

The Effect of the Defense Budget on Income Inequality in Indonesia

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Abstract: This study aims to determine the effect of the defense budget on income inequality in Indonesia. The independent variable used in this variable is the defense budget, as well as other independent variables, namely economic growth and investment. The dependent variable used is income inequality. The data series used in this study was for 20 years from 2000 to 2019. The analysis technique used in this study was multiple linear regression using the *Ordinary Least Square* (OLS) method. Prior to the regression analysis, the classical assumption test was carried out which included normality test, heteroscedasticity test, multicollinearity test, and autocorrelation test. Hypothesis testing using t test (partial) and F test (simultaneous). The results showed that partially all independent variables, namely the defense budget and other independent variables, namely economic growth and investment had a significant effect on income inequality. The defense budget has a significant effect on income inequality with a probability value of 0.0223 and has a positive regression coefficient value of 0.0498. Simultaneously all independent variables have a significant effect on income inequality with a determination value of 88.5 percent.

Keywords: defense budget, *Ordinary Least Square* , income inequality

I. Preliminary

To lame income Becomes problem for all country good _ country proceed nor countries growing . Inequality this bring up impact great continuation _ dangerous for continuity development , especially in the field of economy . A number of studies show , inequality income impact on individual , family , social , and economy . getting taller gap income , will enlarge happening problem social . Imbalance social this can causing instability economy . Level to lame high income _ will related live with instability economy , crisis financial , burden debt , and inflation .

Another negative impact of inequality income, that is, it can generate demotivation , tension social and unrest politics that can lead to the disintegration of the nation , as well as drop request goods/services that can brake growth economy . Therefore, the problem of income inequality must be one of the important agendas and the focus of the government's attention to be addressed immediately in order to prevent various negative impacts that can arise in the life of the nation and state.

Hirnisa , MT, et al. (2009) conducted a study to investigate the long-term relationship between defense budgets and income inequality in six selected Asian countries in 1970-2005, namely Malaysia, Singapore, Thailand, Philippines, South Korea and India. The results of his research, in the case of Malaysia and Singapore, the defense budget has a significant positive effect on income inequality, which means that an increase in the defense budget will worsen income distribution (increase income inequality). For the other four countries, namely Thailand, the Philippines, South Korea, and India, no significant effect was found between

these variables, so it can be concluded that the defense budget is independent and does not have any impact on the distribution of income in the four countries.

II. Research Methods

The research method can be interpreted as a scientific way to obtain valid data with the aim of discovering, developing, and proving certain knowledge so that it can be used to understand, solve, and anticipate problems (Sugiono, 2014). The research method used in this research is descriptive quantitative research method, namely by finding information about existing symptoms, clearly defined goals to be achieved, planning the approach, collecting data as material for making reports. Observations were made using *time series data* for 20 years from 2000 to 2019. The data were taken from credible official institutions, then quantitative data was processed using the *evIEWS10 program*.

In this study, there is one main independent variable, namely the defense budget and two other independent variables, namely economic growth and investment, while the dependent variable is income inequality. To find out the relationship between the dependent variable and the independent variable, hypotheses were made and statistical data tests were carried out. The analytical technique used in this study is multiple linear regression analysis using the *Ordinary Least Square (OLS)* method using time series data.

Table 1 . Variables Used

Variable	Indicator
Defense Budget (X_1)	Percentage of Defense Budget to Gross Domestic Product (GDP) at Current Prices (ADHB) in a period/year
Economic Growth (X_2)	Percentage change in GDP at constant prices (ADHK) for the current year divided by GDP for ADHK in the previous year
Investment (X_3)	Percentage of Investment Value (Gross Fixed Capital Formation + Inventory Change) to ADHB GDP in one period/year
Income Inequality (Y)	The Gini Ratio is the index between the cumulative percentage of households and the cumulative percentage of expenditure

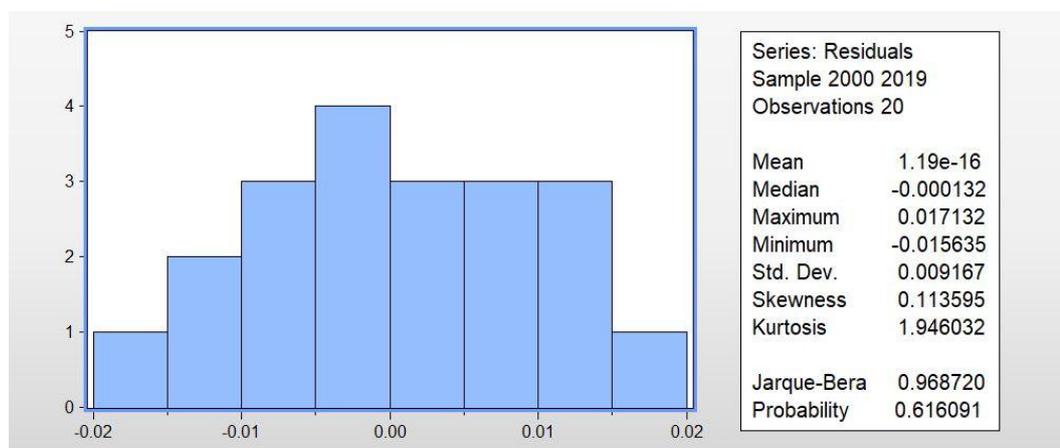
Source: Processed by Researchers (2021)

III. Results and Discussion

1. Classic assumption test

Classical assumption test is performed to ensure that the data collected and used in regression analysis can produce a valid analysis. There are 4 types of classical assumption tests commonly used, including:

1. Normality test



The results of the normality test as shown in Figure 1 above show that the data in this study is normally distributed, this is because the p-value (0.616) > (0.05).

2. Test Multicollinearity

Multicollinearity test was conducted to see whether there was a correlation between the independent variables. In this study, the multicollinearity test used *Variance Inflation Factor (VIF)*.

Table 2 Results Test Multicollinearity

Variance Inflation Factors

Samples: 2000 – 2019

Included observations: 20

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000547	109.5418	NA
X1	0.000387	43,76358	1.060254
X2	1.24E-05	70.08673	1.095112
X3	2.43E-07	43.47408	1.156676

Source: Processed by researchers with *Eviews10*

The results of the multicollinearity test as shown in table 2 above obtained the *Centered VIF* value of each independent variable < 10. These results indicate that the independent variable data in this study does not have multicollinearity or does not have a significant relationship or similarity with one another.

3. Test Heteroscedasticity

In this study, Test Heteroscedasticity used is ARCH test .ARCH test is working for see homogeneity residual variance .

Table 3 Heteroscedasticity Test Results

Heteroskedasticity Test: ARCH

F-statistics	0.974817 Prob. F(1.17)	0.3373
Obs*R-squared	1.030415 Prob. Chi-Square(1)	0.3101

Source: Processed by researchers with *Eviews10*

The ARCH test results as shown in table 3 above have a Chi-Square Prob value of 0.31. The prob chi square value is greater than = 0.05 (5%) so based on the results of the heteroscedasticity test using the ARCH test, it shows that the data used in this study has a residual variance that is homogeneous and free from heteroscedasticity.

4. Test Autocorrelation

The autocorrelation test used in this study is the *Breusch-Godfrey Serial Correlation LM Test* with a significance level of = 5%.

Table 4 Results Test Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

F-statistics	1.131673 Prob. F(2.14)	0.3503
Obs*R-squared	2.783371 Prob. Chi-Square(2)	0.2487

Source: Processed by researchers with *Eviews10*

When viewed from the results in table 4 above, the value of the Chi-Square Prob is 0.249, which means it is greater than the significance level of = 5%. With these results it can be concluded that there is no autocorrelation.

2. Multiple Linear Regression Test

The results of the classical assumption test process above show that the data in this study are normally distributed, free from multicollinearity, the residuals are homogeneous, and have no significant correlation between each independent variable. Based on the results of the classical assumption test, this research can be continued to the next stage, namely conducting multiple linear regression tests using the *Ordinary Least Square* (OLS) model. The results of the multiple linear regression test for all the variables used in this study can be seen in the table below.

Table 5 Results Test Multiple Linear Regression

Dependent Variable: Income Inequality (Y)

Method: Least Squares

Samples: 2000 – 2019

Included observations: 20

Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	0.168246	0.023377	7.196978	0.0000
Defense Budget (X1)	0.049763	0.019669	2.530053	0.0223
Economic Growth (X2)	0.008092	0.003527	2.294316	0.0356
Investment (X3)	0.004263	0.000493	8.646553	0.0000
R-squared	0.885091	Mean dependent var		0.373375
Adjusted R-squared	0.863545	SD dependent var		0.027041
SE of regression	0.009989	Akaike info criterion		-6.197814
Sum squared resid	0.001596	Schwarz criterion		-5.998668
Likelihood logs	65.97814	Hannan-Quinn Criter.		-6.158939
F-statistics	41.08009	Durbin-Watson stat		1.386884
Prob(F-statistic)	0.000000			

Source: Processed by researchers with *Eviews10*

If seen from table 5 above, based on the results of the multiple linear regression test with the OLS model, the results obtained that of the 3 (three) independent variables all have p-value < = 0.05. This means that all independent have a significant effect on the dependent variable. Based on the results of the multiple linear regression test above, the following equation can be made:

$$Y = 0.1682 + 0.0498 X1 + 0.0081 X2 + 0.0043 X3 +$$

Information:

Y = Income Inequality

X1 = Defense Budget

X2 = Economic Growth

X3 = Investment

Based on the regression results shown in table 5 above, it can be seen that the results of the first independent variable partial test, namely the defense budget, have a significant effect on Income Inequality with a probability value of $0.0223 < = 0.05$. The regression results in table 5 above also show that the coefficient value of the defense budget variable is positive, which means that the defense budget and income inequality have the same value, when the defense budget increases, income inequality also increases.

If seen from the results of the regression test as shown in table 5 above, the probability value of the *F-statistic* is 0.0000, which means the value is ≤ 0.05 . Based on these results, it can be concluded that the F test results show that the defense budget, economic growth, and investment simultaneously have a significant effect on income inequality.

The results of the regression test such as solid table 5 show that the *R-squared* value obtained is 0.885. This means that together all the independent variables tested are able to explain the dependent variable, namely income inequality of 88.5%. while the remaining 11.5% is influenced by other variables not included in this study.

This study shows that an increase in the defense budget has an effect on increasing income inequality in Indonesia. The defense budget is one of the important factors in creating a stronger Indonesian defense to overcome various threats from within and outside the country. An adequate defense budget can also support national security stability so that it can help ensure that economic activities in Indonesia run smoothly. However, the problem of income inequality cannot be ignored because an increase in income inequality will also trigger social conflicts in the community.

An increase in the defense budget is certainly a necessity that cannot be ignored in order to guarantee defense strength and national security stability. To reduce the impact of increasing income inequality due to the increase in the defense budget, it is necessary to plan the use of the right defense budget so that it can touch various social layers of society.

Closing

IV. Conclusion

1. Budget Defense take effect by significant to Inequality Income on level $\alpha=5\%$ with Mark probability of 0.022. The direction of the relationship between the two variables positive or in the same direction, which means that if the defense budget increases, income inequality will also increase .
2. All independent variables, namely Defense Budget, Economic Growth, and Investment simultaneously have a significant influence on the dependent variable, namely Income Inequality at the level of $\alpha=5\%$ with a probability value of 0.000.
3. The coefficient of determination (R^2) is 0.885, which means that all independent variables that have a significant effect, namely the Defense Budget, Economic Growth, and Investment, can explain the dependent variable, namely Income Inequality of 88.5%, while the remaining 11.5% can be explained by other independent variables not included in this study.

Suggestion

Based on the results obtained from this study, there are several things that researchers can suggest, among others, for the Ministry of Defense, because the Defense Budget has a positive influence on Income Inequality, which means that any increase in the defense budget can increase income inequality. and various efforts in the use of the defense budget so as not to contribute to aggravating the condition of income inequality in the community. Such efforts are for example by optimizing the construction of military bases and various supporting facilities in marginal areas, such as border areas or suburbs where development is still lagging behind. It is hoped that this will help encourage development and the economy in the area so that the income of the people can also increase. Other efforts include optimizing the involvement of various Micro, Small and Medium Enterprises (MSMEs) in the community in the context of procuring operational and logistical needs in the defense sector in accordance with the capabilities of the MSMEs. The involvement of MSMEs can also be carried out in the development of the defense industry by making MSMEs as suppliers of raw materials or as part of the production of components in the defense industry according to their needs and abilities.

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