha = 1\%$

The short-term economic growth model as above can be interpreted as follows: in the short term changes in the variable quality of human capital by 1 percent, will increase economic growth by 0.000000177 percent (the effect is significantly positive), then the effect of changes (increase) in the gross fixed capital formation variable by 1 percent will reduce economic growth by 0.00000117 percent (insignificant negative effect), then the effect of

change (increase) infrastructure spending allocation by 1 percent will decrease economic growth by 0.001621 percent (insignificant negative effect), while for the economy openness variable, every increase in economy openness of 1 percent will increase economic growth by 0.0811 percent (positive and significant effect). Granger causality test conducted in this study produced the following conclusions: in lags 1, the variable quality of human capital (X1) did not affect economic growth, then the variable of gross fixed capital formation in lags 1 turned out to affect economic growth, for the variable allocation of infrastructure spending and openness the economy in lags 1 also did not affect economic growth. In lag 2, the quality of human capital (X1), allocation of infrastructure spending (X3) and economy openness (X4) also does not affect economic growth, while the variable capital formation remains gross memo affect economic growth. Meanwhile for lags 3 and lags 4, all independent variables apparently did not affect economic growth, then for lags 5, the Granger causality test results are as follows: 3 variables, namely the quality of human capital, gross fixed capital formation and allocation of infrastructure spending have no effect on growth the economy, while the variable economic openness has a positive effect on economic growth.

From the results of the processed data as stated above, the analysis influence of several macroeconomic variables such as quality of human capital, gross fixed capital formation, allocation of infrastructure spending and the economy openness have relatively different effect. In short term, both variables, each of which are changes in the quality of human capital and economic openness, have a significant effect on economic growth, while the other two variables, namely the formation of gross fixed capital and the allocation of infrastructure spending, have no effect. It means the role of human capital quality and the economy openness in guarding and encouraging economic growth have very strategic position. In the other words, the development quality of human resources is the basis for improving the quality of human capital and the economy openness must be a top priority in formulating development policies including budget allocations for the sector, on the other hand, infrastructure expenditure allocation policies and gross fixed capital formation must be directed to support growth economics both quantitatively and qualitatively. It is expected that in the long term those variables of human capital quality, gross fixed capital formation, allocation of infrastructure spending and economic openness will have a positive and significant impact on economic growth. It can only be achieved if there are consistency and relevance in formulating macroeconomic policies and the allocation of sustainable development budgets.

Conclusion

During the analysis period 2000-2018 Indonesian economic growth in short term was positively and significantly affected by the quality of human capital and the economy openness, while in the long term, 4 macroeconomic variables such as quality of human capital, gross fixed capital formation, allocation of infrastructure spending and economic openness significant effect on economic growth, although both of them are gross fixed capital formation and allocation of infrastructure spending negatively and significantly. Granger Causality Test results concluded that in lags 1 and lags 2, only variable fixed gross capital formation affects economic growth, the other 3 variables have no effect. In lags 3 and lags 4, all independent variables have no effect on economic growth, while in lags 5 only variables only economic openness affect economic growth, while the other 3 variables have no effect.

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