

The Effect of Foreign Debt on the Economic Growth (Pengaruh Hutang Asing terhadap Pertumbuhan Ekonomi)

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ABSTRACT

This study examines the effect of foreign debt on the economic growth. Using a time series Indonesian data over 1981 - 2017, we employ the Error Correction Model based on the debt overhang theory. Foreign debt was found to produce negative and significant effect on the economic growth both in the short- and long-run. The paper further found that Foreign Direct Investment (FDI) improves the economic growth. Foreign debt that continues to increase drastically in the long-run could slow down the economic growth which may indicate the economy experiencing a debt overhang. It is thus imperative for the government to ensure the debt ratio remain below a certain threshold. Further, foreign debt should be prioritized to develop infrastructure with a broad multiplier effect and the FDI likewise prioritized for labor-intensive sectors.

*Keywords: Foreign debt; foreign direct investment; economic growth; Indonesia, error correction model
JEL: E22, F34, O47*

ABSTRAK

Kajian ini memeriksa kesan hutang luar negara terhadap pertumbuhan ekonomi. Dengan menggunakan data siri Indonesia sepanjang tahun 1981-2017, kami menggunakan Model Pembetulan Rawak berdasarkan teori "debt overhang". Hutang luar negara didapati memberi kesan negatif dan signifikan terhadap pertumbuhan ekonomi dalam jangka pendek dan jangka panjang. Kajian ini seterusnya mendapati bahawa pelaburan langsung asing meningkatkan pertumbuhan ekonomi. Hutang luar negara yang terus meningkat secara drastik dalam jangka panjang dapat memperlambat pertumbuhan ekonomi yang juga menunjukkan ekonomi mengalami hutang yang terlalu banyak. Oleh itu, sangat penting bagi kerajaan untuk memastikan nisbah hutang tetap di bawah ambang tertentu. Selanjutnya, hutang luar negara harus diutamakan untuk membangun infrastruktur dengan kesan pengganda yang lebih luas dan pelaburan langsung asing juga diutamakan untuk sektor intensif buruh.

Kata kunci: Hutang luar Negara; pelaburan langsung asing; pertumbuhan ekonomi; Indonesia; model pembetulan rawak

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INTRODUCTION

Debt is one of the primary sources of development funding, especially in developing countries. Indonesia's debt continues to increase sharply from year to year, in line with the increase in the national income. This increase is expected to encourage economic growth, even though Indonesia's economic growth has actually contracted. Bökemeier and Greiner (2015) argued that debt becomes capital in carrying out development, which in the end, will increase output. Swamy (2015) found that the ability of debt to drive economic growth has long been a controversial issue because some countries have experienced increased economic growth after receiving debt stimulus, and some other countries have experienced contraction. However, based on the study by Pegkas (2018) private and government consumption,

trade openness, population growth and government debt in Greece, the economy experienced contraction even after the government debt continued to increase. The role of debt on economic growth is indeed inseparable from external influences such as the global financial crisis which impacted the domestic economy.

Economic liberalization will lead to several consequences in the relation between countries, in both the political and economic fields. Economic liberalization allows a developing country to interact with developed ones both in the form of trade such as exports and imports, as well as in finance, such as debts, investment, and growth assistance provided by these rich countries. Indonesia still needs to overcome problems in managing its finance, both in financing government budget deficit and financing for growth. Economic liberalization helps the government of developing

economies to face such problems. However, they also encounter some negative effects such as in creating dependency on the developed countries as well as in the exploitation of their resources. One of the government's strategies to take advantage of economic liberalization is to borrow from other countries to finance its sovereign development. For example, debt is an alternative way to cover budget deficit of the Indonesian government. Foreign debts can encourage economic growth, but if sourced excessively it may also limit sustainable economic growth and poverty reduction in the debtor country. Excessive foreign debt will generate a debt-bound economy which is eventually sustained through exploitation of abundant resources to pay off the debt. The impact may also damage economic growth when debt payment becomes domestic production costs.

Indonesia's foreign debt is increasing every year thus indicating her heavy dependence on other countries. The total national foreign debt, both government and private, reaches 413.374 billion USD in 2020 (Bank Indonesia). The bigger lender countries and institutions are the World Bank (29.7%), Japan (29.5%), the Asia Development Bank (16.2%), France (3.5%), Germany (2.9%), and the Islamic Development Bank (1.1%). The Indonesian government considers the size of her foreign debt is still manageable and under control since the debt to GDP ratio is still below 60%. Some countries such as Malaysia and Thailand have debt ratios higher than their GDP. Even as early as 2000 these ratios almost reached 90%. Foreign debt which interacts with other external factors, such as the global economic crisis, will jointly affect economic growth. Despite such interaction

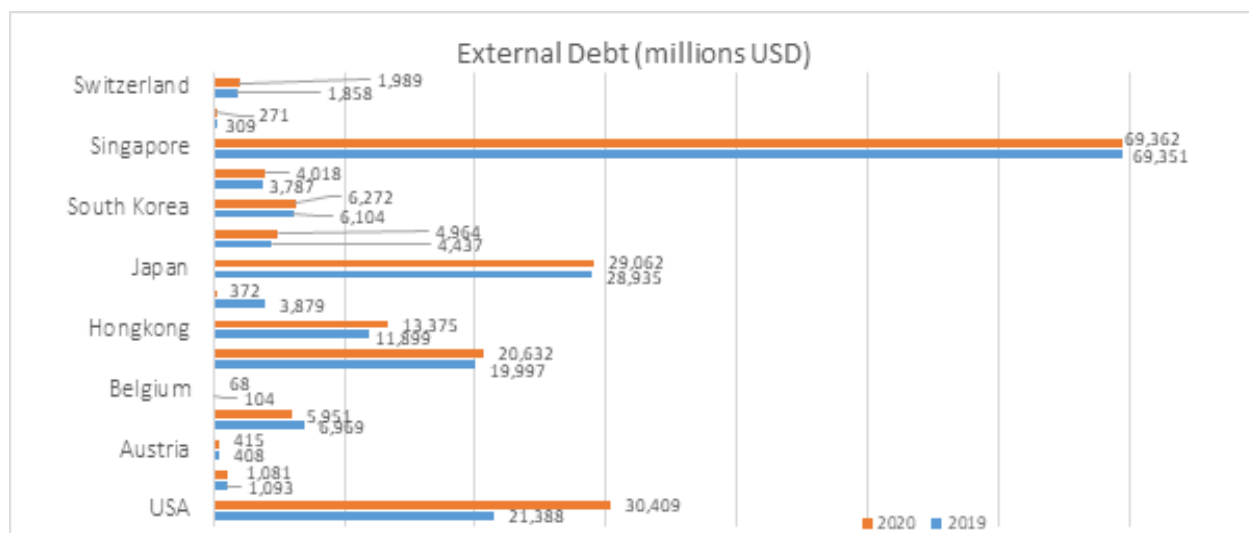


FIGURE 1. External debt position of indonesia by creditor country
Source: Bank Indonesia

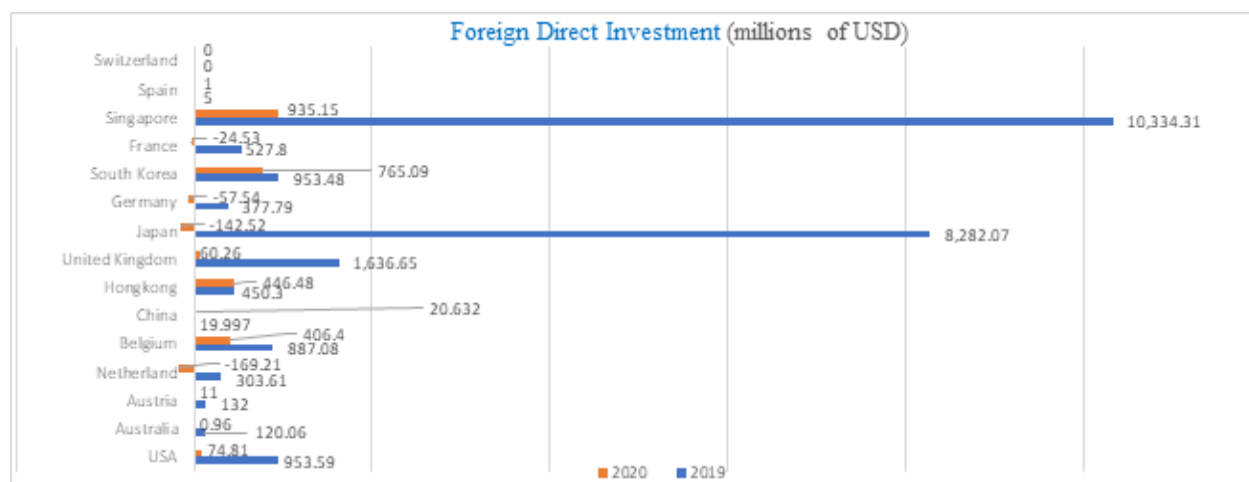


FIGURE 2. Foreign direct investment flows in Indonesia by country of origin
Source: Bank Indonesia

the weakening economic growth is still often attributed to the debt factor. Besides being used to finance development, foreign debt is also used to pay for budget deficit. Figure 1 describes Indonesia's foreign debt based on the credit provider country. Based on the data from Bank Indonesia, Singapore is Indonesia's largest creditor country with a debt value of USD 72.4 billion. And as much as 99% of this is in the form of privately owned external debt. Indonesia's second largest creditor is Japan with a total external debt of USD 28.9 billion. The USA is the next biggest creditor with a recorded value of USD 26.6 billion. It is followed by China, another large creditor, at USD 20.1 billion.

In addition to debt, investment is also an important factor driving economic growth, especially Foreign Direct Investment (FDI). The Indonesian government is hence keen to increase her share of FDI. It is a profit-oriented investment activity carried out by investors from a foreign country. In addition to providing capital, the donor country may also control and manage the invested company in the designated country. FDI in Indonesia has grown rapidly, with a total increase investment of USD 12.749 billion over the period, 2010 to 2016 thus indicating a promising future for such investment in the country. Sectors that attract most investors are metal, machinery, and electronic industries, followed by chemical, pharmacy and the petroleum industries. The direct investment flows into Indonesia, by country of origin, according to (Bank Indonesia) are illustrated in Figure 2. Singapore is still the largest contributor to FDI in Indonesia in 2020, with an investment value of USD 7.2 billion. Second is the investment from China, valued at USD 3.51 billion. And third is from Hong Kong at USD 2.48 billion. The preferred sectors for FDI in Indonesia in 2020 are the base metal industry, metal goods, non-machinery and equipment.

FDI brings positive impacts both for donor and recipient countries. For the latter, FDI is often used to fund development, create employment, as well as enable transfer of knowledge and technology from the developed donor countries. FDI however, may exert negative impacts if proper and efficient monitoring is lacking from the host government. This may be in the exploitation of natural and human resources to expand investment profit but to the disadvantage of recipient countries. Additionally, the foreign companies may create monopolies in the business fields with little consideration to the needs of the local population.

The phenomenon of increasing debt as a development cost often occurs in developing countries, but the impact is actually in the slowing down of economic growth. A study by Misztal (2010) showed that in developed countries the existence of debt on the contrary encourages economic growth. Some countries have failed in pushing the economy through debt schemes due to the failure in the management of their debts and the excessive burden of debt that must

be borne. On the other hand, creditor countries often have other motives, such as making debt a creation of international trade. Jilenga et al. (2016) however found that in developing countries, foreign debt will encourage economic growth in the long-run, while the presence of FDI will actually cause economic growth to contract. The apparently contradictory impact of debt may occur because of differences in economic conditions that exist between developed, developing, and poor countries, the method of analyses used, as well as the period of study. Based on the preceding discussion, the following pertinent questions may arise: What about Indonesia's foreign debt? Can its existence encourage economic growth as expected? Does FDI also play a role in driving Indonesia's economic growth? This study seeks to analyze the effect of foreign debt and FDI on Indonesia's economic growth.

LITERATURE REVIEW

Basically, a reasonable amount of foreign debt is useful in driving economic growth in a country. This is consistent with the neoclassical growth model that maintains that the interaction between countries will bring about capital mobility. The 1997 financial crisis caused Malaysia, Thailand, Indonesia, Philippines and South Korea to be seriously affected. The study by Mohamad et al. (2020) found that Southeast Asian countries hit by the financial crisis choose foreign debt to achieve higher economic growth compared to capital control. Cahyadin and Sarmidi (2019) using the ARDL model and the Error Correction Model, found that FDI, labor and foreign debt had a major impact on economic growth in both Indonesia and Malaysia in the period 1980-2016 in the long and short term. The study of Toktas et al. (2019) using a unit root test from time series data for the period 2003 – 2017 also found a significant causality relationship between foreign debt and economic growth in Turkey.

On the other hand, research conducted by Hassan and Meyer (2020) found an inverse U-shaped foreign debt relationship to economic growth in Sub-Saharan African (SSA) countries. At a certain threshold, it will suppress economic growth. This finding is relevant to the research of Dey and Tareque (2019), using autoregressive distributed lag (ARDL) for cointegration, it was found that the negative impact of foreign debt on the growth of Gross Domestic Product in Bangladesh. This can be reduced by proper human resource policies. Ibrahim (2020) using ARDL in 20 developing countries during the period 1996-2018 revealed that corruption increases the debt-to-GDP ratio and corruption has a positive impact on public income and debt in the long run. High levels of corruption lead to hampering long-term economic growth and increase the negative effect of public debt on economic growth in developing countries.

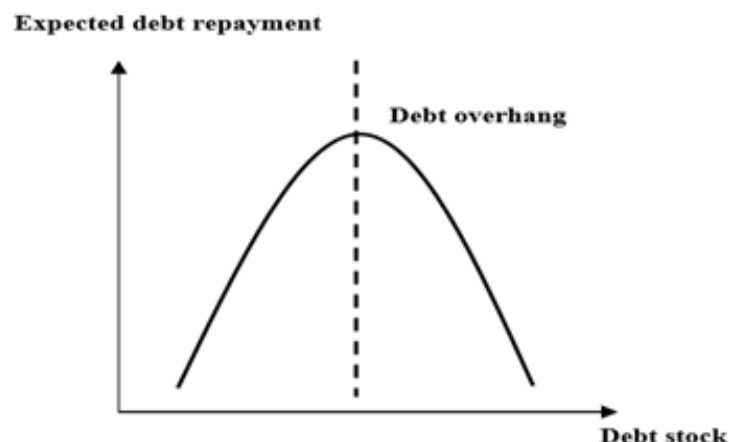


FIGURE 3. The debt overhang
Source: Pattillo et al. (2004)

Awad (2020) investigated the long-term impact of foreign aid, remittances, foreign direct investment (FDI), trade and debt, on the economic growth of 21 low-income countries in Sub-Saharan Africa (SSA), over the period 1990–2018 using parametric and non-parametric approaches. The findings confirm that, in the long term, trade and foreign aid affect per capita income in these countries positively. However, foreign debt has an adverse effect on per capita income

According to Pattillo et al. (2004) debtor countries will invest in marginal capital products that are higher than the interest to be paid and this gain provides them the incentives. However, foreign debt will become a problem and a burden to the economy if the amount begins to be excessive. Stiglitz et al. (2006) stated that many crises occur due to excessive debt burden. Debt overhangs occur in situations of large amounts of debt which become difficult to offset due to insufficient potential present value of the debt payment sources, thus triggering the decline in economic growth. The debt overhang curve in Figure 3 explains the relationship between foreign debt and economic growth. At the initial phase, a gradual and reasonable increase in foreign debt will encourage economic growth but only up to a certain point beyond which the economy will slow down and starts to decline. Excessive government debt has a crowding out effect. According to economic theory, when government increases debt in order to finance spending, the private sector will be subjected to crowding out, a condition characterized by rising interest rates that creates uncertainty in debt payments. If the management and use of foreign debt are not properly and correctly handled, it will create obstacles to long-run economic growth.

The literature recorded varying experiences on how different countries handle debt as a source of economic growth. Pattillo et al. (2004) investigated whether debts affect the growth of 61 developing

countries between 1996 and 1998. Debts were shown to negatively affect economic growth whereas investment positively influenced it. Similar findings by Shah and Shahida (2012) in Bangladesh, during the 1980 - 2012 period, revealed that public debt was unable to foster economic growth. Tchereni et al. (2013) also established that increasing debt in 1975-2003, tended to reduce economic growth in Malawi. Similarly, Afonso & Jalles (2013) utilized panel data from 15 European countries to examine the relationship between economic growth, productivity, and government debt. They showed that increasing the amount of debt in these countries reduced economic growth. This condition was further worsened by the global financial crisis that exacerbated economic growth. Despite this however fiscal policy was shown to be able to boost economic growth.

According to Sajjad et al. (2018) the results of Augmented Dickey-Fuller (ADF) testing during the period 1980-2016 found that external debt was detrimental and statistically significant to the Gross Domestic Product (GDP) growth rate in Pakistan, while other explanatory variables, namely human capital, exports, and FDI conversely showed a significant positive impact on the GDP. The right policy must be adopted by policy makers to reduce foreign debt, increase export volume and increase more foreign investment as means to encourage economic growth in the country. Kharusi & Ada (2018) investigated the relationship between government foreign borrowing and economic growth in Oman whose foreign debt continues to increase every year in order to finance development. A series of data was used in the study for the period 1990-2015 sourced from the Central Bank of Oman and analyzed with an Auto Regressive Distributed Lag (ARDL) and Error Correction Model to determine the short-run dynamic nature of external debt and economic growth. The results established that foreign debt has a negative effect on economic growth in Oman although gross fixed

capital has a significant positive effect on the growth performance. In consequence the authors recommended a more productive use of foreign debt funds to influence positive growth. Such studies commonly suggest that the existence of debt in the developing countries has not been able to actively encourage GDP growth (Shah & Shahida 2012; Tchereni et al. 2013; Kharusi & Ada 2018).

Ajayi and Oke (2012) examined in depth the role of foreign debt in economic growth and development in Nigeria using the variables of national income as debt repayment, external reserves, and interest rates. The external debt burden was shown to exert positive impact on all three variables. However, on the downside a rise in the level of foreign debt will trigger currency devaluation, increase in pension funds, industrial strikes and result in an inadequate education system. Conversely however Sulaiman & Azeez (2012) found the opposite effects were true in Nigeria. Using time-series data over 40 years and an error correction model analysis, they established that external debt produced significant effect on economic growth in the long-run. Jilenga et al. (2016) likewise showed similar results on the effect of FDI and foreign debts on economic growth from 1970 to 2011 in Tanzania. They adopted the Auto Regressive Distributed Lag (ARDL) method and Bounds test in the analysis and used the Gross Domestic Product (GDP) as dependent variable. The independent variables used comprised foreign debts, FDI, Official Development Assistance (ODA), real exchange rate, and principal repayment on external debt. In the long-run, foreign debt was found to stimulate economic growth. They cautioned that for such positive effect the government needs to ensure that foreign debts are properly managed in order to avoid a negative impact on economic growth. Further, domestic investments may also produce more benefits to economic growth in Tanzania.

Investment is one of the development capitals that determines economic growth in a country. According to Harrod-Domar in Jhingan (2012), investment has an important role in the process of economic growth due to two characteristics; namely creating income and increasing the production capacity of the economy through increasing capital stock. To create steady-state investment, it must continue to increase, and this will require sustained real income growth at a rate sufficient to ensure full capacity utilization of the growing capital stock. In simple terms, the Harrod-Domar theory can be formulated as follows: $\Delta Y/Y = s/k$, where, $\Delta Y/Y$ is the growth rate of GNP, s is the national saving ratio and k is the national capital output ratio. From this equation, it can be seen that output growth depends on investment productivity which is the amount of additional output obtained from an investment unit. To increase investment, savings must also be increased. If savings are low, other sources must be sought for investment financing, one of which is debt.

Research on the role of FDI and its effects on economic growth has been widely carried out both in developed and developing countries. During the period 1996-2010 Islam (2014) discovered that the role of FDI in Bangladesh was crucial for increasing economic growth. Additionally, FDI exerted positive relationship with GDP, exports, and private investment. The same situation was also observed by Muntah (2015) in Pakistan, and Khathlan (2013) in Saudi Arabia. Similar to the research of Ghazi et al. (2017) using Johansen's procedure and found developed countries such as Japan and Korea and developing countries such as Malaysia and Indonesia to have a significant positive long-term relationship between FDI and economic growth. Khathlan (2013) tested the relationship between FDI and economic growth in Saudi Arabia from 1980 to 2010 using the Johansen-Juselius co-integration test and ECM techniques. The study established that FDI and government spending have positive effect in the long-run. On the other hand, domestic capital and labor force also produce positive effect but in the short-run. Saudi Arabia is quite strict in granting FDI licenses. The non-significant effect of government spending on economic growth in the short-run can be due to promotion of socio-economic development programs and large capital outflows in the form of remittances by foreign workers. Saudi Arabia is fortunate because it has considerable oil and natural gas reserves which greatly motivate foreign investors with the potential of large business opportunities. The country has succeeded in diversifying its structural base by increasing the role of the domestic and foreign sectors in the country. Such changes will allow countries to expand employment opportunities and benefit from the World Trade Organization membership.

In comparison to foreign investments, a study conducted by Saqib et al. (2013) in Pakistan actually discovered that domestic investments benefitted the country's economy. FDI actually creates dependency for the country and the outcome cannot drive the economy since it is said to only benefit state investors. In addition, the state is also unable to facilitate the transfer of knowledge and technology from FDI and as such the actual benefits are considered insubstantial. Dinh et al. (2019) examined FDIs in 30 developing countries from 2000-2014, using Vector Error Correction Model (VECM) and Fully Modified-Ordinary Least Square (FMOLS) techniques to elucidate the long- and short-run effects of the investments on economic growth. FDI was shown to inhibit a country's economic growth in the short-run, but it has a positive effect in the long-run, especially for developing and underdeveloped countries. The policy to attract FDI in the long-run is quite appropriate since it can maximize the positive effect in generating for the country's economy. Nevertheless, the impact of FDI on economic growth is not always positive since it is also dependent on the characteristics of the investment itself.

Several studies have been conducted on the situation of Indonesia's debt. A study by Djulius (2018) clarified the role of FDI, foreign loans and domestic savings in short-run and long-run economic growth in Indonesia. In its data analysis, which used an error correction model, the author established that in the short-run, the three explanatory variables significantly affect economic growth. In the long-run, domestic savings proved positively and significantly influential. The importance of maintaining domestic savings was thus emphasized in order to preserve the stability of economic fundamentals in the long-run. To get a more comprehensive understanding on this, further studies are necessary. According to (CNBC Indonesia), Indonesia has changed its status from a developing to a developed country since February 2020 and in consequent foreign debt has increased. The study sought to explain the condition of Indonesia's debt associated with the change in Indonesia's status in becoming a developed country. Against this background of relevant findings from past research this study aims to analyze the effects of foreign debt and FDI on Indonesia's economic growth.

METHODOLOGY

In this study secondary data over 36-year span, from 1981 to 2017, were used comprising statistics on foreign debt, FDI and economic growth. These were sourced from publications of Bank Indonesia publication and analyzed using Error Correction Model (ECM). Prior to choosing the appropriate model, the study checked the stationary of time series. This procedure is important to ensure that the series is stationary before using it in the regression. The formal method used for this is the unit root test. Based on the Autoregressive Moving Average (ARMA) estimation, a series is said to be stationary if its mean and auto co-variances do not depend on time. A common example of a non-stationary series is the random walk shown below:

$$y_t = y_{t-1} + \epsilon_t \quad (1)$$

where, ϵ = stationary random disturbance term, γ has a constant forecast value, conditional on t , and the variance is increasing over time. The random walk is a difference stationary series since the first difference of y is stationary:

$$y_t - y_{t-1} = (1-L)y_t = \epsilon_t \quad (2)$$

A difference stationary series that is integrated is denoted as $I(d)$ where d is the order of integration. The order of integration is the number of unit roots contained in the series, or the number of difference operations it takes to make the series stationary. For the random walk above, there is one unit root, so it is an $I(0)$ series. Similarly, a stationary series is $I(0)$. The random walk model is called by integrated of order 1, denoted as $I(1)$.

If a time series has to be differenced twice to make it stationary, a time series is called the integrated of order 2, denoted as $I(2)$. This paper used the Augmented Dickey-Fuller (ADF) Test to unit root test. The standard Dickey-Fuller (DF) is as follows:

$$\Delta y_t = \alpha y_{t-1} + x_t' \delta + \epsilon_t \quad (3)$$

Where $\alpha = \rho - 1$. The null and alternative hypotheses are written as:

$$H_0 : \alpha = 0 \quad (4)$$

$$H_1 : \alpha < 0$$

According to Dickey and Fuller in Gujarati and Porter (2013) the null hypotheses derive the asymptotic results. The simple DF unit root test is valid only on the AR (1) process. Hence, the Augmented Dickey-Fuller (ADF) test constructs a parametric correction for higher-order correlation. The assumption in ADF follows that the y series abides by an AR (p) process and adds p lagged difference in terms of the dependent variable y . The model can be shown as such:

$$\Delta y_t = \alpha y_{t-1} + x_t' \delta + \beta_1 \Delta y_{t-1} + \beta_2 \Delta y_{t-2} + \dots + \beta_p \Delta y_{t-p} + v_t \quad (6)$$

This augmented specification used the same null and alternative hypotheses with standard DF. This equation explained that the ADF was conducted to reject H_0 . Said & Dickey (1984) demonstrated that the ADF test was asymptotically valid in the presence of a moving average (MA) component, provided that sufficient lagged difference terms were included in the test regression. When the series is non-stationary in the level, we move to the first difference or second difference until the series becomes stationary.

According to Gujarati & Porter (2013) following the unit root test, we seek to test the co-integration. Two variables will be co-integrated if they have a long-term equilibrium, or relationship between them. We used Johansen test (1991) to find the co-integration since it can analyze the autoregressive model with p order, as follows:

$$Y_t = A_1 Y_{t-1} + \dots + A_p Y_{t-p} + B X_t + e_t \quad (7)$$

Where Y_t is a vector k from variable $I(1)$ nonstationary, X_t is a vector d from determinant variable, e_t is a innovation vector. Thus, the equation can be written as:

$$\Delta Y_t = \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-i} + \Pi Y_{t-k} + B X_t + \epsilon_t, \text{ where} \quad (8)$$

$$\Pi = \sum_{i=1}^{p-1} A_i - 1 \text{ and } \Gamma = \sum_{j=1}^{p-1} A_j \quad (9)$$

The co-integration is explained by the matrix from p variable. When $0 < \text{rank} = r < p$, Π consists of Q and R matrix with $r \times p$ dimension, so that $\Pi = QR'$. R matrix consists of r , $0 < r < p$ co-integration vector, while Q matrix is a parameter vector of error correction. Johansen not only suggests the maximum likelihood

estimator for Q and R but also the statistics test to determine the co-integration vector r. Co-integration is based on the likelihood ratio (LR) test. If LR test > LR critical value, the co-integration of variable is accepted but not if LR test < LR critical value, since co-integration is absent. The critical value of LR is based on the table by Johansen and Juselius, following this formula:

$$Q_r = -T \sum_{i=r+1}^k \log(1 - \lambda_i) \quad (10)$$

$r = 0, 1, \dots, k-1$ where λ_i is the highest of the eigenvalue. Johansen also gives an alternative LR known as maximum eigenvalue statistic which can be calculated from the trace statistics as:

$$Q_r = -T(1 - \lambda_{r+1}) = Q_r - Q_{r-1} \quad (11)$$

This test will establish that if the variable has a stationary in I (1), then it should be assumed to have co-integration. Therefore, the error correction model can be applied to prove the long-term causality.

The use of the Error Correction Model (ECM) aims to determine the stability of relationships between variables occurring, both in the short-run and long-run, due to the co-integration between variables in the research. To assess whether or not the empirical model specification used was valid, it can be verified from the Error Correction Term (ECT) coefficient which examines the consistency of the empirical model with the economic theory. If the test result of the ECT coefficient was significant, the observed model specification was considered valid.

The variables used in this study comprised the independent variables of foreign debt and foreign investment, and the dependent variable of economic growth. Economic growth (Gro) is the increase in the amount of production, year to year, of goods and services in a country. Foreign debt (Exdebt) is a valuable domestic letter issued in that country which creates an upside obligation to foreign parties stated in USD. Foreign direct investment (FDInv) is the investment made by one country in another country stated in USD. Error Correction Model (ECM) is an analysis tool to identify long-run and short-run relationships that occur due to the co-integration between variables. The validity of an empirical model used can be detected based on the value of the ECT coefficient. The formulation of an ECM model for the long-run, is as follows:

$$y_t = \beta_1 + \beta_2 x_t + \mu_t \quad (12)$$

If there is a linear combination of y_t and x_t that is stationary at I(0) and are co-integrated, the implication is that the estimated residual is stationary, so that:

$$\mu_t = y_t - \beta_1 - \beta_2 x_t \quad (13)$$

β_2 is the long-run coefficient. The relationship between y_t and x_t with ECM specification is expressed as follows:

$$\Delta y_t = \beta_3 + \beta_4 \Delta x_t - \pi_1 \mu_{t-1} + \varepsilon_t \quad (14)$$

This variable becomes stationary at the first difference, β_3 is a constant term, β_4 is a short-run coefficient measure of the immediate impact of a change in x_t on a change in y_t , π_1 is a coefficient of the estimated lagged residual that shows how much the disequilibrium is being corrected, ε_t is the error term.

$$\text{If: } \mu_{t-1} \text{ is a ECT, so:} \quad (15)$$

$$\mu_{t-1} = y_{t-1} - \beta_1 - \beta_2 x_{t-1} \quad (16)$$

With β_2 is the long-run coefficient. Therefore, the complete model of the ECM is as follows:

$$\Delta y_t = \beta_3 + \beta_4 \Delta x_t - \pi_1 (y_{t-1} - \beta_1 + \beta_2 x_{t-1}) + \varepsilon_t \quad (17)$$

Based on this model, the ECM equation for this paper is as follows:

$$\Delta Gro_t = \beta_0 + \beta_1 \Delta Exdebt_t - \beta_2 \Delta FDInv_t - \pi_1 (Gro_{t-1} - \beta_4 + \beta_5 Exdebt_{t-1} - \beta_6 FDInv_{t-1}) + \varepsilon_t \quad (18)$$

β_1 and β_2 is a long-run coefficient

β_5 and β_6 is a short-run coefficient

$$Gro_{t-1} - \beta_4 + \beta_5 Exdebt_{t-1} - \beta_6 FDInv_{t-1} \text{ is a ECT} \quad (19)$$

On realizing the output of ECM, we must diagnose the classic assumption through employing normality, multicollinearity, heteroscedasticity, and autocorrelation. For normality, the Jaque-bera test was used with H_0 : data is not normal. For heteroscedasticity, we use the Breush-Pagan-Godfrey test with H_0 : there is heteroscedasticity. For autocorrelation, we use the residual LM test where H_0 : there is a correlation. All the tests are significant at 0.01 level. For multicollinearity, we use tolerance value > 0.10 with H_0 : there is no multicollinearity. The result of the unit root test shows that Ex-debt and FDInv non-stationary are at the level, so the unit root test moves to the first difference, while, Gro stationary stays at the level and is the first difference.

EMPIRICAL RESULTS

Error Correction Model is an econometrics tool used to identify long-run and short-run relationships between research variables. To determine whether the specification of the empirical model used is valid or otherwise, it can be gauged from the value of the ECT and the consistency of the empirical model with the economic theory. The estimation results in Table 1, shows that the variables of economic growth, foreign debt, and FDI are not stationary at the level phase because the probability value is more than the 1% significance level, and as such it is subsequently followed by higher unit root test. All variables are found stationary at first difference or d (1) with a probability value < from the significance level of 1%. After all variables used are stationary at the same level, the next step is to do the Johansen co-integration test to determine whether or not all variables used have a long-run relationship.

TABLE 1. Estimation result of unit roots test using ADF test

Variable	Probability at Level (I(0))	Probability at First Difference (I(1))
Gro	0.0009*	0.0000*
Exdebt	0.4005	0.0082*
FDInv	0.2275	0.0000*

* Significant at α 1%

Based on Johansen (1991) and with reference to Table 2, it can be said that when $r=0$, the Trace Statistics value is 43.7924 which is larger than the Critical Value 29.7971. The Maxima-Eigen's number is 27.3991 and greater than the Critical Value of 21.1316, indicating that the observed variable has a long-run relationship or is co-integrated in the short-run. In addition, an Error Correction Model (ECM) test was conducted to elucidate whether foreign debt and FDI variables influence the economic growth variables. The model is considered valid if it has a significant ECT.

Based on the stationary test, all stationary variables at the first difference and the co-integration test showed that all independent variables, namely foreign debt and foreign investment, affected economic growth in Indonesia in the long-run. After going through several stages of tests that were conducted earlier, it can be shown that the Error Correction Model (ECM) can be carried out to obtain results as given in Table 3.

The results in Table 3 revealed that the ECT value is negative at -0.7383 and significant with a probability of 0.0001 indicating that the model used in this study was valid. The F-statistical probability was 0.0000 which means that the foreign debt and FDI variables together significantly affected economic growth in Indonesia. The R-squared value is 0.6089 thus indicating that foreign debt and FDI capability in explaining economic growth in Indonesia is 60% with the remaining 40% explained by other variables that are not included in this study.

The diagnostic test in Table 4 shows the normality from all variables with p value of Jaque-bera < 0.01 , indicating that all variables are normal. For heteroscedasticity, the probability is chi square < 0.01 , which indicates that there is no heteroscedasticity in this model. For autocorrelation, the probability is chi squared > 0.01 , meaning that H_0 is accepted. There is no auto-correlation in this model. Multicollinearity in the independent variable shows 0.83, indicating its absence thus, the output in ECM is not biased and it occupies the standard of BLUE (Best, Linear, Unbiased Estimation).

From the estimation result in Table 3, it can be proven that the effect of foreign debt on economic growth in Indonesia in the long-run is significant and negative at -10.4798, while in the short-run it is not significant and negative at -22.5307. This suggests that in the long-run, an increase in foreign debt by 1.000%,

will reduce economic growth by 10.4798% while in the short-run, it will decrease by 22.5307%. The effect of FDI in Indonesia's economic growth is thus positive and significant in both the long and short-run.

This study has shown that foreign debt has adversely affected economic growth in Indonesia. In the short-run, debt has an important role in boosting Indonesia's economy although the effect is not significant since there are other driving factors. However, in the long-run, economic growth begins to slowdown since the output is increasingly used to settle the sizeable debt incurred. The change in Indonesia's status from a developing country to a developed country, with an increasing per capita income, has permitted her to assume increasing debt loans given that under her new status, the country is considered to have the capacity to pay debt installments. The results show that Indonesia's foreign borrowing is in a debt overhang condition with a negative regression coefficient of -22.5307 in the short-term and -10.4798 in the long-term. The increase in foreign debt in the last five years, has passed a critical point based on the Debt Lafter Curve pattern and has caused the slowing down of economic growth. Foreign debt can only provide the impetus for Indonesia's economic growth when its amount is still in a reasonable ratio. The occurrence of the debt overhang is symptomatic of the gradual stagnation of the economy which has not exceeded 5% in the last 3 years. Much infrastructure development however occurred at this time with the added benefit of employment to the community. However, if debt continues to experience a sharp increase, coupled with the prospect of a long-run return, economic growth may slow down and stagnate, particularly where debt realization is not placed in the productive sector. For example, if more debt is allocated to consumptive activities it will not benefit the economy in the long-run. Debt is needed as capital to increase production, expand employment opportunities, and encourage economic growth. Conversely, if debt is misused such as for building public facilities with unbalanced benefits, or on wasteful spending, then it may slow down economic growth and even threaten macroeconomic stability. Cumulative foreign debt load not only slows down the economy but may lead the country into debt traps and debt bondage in the long-term.

This condition is consistent with the views of Presbitero (2012) who regarded industrial or developed countries as better than developing ones in debt management, since they utilized debts in high productivity activities with accordingly high outputs. Developed countries also have good and systematic mechanism in the use of debt as development capital and are capable of avoiding the problem of corruption in managing debt funds. Developing countries in comparison, have poor mechanism in debt management and have the tendency to use debt for consumptive and low productivity projects, which are not profitable

TABLE 2. Estimation Result Johansen Co-Integration Test

r	Trace			Maximum Eigenvalue		
	Trace Statistics	Critical Value	Probability	Max-Eigen Statistic	Critical Value	Probability
r=0	43.7924*	29.7971	0.0007*	27.3991*	21.1316	0.0057*
r=1	16.3933**	15.4947	0.0365**	13.3083	14.2646	0.0704
r=2	3.0850	3.8415	0.0790	3.0850	3.8415	0.0790

* Significant at α 1%.** Significant at α 5%.

TABLE 3. The result of long-run and short-run estimation error correction model

Long-Run Estimation				
Variable	Coefficient	t-statistic	Probability	
C	72.2534	3.4394	0.0016*	
EXDEBT	-10.4798	-3.9417	0.0004*	
FDINV	5.1944	4.3461	0.0001*	
F-statistic	0.0005			
Short-Run Estimation				
C	0.3082	0.4406	0.6625	
D(EXDEBT)	-22.5307	-1.4209	0.1650	
D(FDINV)	5.8024	5.5902	0.0000*	
ECT (-1)	-0.7383	-4.3398	0.0001*	
R- Squared	0.6089			
F-Statistic	0.0000			

* Significant at α 1 %

TABLE 4. Diagnostic Result

Diagnostic Test	Growth	Debt	FDI	Prob Chi Square
Normality	0.0000*	0.0076*	0.0000*	-
Heteroskedasticity	-	-	-	0.0003*
Autocorellation	-			0.4005
Multicollinearity debt to FDI	-	0,8324		

* Significant at α 1 %.

to the economy. The findings of this study are in line with those of Shah and Shahida (2012) in Bangladesh, Afonso and Jalles (2013), Tchereni et al. (2013) in Malawi and Cuestas et al. (2014) in 12 Euro area countries. The study however contradicts Jilenga et al. (2016) who concluded that foreign debt will drive GDP growth in the long-run, provided that the government must ensure its good management and exclusive use for development.

According to (Bank Indonesia), the country's foreign debt in the last five years showed a significant increase. In 2006 private foreign debt was recorded at USD 56.8 billion and in 2011 it increased by 87.85% to USD 106.7 billion. In 2020 it increased further to USD 413.371 billion. The increase is in line with Indonesia's favorable economic condition which has continued to

grow in the last five years along with the increasing express need of capital growth, both for development and investment. The commendable economic condition in Indonesia, which maintained a growth trajectory in the midst of economic contractions in the region and elsewhere during the global financial crisis, becomes her attraction to foreign creditors who offer credits to local companies. A similar situation occurred in 1997/1998 prior to the economic crisis, when the country was in a relatively good economic condition and was politically stable.

The situation with foreign debt in Indonesia is consistent with that of Oman (Kharusi & Ada 2018) where considerable debts were sourced for the development budget. In the Oman study the ARDL and ECM were employed to explain the long-run and short-

run effects of foreign debt and economic growth on the country. The results revealed a negative relationship between foreign debt and economic growth in Oman, and explained the possible occurrence of a debt overhang and crowding-out problem. Investments that are proxied by the formation of gross fixed capital have a positive and significant effect on economic growth. Oman is a developing country that needs foreign debt to bridge the gap in her resource requirement. It is thus necessary to have good foreign debt management that ensures the debt funds are suitably channeled into economic value-added sectors and optimally utilized in order to positively influence growth performance. The situation with foreign debt in Indonesia is also consistent with the research of Hassan and Meyer (2020) and Awad (2020) in Sub-Saharan African (SSA) countries, Dey and Tareque (2019) in Bangladesh, and Ibrahim (2020) in 20 developing countries. However, according to Sajjad et al. (2018) the results of ADF testing during the period 1980-2016 in Pakistan, found that external debt was detrimental and statistically significant to GDP growth rate. Conversely, other explanatory variables, namely human capital, exports, and FDI showed significant and positive influence on the GDP. Policy makers need to adopt the correct policy in reducing foreign debt and increasing export volume and foreign investment to encourage economic growth in the country.

Based on results in Table 3, FDI demonstrates a positive and significant effect on Indonesia's economic growth in both the short- and long-run. If FDI increases by 1.000%, economic growth may increase by 5.8024% in the short-run, and by 5.1944% in the long-run. The role of FDI in Indonesia is potentially huge and as such it is capable of exerting a positive and significant effect on economic growth. This study proved that FDI can make real contribution to the Indonesian economy, both in the short- and long-run. The country still urgently needs FDI to finance its programs to accelerate national development, especially in infrastructure. The capacity of the State Budget is limited and other sources are derived from State-Owned Enterprises and national banks. The government places high hopes for FDI to provide the financing, especially one that is export-oriented. The existence of FDI also helps absorb labor in Indonesia, although the trend has recently decreased since the investment has been more capital intensive than labor intensive in nature. The entry of FDI, that is export-oriented and has a comparative advantage in the technology sector, is very beneficial for Indonesian workers because it will indirectly lead to technology transfer, which will nurture the quality of human resources. In addition, FDI also plays a role in connecting local industries to the global value chain, thereby accelerating the national efforts to expand into the global market.

The findings of this study are supported by Awolusi and Adeyeye, (2016) for African countries, Gochero &

Boopen (2020) for Zimbabwe & Khathlan (2013) for Saudi Arabia. Based on Awolusi and Adeyeye (2016), FDI has significant effect on the economic growth of African countries through various channels, such as gross capital formation, increased human capital, technology transfer, spillovers, and the workforce. The policy that can be adopted in Africa is to provide incentives to compensate for market failures. The authors also recommended that the relevant countries make efforts to attract FDI in the mining sector. Results from Gochero and Boopen (2020), who studied the relationship between FDI and economic growth in the mining sector of Zimbabwe, using the Auto Regressive Distribution Lag (ARDL) approach, showed that investment in the mining sector demonstrated positive and significant relationship to GDP in the short- and long-run. Investment is separated between domestic and foreign investment which is further differentiated into mining and non-mining sectors. Based on the ARDL results, FDI in the mining and non-mining sectors showed significant effect on economic growth. The Zimbabwean government judiciously facilitates the entry of FDI as well as encourages domestic investment and financial sector development.

As reported earlier Jilenga et al. (2016) showed to the contrary that the inflow of FDI did not benefit the Tanzanian economy. And that domestic investment is considered more profitable in boosting Tanzania's GDP as compared to foreign investment. Similarly Kharusi & Mbah (2018) found that external debt in Oman did not promote GDP growth. The role of gross fixed capital investment was instead proven to drive growth performance. Theoretically and empirically, capital is an essential factor to support economic growth as stated in the classical, neoclassical, and endogenous growth theories. The converse is true in the case of Indonesia where limited domestic investment has led her to depend on the FDI as an important factor that drives economic growth.

CONCLUSION

This study aims to analyze the effect of foreign debt and FDI on Indonesia's economic growth through using the Error Correction Model (ECM) to elucidate the stability of relationships occurring between variables due to cointegration between them, both in the short- and long-run. Data spanning 1981 to 2017 were used in the study. Foreign debt was found to increase economic growth in the early days, which subsequently slowed down, and ultimately decreased in the long-run. Indonesia's foreign debt however continues to experience a sharp increase. In the short-run, this condition can still benefit the economy, if debt is managed prudently and prioritized for productive activities. The study further revealed that Indonesia's foreign debt in the long-run

experiences a debt overhang, where growth has peaked and is eventually reduced to a slowdown in economic growth. Similar finding was reported by Kharusi and Mbah (2018) who discovered debt overhang in Oman when debt continues to increase in the long-run. This study also revealed that FDI has significant effect in boosting economic growth in Indonesia, in both the short and long-run.

The main recommendation from this study is the need to control the increase in foreign debt including FDI so that it does not exceed economic growth. The government should maintain the debt ratio at less than 60% of GDP. The use of foreign debt is prioritized for infrastructure development with broad multiplier effect particularly in sectors that employ massive workforce. Judicious debt management may provide economic benefits, as proven by Jilenga et al. (2016) who discovered that foreign debt will drive economic growth in Tanzania in the long-run. It is thus imperative for the government to ensure that foreign debt is well managed if it is to promote economic growth.

The study is limited in its use of data that only spanned 36 years, from 1981 to 2017. Future research is recommended to increase the observation period or use quarterly data. In addition, the debt can also be varied into foreign and domestic debt, so that the comprehensive effect of debt on the economy is tangible and can thus be justified as a source of development financing.

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