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The Impact of Net Exports, Technological Investment, Non-Financial Asset Investment, Infrastructure Investment, and Consumption on Economic Growth in Indonesia

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Abstract

This research studies Net Exports, Technology Investment, Non-Financial Asset Investment, Infrastructure Investment, and Consumption on Economic Growth in Indonesia. This study uses secondary data from world banks and processed regression using the moving average autoregression method. We find that the drivers of economic growth in Indonesia are consumption, government spending and exports. Meanwhile, investment in technology and investment in the business sector came under pressure when economic growth picked up.

Keywords: Technology Investment, Indonesia, Economic Growth
JEL Classification : C0, J24,J64

Background

Indonesia is one of the countries with the largest population in the world (Chen-Wishart & Vogenauer,2020). A large population is synonymous with high consumption. High consumption will cause many products to be produced to meet domestic needs, resulting in an increase in production which in turn encourages economic growth.

The increase in production at a certain level is more than sufficient to meet domestic demand, so it is necessary to absorb markets outside the country so that exports occur. When domestic production is more expensive or less to meet domestic needs, imports occur. The difference between exports and imports is known as net exports (Başar & Durmaz,2019).

The economic process certainly requires technology to accelerate production results with better production results. Technological investment is a process and an effort to obtain better technology. Investment in business is an investment in non-financial assets, which simply means an investment to build a new business. And the term infrastructure investment is a term for government spending to add or improve existing infrastructure to support economic activity (Guez & Zaouati,2017).

Literature review

International trade involves two or more countries in their trading activities. International trade gave birth to the terms export and import. Export is a domestic product that is absorbed by the international market or foreign market so that export is often interpreted as the trade of domestic products that are sold abroad or in other words, sold to other countries. Meanwhile, import is the opposite of export. Import is the result of foreign production which is absorbed in the domestic market or the domestic market, or in other words, the result of foreign production which is sold domestically (Mavroidis,2020).

In the process of international trade, many methods and techniques are needed as well as systems for preservation and packaging of domestic products. Of course this is a known technology. To improve preservation and packaging to better delivery requires technology investment including the purchase of machinery and other equipment related to trade technology. Technology investment is an investment to develop known technology so that it becomes better or to import or import technology from abroad into the country to get better results (Kim et al,2020).

There are two kinds of investment in the business sector, namely investment in financial instruments such as stocks and bonds. The second is direct investment in the form of new business developments. Direct investment is known as investment in non-financial assets. So that the impact of direct investment is the opening of new job opportunities and new production (Santos et al,2019).

To carry out business activities, it requires business supporting infrastructure such as roads and ports. Generally infrastructure is a public good that can be used by everyone, so generally the procurement of public goods in the form of infrastructure is carried out by the state. Infrastructure investment is generally carried out by the government to improve the economy. When the economy improves the country will benefit from getting more taxes in the future. So that the state's ability to provide better public goods also increases (Bohnen,2020).

The absorption of domestic products, both domestic and foreign production, is the consumption of the population. Population consumption makes business activities run because there are financial transactions so that the higher the population consumption, the more products are produced and have an impact on labor absorption and economic growth (Haughwout & Mandel,2019).

Research methods

This research studies Net Exports, Technology Investment, Non-Financial Asset Investment, Infrastructure Investment, and Consumption on Economic Growth in Indonesia. This study uses secondary data from world banks and processed regression using the moving average autoregression method with the following equation:

$$GDP_t = C_t + \beta_1 TI_{t1} + \beta_2 I_{t2} + \beta_3 G_{t3} + \beta_3 Nx_{t3} + \beta_3 Co_{t3} + e_t$$

Where,
GDP = Gross Domestic Product
C = Constant
IT = Technology Investment
I = Business Sector Investment
G = Infrastructure Investment
Nx = Net Exports
Co = Consumption
e = Error Term

All financial data is calculated in USD.

Results and Discussion

The estimation results are as follows:

$$GDP = -21443053755.3 + 1.48390042141*CO + 1.04339604414*G - 2.93604881744*I + 0.0310169324482*NX - 8.64185185339*TI$$

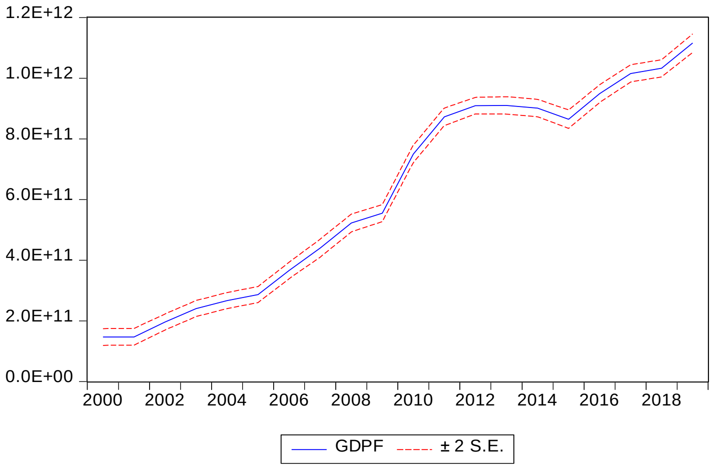
From the estimation results, consumption (Co), infrastructure investment (G), Net Export (Nx) are positively related to economic growth, while investment in the business sector and investment in technology has a negative impact on economic growth. This shows that the drivers of economic growth in Indonesia are consumption, government spending and exports. Meanwhile, investment in technology and investment in the business sector came under pressure when economic growth picked up. Table 1 illustrates the estimation results as follows:

Table 1. Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.14E+10	1.47E+10	-1.458006	0.1669
CO	1.4839	0.21695	6.83984	0
G	1.043396	1.286126	0.81127	0.4308
I	-2.936049	1.464779	-2.004431	0.0648
NX	0.031017	0.361697	0.085754	0.9329
TI	-8.641852	7.655319	-1.128869	0.2779
R-squared	0.999019	Mean dependent var		6.24E+11
Adjusted R-squared	0.998669	S.D. dependent var		3.39E+11
S.E. of regression	1.24E+10	Akaike info criterion		49.56002
Sum squared resid	2.15E+21	Schwarz criterion		49.85874
Log likelihood	-489.6002	Hannan-Quinn criter.		49.61833
F-statistic	2852.738	Durbin-Watson stat		0.975065
Prob(F-statistic)	0			

Based on the estimation results described in Table 1., it can be seen that the R-square is quite high, namely 0.99, so the quantitative calculation results show the 99% level of truth. Figure 1. Shows the forecasting of economic growth in Indonesia

Figure 1. Forecasting Economic Growth in Indonesia



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Forecast: GDPF
Actual: GDP
Forecast sample: 2000 2019
Included observations: 20
Root Mean Squared Error       1.04E+10
Mean Absolute Error           8.27E+09
Mean Abs. Percent Error      2.106957
Theil Inequality Coefficient 0.007332
    Bias Proportion          0.000000
    Variance Proportion      0.000245
    Covariance Proportion    0.999755
Theil U2 Coefficient         0.164772
Symmetric MAPE               2.150744
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Source: Author Computing

From the forecasting results, it can be seen that economic growth in Indonesia is experiencing very rapid growth by taking into account Net Exports, Technology Investment, Non-Financial Asset Investment, Infrastructure Investment, and Consumption of Economic Growth in Indonesia. This shows that Net Exports, Technology Investment, Non-Financial Asset Investment, Infrastructure Investment and Consumption have an impact on Economic Growth in Indonesia.

Conclusion

Net Exports, Technology Investment, Non-Financial Asset Investment, Infrastructure Investment, and Consumption have an impact on Economic Growth in Indonesia. Economic growth in Indonesia relies on the private consumption sector, government spending and net exports.

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