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The Contribution of External Debt to Economic Growth: An Empirical Investigation in Indonesia

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Abstract

This study aims to know the contribution of external debt to Indonesia's economic growth. The data used a source from the Central Bank of Indonesia from 2011 to 2020. This empirical study uses a quantitative approach with Error Correction Model as the regression method. Government expenditure, government revenue, export, import, inflation, and exchange rate are control variables. The result of the descriptive statistic shows economic growth in Indonesia increased gradually from 2011 to 2020. The increase in economic growth occurred regardless of the contribution of external debt. It does, however, inform the public that Indonesia's economic system has seen successful investments. The result of the study is classified into long-term and short-term. External debt contributes to growth in the long term and has a significant impact. The study's findings will give Indonesia optimism that it can manage external debt as a source of domestic investment. This research may also persuade Indonesia to maintain its economic potency in the future. In the future, this research can be perfected, by adding a threshold level on the amount of Indonesia's external debt.

Keywords: Economic Growth, External Debt, Investment, Indonesia

JEL Classification Code: B23, C31, O11

1. Introduction

The literature on economic growth has increased at a fast pace. Economic growth is influenced by a number of important factors. However, there is still a scarcity of research on the impact of external debt on economic growth. Literature limitations about external debt lead to ambiguous answers. Historically, countries that have external debt show an increasing accumulated debt balance. The continuous increase in external debt raises the question of whether external debt promotes economic growth. Or does

external debt constitute a stumbling block to the national growth planning? The essence of a country obtaining external debt is to support economic growth to reduce poverty levels. For external debt to be utilized best in national economic development, state debt management requires a reference point to calculate the proper proportion to state capacity. The country owes it to the debtor country to avoid a default debt situation or a situation in which the external debt does not benefit the debtor country.

Natural resources, human resources, and capital resources are the three main resources in development. Economic growth is a state obligation that has to be realized, but it is hampered by a lack of resources. In this environment, the government must play a central role in economic development. It is impossible to deny that capital resources play a key role in economic development. Without sufficient capital, effective economic growth is impossible.

Indonesia is a developing country, where the participation of domestic private investments in economic development is still relatively low. In this situation, the government relies on funds from developed countries and international financial institutions to meet its financial needs. In other words, the government is promoting

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economic growth that is not backed up by the country's capital resources. As a result, the government obtains capital from a third party to carry out its national development plan. The methods utilized to get capital resources from other countries include foreign capital investment, portfolio investment, and external debt. Foreign direct investment has been shown to have a favorable and considerable impact on economic growth. (Naila et al., 2016).

Simply put, the impact of external debt is as follows: the positive impact of accepting external debt as a means of meeting state budget obligations in boosting economic growth. Economic development acts as a catalyst for people's per capita income to rise. Every debt that is received has a commercial and political aspect to it. However, external debt can contribute to a plethora of problems in the long term, both economic and political, and in certain cases, it can even become a huge burden as if it were an economic trap. People's welfare eventually worsens in quality.

Figure 1 shows Indonesia's external debt starting from 2011 to 2020. Indonesia's external debt increased by 85% in the last decade. In 2020 Indonesia's external debt was recorded at \$417,145 million which is equivalent to 39,4% of gross domestic product (Central bank of Indonesia, 2020). This raises the question, "Does external debt prompt economic growth?" Indonesia's debt shows an increasing pattern, then the possibility of default will also be high. In such a case, does this give a good impression on the debtor? The answer depends on external debt's contribution to economic growth. Efficient management of external debt and proper allocation will be able to generate sustainable economic growth. Thus, investment opportunities for Indonesia are increasingly getting credibility in the global world.

Overview of economic growth which is indicated by the Gross Domestic Product increase consistently from

2011–2020 (Central Bank of Indonesia, 2020). As a developing country, Indonesia's economic growth did not experience significant fluctuation, however, in 2014 Indonesia's growth experienced a slowdown. Therefore, descriptively, the growing accumulation of Indonesia's external debt is higher than Indonesia's economic growth.

Table 1 provides details on the compositions of Indonesia's total external debt based on the term and holding from 2011–2020 (Central bank of Indonesia 2020). The composition of Indonesia's external debt shows a consistent pattern. Indonesia's long-term external debt has increased by 84 percent, while its short-term external debt has increased by 16 percent. External debt is dominant over the long term, implying that external debt management follows the conservative principle. The government and private sector both have an identical share of external debt holders, with 49.55 percent for the government and 50.45 percent for the private sector.

The payment of government debt is an indicator of a country's economic system. The following issues make this research necessary: the presentation of external debt service will affect external parties' confidence in the stability of the Indonesian economy. According to the Ministry of Finance of the Republic of Indonesia, an analysis of external debt and economic growth might provide an intuition as to whether Indonesia has profited from external debt over the last ten years. This study looked into the relationship between external debt and economic growth in greater depth. The non-linear relationship between debt and economic growth is crucial to understand. This study is beneficial to creditors in determining their ability to pay and the feasibility of investing in Indonesia. The sparse literature on the contribution of external debt to Indonesian economic growth makes this research valuable.

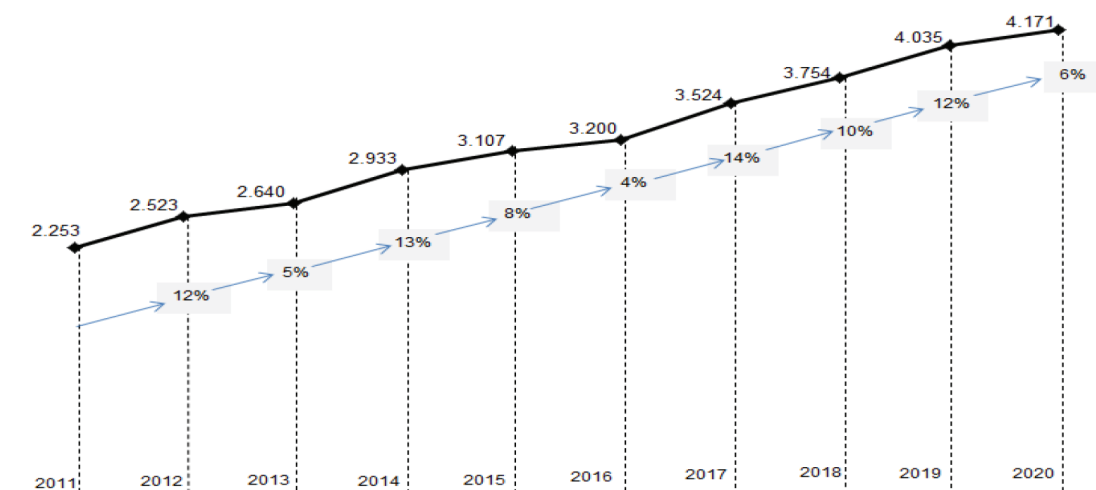


Figure 1: Total Outstanding External Debt of Indonesia (million USD)

Table 1: The Compositions of External Debt (million USD)

| Group of Borrower | Short Term Debt ≤1 year | Long Term Debt ≤1 year | External Debt Position |
|---------------------------|----------------------------|---------------------------|------------------------|
| Government & Central Bank | 14.133 | 195.133 | 209.246 (50.45%) |
| Private | 51.121 | 156.779 | 207.900 (49.50%) |
| Total | 65.253 | 351892 | 417.145 (100.00%) |
| Percentage | 16% | 84% | |

Source: Central Bank of Indonesia.

2. Literature Review

2.1. Neoclassical Growth Theory

Economic growth is an indicator of the success of a country's economic system. Economic growth is called economic welfare as well, which is marked by an increase in the Gross Domestic Product (GDP). Economic growth is the process of increasing per capita income sustainably in the long term (Jhingan, 2008). Economic growth is measured quantitatively and compared to the previous year in percentage terms (Sukirno, 2010). Economic growth will fluctuate as a result of micro and macroeconomics' responses. From a long-term perspective, it takes at least 10 years to assess economic shifts (Boediono, 1982).

Economic growth is determined by the components of production in the neoclassical growth theory, which are population, labor, capital accumulation, and technological advancement (Arsyad, 2010). In neoclassical theory, the growth model presupposes that a country has a closed economic system. Economic interaction is not seen in a closed economy because all production factors are obtained from within the country. The neoclassical theory (Romer, 1986) posits an endogenous technological shift that occurs as a result of the accumulation of new information or as a result of knowledge spillover. Advances in technology have a limitless impact on the manufacturing process of goods and services. When a country moves from a closed to an open economic system, it becomes more reliant on another country. Trading marked this dependence, and higher capital flows are required to support economic growth. Villanueva and Mariano (2007) have developed a model of economic growth involving global capital markets. The globalization era expands a country's options to collect capital resources. Inflows of capital in the form of debt to developing countries.

The demand for external debt is growing in tandem with the demand for capital. However, those with a high total debt will be at risk of developing overhang debt problems. Overhang debt is defined by Krugman (1988) as a country's inability to pay its external debt under a previous agreement. Overhang debt happens when the debt's value exceeds the

borrower's ability to repay it. High debt has a negative impact on the investment level and economic growth. External debt will cause a disincentive effect, disruption of capital inflows, and a bad image. Not only external debt, but grant receipts also have a negative effect on economic growth. A test was carried out with 167 countries to prove the non-linear relationship of grants to economic growth (Ahn & Park, 2018).

External debt, when kept at a reasonable level, acts as a stimulant to economic growth, according to some statistical analyses. Emphasis must be placed on debt control for debt levels to remain below the threshold. To present it, can use the 'Laffer curve. This curve describes the relationship between the tax rate and the amount of revenue received by the government (Fullerton, 2008). If debt increases beyond the threshold, it will be counter-productive to economic growth.

2.2. Hypotheses

Clements et al. (2003) examined external debt to economic growth in low-income countries. It was found external debt did not affect the growth through investment, but growth was affected by resources efficiency. The tested hypotheses show external debt undermines economic growth once it reaches the threshold. External debt of threshold level to Gross Domestic Product was estimated at 20–25% and 100%–105% of the export value. According to Pattillo et al. (2004), high debt has a detrimental impact on economic growth. An increase in debt above the threshold will reduce growth by about 1%. Another research from Choong et al. (2010) agreed that external debt exceeding the threshold harms economic growth in the long term. External debt has a negative effect not just in the long term, but also in the short term, as demonstrated by the case study in Iraq by Ahmed et al. (2013). Debt also has a significant negative effect on corporate profitability in Vietnam (Ngo et al., 2020).

Schclarek (2004), on the other hand, discovered a different result based on the same research. According to the GGM method, there is no non-linearity between external debt and economic growth in developed countries.

The private sector's external debt, on the other hand, has a positive impact on economic growth. The study included 55 developed countries as a sample, with Indonesia being one of them. An industrial country's high external debt does not always affect its Gross Domestic Product. The researcher is encouraged to fill in the gaps in the literature about external debt by looking for material about the non-linear relationship between external debt and economic growth. This paper will attempt to clarify the unclear answer.

H1: *External Debt positively affects profitability.*

3. Research Methods

The econometrics used in this study is inspired by the neoclassical theory that has undergone developments. Villanueva and Mariano (2007) emphasized endogenous technical and capital market into growth concept and mentioned domestic savings and the external loan as aggregate capital. According to neoclassical theory, a country's capital resources must be sufficient if it intends to accelerate economic growth. External debt will help to ensure that funds for national investment are available. This study will provide a better understanding of the role of external debt in Indonesia's economic growth.

Data used is Indonesian aggregate. This study used secondary data sourced from the Central Bureau of Statistics of the Republic of Indonesia and the monthly report of Bank Indonesia. The data is in the form of a quartal from 2011Q1 until 2020Q4. Figure 2 illustrates the research model of this study.

This study uses the estimation method with Error Correction Model cointegration analysis. The variable used in the model is adapted from Dauda et al. (2013) and Ahmed et al. (2013). While they used ARDL as an analytical method, this study uses a different method to do the analysis. Granger and Newbold (1978) attracted attention to spurious regression problems in time progression. ECM (Error Correction Model) provides solutions from two completely unrelated time series. In general, regression analysis of each other will reveal a significant link, leading people to believe they have discovered a true relationship between these variables. Phillips (1985) demonstrated that parameter estimation does not converge in probability, and thus as the sample size increases, the intercept will have a non-decreasing distribution. However, there is a stochastic

tendency between the variables analyzed that reflects the long-term.

$$GDP_t = f(GEXP, GREV, EXPR, IMPR, INF, EXCH, ED) \quad (1)$$

Where (in time t), GDP (Gross Domestic Product) is the Gross Domestic Product of Indonesia, GEXP is Indonesia's State Budgeting Realization, GREV is Government Revenue including reward and grant, EXPR is total export, IMPR is total import, INF is the inflation rate that is denoted in percentage, EXCH is Rupiah exchange rate against one US dollar, and ED is Indonesia External Debt.

The dependent variable GDP represents the gross domestic product, while the independent variable includes GEXP, GREV, EXPR, IMPR, INF, EXCH, and ED. This model considers various fiscal policies in forming GDP (Gross Domestic Product), and the chosen variables are GEXP and GREV. This study uses two similarities as follows:

$$\begin{aligned} D\log GDP_t = & \beta_0 + \beta_1 D\log GEXP_t + \beta_2 D\log GREV_t \\ & + \beta_3 D\log EXPR_t + \beta_4 D\log IMPR_t \\ & + \beta_5 D\log INF_t + \beta_6 D\log EXCH_t \\ & + \beta_7 D\log ED_t \end{aligned} \quad (2)$$

Meanwhile short-term relationship stated with these similarities is as follows:

$$\begin{aligned} D\log GDP_t = & \beta_0 + \beta_1 D\log GEXP_t + \beta_2 D\log GREV_t \\ & + \beta_3 D\log EXPR_t + \beta_4 D\log IMPR_t \\ & + \beta_5 D\log INF_t + \beta_6 D\log EXCH_t \\ & + \beta_7 D\log ED_t + \text{ECT} + \mu_t \end{aligned} \quad (3)$$

Macro variables with time-series data generally have stationarity problems, however, this can be tested by ECM (Error Correction Model) cointegration analysis. The advantage is that this method does not make a fuss about the variables that are stationary at (0) or $I(1)$. The test is done by using the method adopted by Granger and Newbold (1978), which shows that ECM (Error Correction Model) will produce consistent estimation against long-term coefficient, although the regressor variables are stationary at $I(0)$ or $I(1)$.



Figure 2: The Association Between External Debt and Economic Growth in Indonesia

4. Results and Discussion

The variables used for the unit-root test are GDP, GEXPR, GREV, EXPR, IMPR, INF, and ED. Every variable determined is subjected to a stationarity test using the Augmented Dickey-Fuller test. The residual *T*-count value was presented using the unit-root test. The variable passes the stationarity test if the *T*-count residual value > 1 table or probability *T* count residual is < 0.05 . The result of this study denies $H(0)$ in the short term and long-term. At the level, the variables GREV and INF are stationery, while GDP, GEXP, EXPR, IMPR, EXCH, and ED are stationary at the first difference with a significant value of 5%. In other words, every variable was suitable and continued to be used in the research model.

According to the result of time series data processing from 2011 to 2020, the relationship between a gross domestic product and external debt by ECM estimation obtained regression results as shown in Table 2.

In the long-term analysis, R^2 is 0.919407, which means that the independent variable can describe a 91.9% change in the dependent variable. Government expenses, government revenue, export, import, inflation, exchange rate, and external debt are control variables used for determining gross domestic product change in Indonesia. The long-term regression result demonstrates the significance of the association between external debt and positive GDP. An increase in external debt of 1 % is associated with an increase in the economic growth of 0.082% (significant at 1 percent). In other words, external debt increases the state's investment value. The other control variables are Government Revenue (GREV),

Export (EXPR), and Import (IMPR), which have a positive effect on economic growth. This indicates that import in Indonesia have a positive effect and is significant to economic growth. Other control variables which have an adverse impact on economic growth are Expenses Government (GEXP), Inflation (INF), and Exchange rate (EXCH).

To provide additional insight, this study tries to analyze a more detailed relationship between Indonesia's external debt in the short term and economic growth. The regression result in the short term is shown in Table 3. The Error Correction Model (ECM) is inextricably linked to the ECT (Error Correction Term). The ECT coefficient of -0.555575 indicates that the previous period's disequilibrium was corrected by 0.55 percent in the present period. The ECT (Error Correction Term) measures how quickly long-run equilibrium is reached. The ECT (Error Correction Term) coefficient has a negative value, indicating that the pace of short- and long-term adjustments to a state of equilibrium is slow. The error correction amount of 0.55 indicates that the adjustment to the Gross Domestic Product equilibrium condition is 1.5 years.

The relationship in the short term shows external debt can improve economic growth. A 0.005% increase in external debt will lead to a 1% increase in economic growth. External debt in the short term is not significant at the 5% level. In other words, external debt does not contribute to a change in the Gross Domestic Product

This study examines Indonesia's external debt, which comprises government, central bank, and private bank debt. Indonesian external debt is found to have a positive impact on economic growth based on long- and short-term

Table 2: Result of Estimated Long-term Coefficient using the ECM Approach

| Variables | Coefficient | Std. Error | t-statistic | Prob. |
|----------------|-------------|------------|-------------|--------|
| GEXP** | -1.296 | 0.498 | -2.6003 | 0.0140 |
| GREV*** | 0.063 | 0.614 | 0.1036 | 0.0981 |
| EXPR | 0.129 | 0.430 | 0.3010 | 0.7653 |
| IMPR** | 1.358 | 0.511 | 2.6565 | 0.0122 |
| INF | -0.373 | 1.450 | -0.2574 | 0.7985 |
| EXCH* | -8.840 | 2.258 | -3.9149 | 0.0005 |
| ED* | 0.082 | 0.008 | 9.8638 | 0.0000 |
| C | 88.448 | 33.2444 | 2.6605 | 0.0121 |
| R^2 | 0.9194 | | | |
| t-Table | 2.0345 | | | |
| Prob (t-Table) | 0.0000 | | | |

Note: *Denotes significant at 1%, ** and ***denote 5 and 10% significance levels respectively.

Table 3: Result of Estimated Short-term Coefficient using the ECM Approach

| Variables | Coefficient | Std. Error | t-statistic | Prob. |
|----------------|-------------|------------|-------------|--------|
| D(GEXP)** | −0.972 | 0.376 | −2.581 | 0.0150 |
| GREV*** | 0.514 | 0.301 | 1.707 | 0.0981 |
| D(EXPR) | 0.462 | 0.353 | 1.308 | 0.2005 |
| D(IMPR)* | 0.965 | 0.350 | 2.751 | 0.0100 |
| INF | −0.555 | 1.151 | −0.482 | 0.6330 |
| D(EXCH)* | −10.505 | 2.242 | −4.681 | 0.0001 |
| ED | 0.005 | 0.023 | 0.230 | 0.8193 |
| ECT(−1) | −0.555 | 0.153 | −3.622 | 0.0011 |
| C | −11.810 | 9.402 | −0.871 | 0.2188 |
| R ² | 0.8290 | | | |
| t-Table | 2.0345 | | | |
| Prob (t-Table) | 0.0000 | | | |

Note : *Denotes significant at 1%, ** and *** denote at 5 and 10% significance levels respectively.

regression analysis. External debt has a positive long-term impact that is significant to the change in Gross Domestic Product. External debt, on the other hand, has a positive effect in the short run, but it is not significant. The results of this study are in line with the findings of Schclarek (2004).

5. Conclusion

This study analyses external debt contribution to Indonesia's economic growth. The method of analysis used is Error Correction Model (ECM) and the data used was from 2011 to 2020. The findings of this study suggest that external debt has a positive impact on Indonesia's economic growth. In a long-term analysis, external debt has a positive and significant effect, whereas, in a short-term analysis, external debt has a positive but non-significant effect. This study concludes H1 is accepted. The policymaker must take the lead in overseeing the external debt situation based on loan maturity, and government must avoid increasing external debt if it does not promote economic growth. To prevent solvability risk, policymakers should use the diversification principle and choose from a number of different currencies in a comprehensive debt payment method. Effective management should be stressed in the short term so that the benefit of external debt can be considered as a stimulus to economic growth.

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