

# Determinants of Indonesia's External Debt 31 Years

HERU WAHYUDI\*

Economic Development, Faculty of Economics and Business,  
University of Lampung,  
Jln. H. Komarudin, Rajabasa Raya, Rajabasa, Bandar Lampung,  
INDONESIA

DRIYA WIRAWAN

Management, Faculty of Economics and Business,  
University of Lampung,  
Jl. Nusa Indah No. 53, Kel. Rawalaut, Kec. Enggal, Bandar Lampung,  
INDONESIA

I WAYAN SUPARTA

Economic Development, Faculty of Economics and Business  
University of Lampung,  
Perum Bataranila, GG. Sakura, Dusun 4, Desa Hajimena, Kec. Natar, Lampung Selatan,  
INDONESIA

WIDIA ANGGI PALUPI

Economic Development, Faculty of Economics and Business,  
University of Lampung,  
Wisma Cantik Manis, Rajabasa, Rajabasa, Bandar Lampung,  
INDONESIA

*Abstract:* - External debt can be used as a source of development in developing countries, including Indonesia. External debt can be affected by various factors. This study aims to determine the short- and long-term relationship between the exchange rate, foreign exchange reserves, and state revenues for Indonesia's external debt from 1990 to 2021, sourced from the World Bank. The method used in this study is the Error Correction Model (ECM). The results of this study show that the exchange rate in both the short and long term has a significant negative effect on foreign debt. In the short and long term, foreign exchange reserves positively impact external debt. Meanwhile, state revenues in a short time do not affect external debt and have a significant positive effect in the long run. This research can be used as one of the guidelines for determining policies related to foreign debt.

*Key-Words:* - ECM, exchange rate, external debt, foreign exchange reserves, state revenues

Received: May 4, 2023. Revised: July 26, 2023. Accepted: August 2, 2023. Published: August 11, 2023.

## 1 Introduction

Economic growth is the most powerful instrument for reducing poverty and improving the quality of life in developing countries, [1]. Every government certainly wants to realize economic improvement, including developing countries. Indonesia is one of the developing archipelagic countries on the Asian continent. According to, [2], external debt is a developing count countries significant development source.

According to, [3], Indonesia is one of the developing countries that uses foreign loans in economic activities. In the short term, external debt can cover the budget deficit due to numerous financing but a limited income. The national al debt is like a double-edged sword, which has both positive and negative impacts on economic growth. Thus, it needs an app. Therefore policies and analysis to mock debt to improve the welfare of the people. This study will analyze the factors that influenced external debt in Indonesia from 1990 to

2021. The following is the development of Indonesia's external debt from 1990 to 2021.

Based on Figure 1, it can be seen that Indonesia's external debt trend continues to increase. In 2011 Indonesia's external debt was enormous, reaching 50.15%. This condition is caused by an increase in the budget deficit, which in 2010 amounted to -98,010 and in 2011 to -124,656; A large amount of Indonesia's external debt in 2011 was caused because 2011 the state budget received many fuel subsidies, so 2011 the budget deficit was even more significant, [4], in addition to being influenced by the budget deficit, research from [5], stated that the exchange rate affected foreign debt. Here is a graph of Indonesia's exchange rate and external debt.

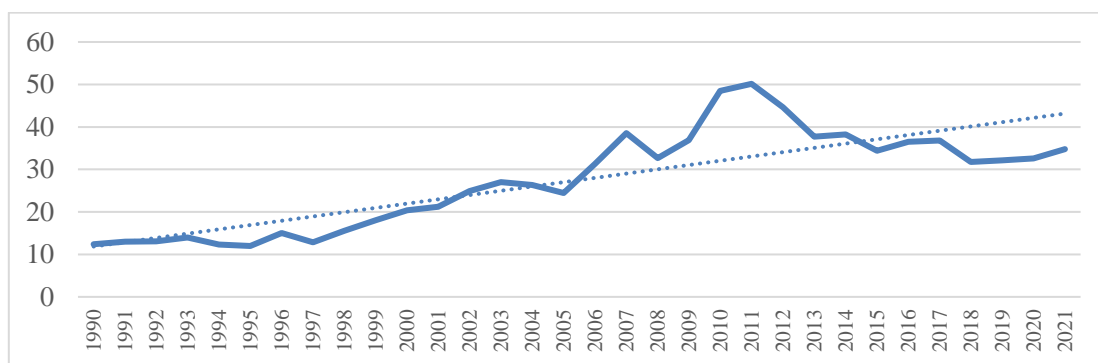


Fig. 1: Development of Indonesia's External Debt 1990-2021 (% of GDP)  
Source: World Bank (2023)

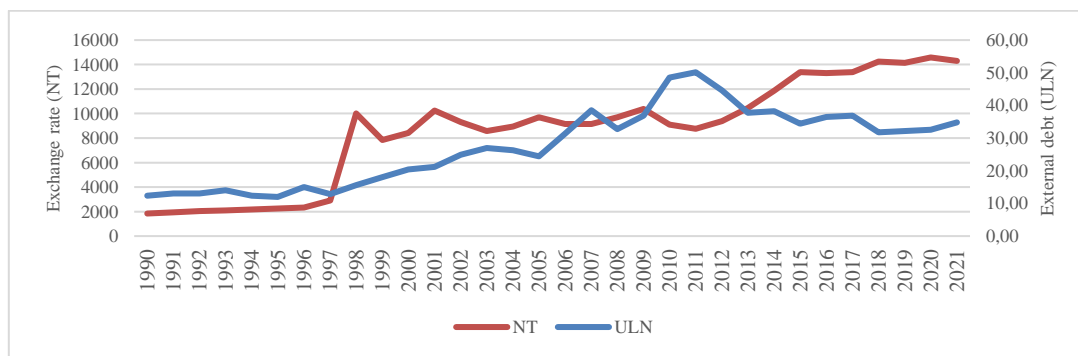


Fig. 2: Exchange Rate and External Debt of Indonesia 1990-2021  
Source: World Bank (2023)

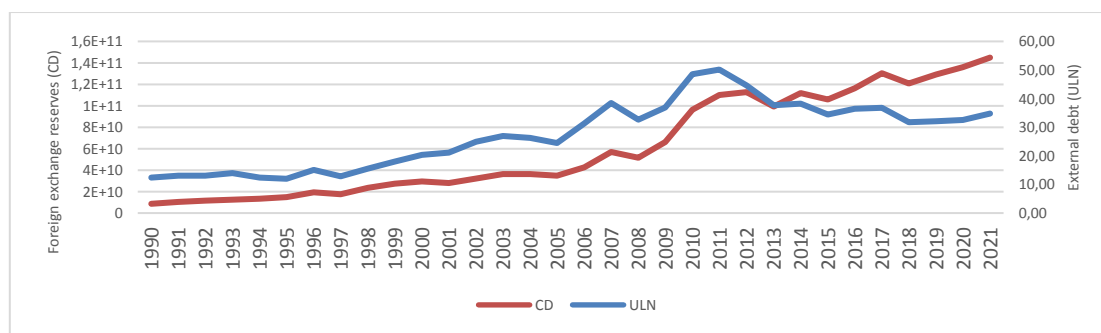


Fig. 3: Foreign exchange reserves and Indonesia's External Debt 1990-2021  
Source: World Bank (2023)

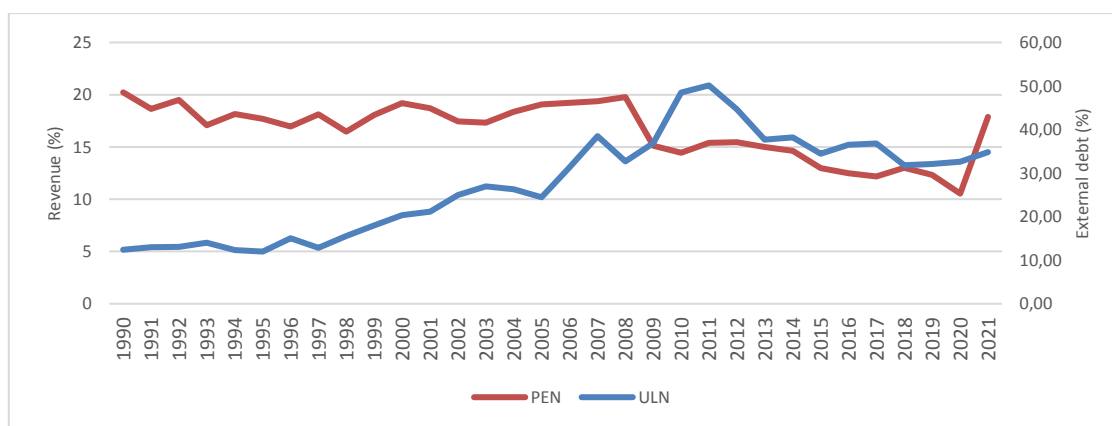


Fig. 4: State Revenue and External Debt of Indonesia 1990-2021

Source: World Bank (2023)

Based on Figure 2, it can be seen that Indonesia's exchange rate and external debt tend to fluctuate. Research conducted by, [6], found that the exchange rate positively affects foreign debt. However, [7], study researchers found that the exchange rate significantly negatively impacts foreign debt. In addition to the exchange rate phenomena, foreign exchange reserves, based on research from, [8], can affect foreign debt. The following is a chart between the value of foreign exchange reserves and Indonesia's external debt from 1990-2021.

Based on Figure 3, it can be seen that foreign exchange reserves and external debt have a positive trend. This means external debt increases when foreign exchange reserves increase, and vice versa. This phenomenon is in line with the research by, [9], but needs to be with the research carried out by, [10]. The differences in research results and phenomena seen in Figure 3 make researchers want to analyze further the relationship between foreign exchange reserves and Indonesia's external debt. Research from, [11], reveals that state revenues also affect foreign debt. According to, [12], foreign loans themselves are carried out because government revenues derived from taxes and other revenues are insufficient to finance government expenditures, both for public expenditures and apparatus expenditures. The data used in the study are state revenues sourced from cash receipts from taxes, social contributions, and other incomes such as fines, fees, rent, and income from property or sales. Grants are also considered income but are excluded from the data used. The following is a chart between Indonesia's state revenue and external debt from 1990-2021.

Based on Figure 4, it can be seen that Indonesia's acceptance tends to be volatile. Research conducted by, [13], found that state revenues

positively affected Indonesia's external debt. Meanwhile, research by, [14], found that state revenues negatively affect Indonesia's external debt. This study will analyze how state revenues affect external debt in Indonesia. Based on the background that has been explained, this study aims to determine the short-term and long-term relationship between exchange rates, foreign exchange reserves, and state revenues to foreign debt. The novelty of this study uses a combination of free variables and years of analysis that are different from previous studies.

## 2 Methodology

This research is a quantitative descriptive study using secondary data obtained from the World Bank. Independent variables used in this study include exchange rates, foreign exchange reserves, and state revenues. Meanwhile, the bound variable is Indonesia's external debt from 1990 to 2021.

The data analysis method in this study uses the Error Correction Model (ECM) method as an econometric tool and a descriptive method, which aims to identify the presence or absence of long-term and short-term relationships that occur due to cointegration between research variables. The use of this method is in line with the study's objectives.

Before ECM estimation and descriptive analysis, several stages must be carried out, such as the static data test and cointegration degree test. After the data is declared stationary and cointegrated, classical assumptions are tested and then based on the discussion results. Here is the equation of the model used in this study.

$$\text{Short-term } D(UL_t) = \beta_0 - \beta_1 D(NT_t) + \beta_2 D(LNCD_t) + \beta_3 D(PEN_t) - ECT_{t-1} \quad (1)$$

$$\text{Long-term } UL_t = \beta_0 - \beta_1 NT_t + \beta_2 LNCD_t + \beta_3 PEN_t + \varepsilon_t \quad (2)$$

Where D indicates the short term,  $\beta_0$  is a constant,  $\beta_{1,2,3}$  is the coefficient, UL is Indonesia's external debt (%), NT is the exchange rate (%), LNCD is the logarithm of foreign exchange reserves (USD), PEN is state revenue (%), ECT is Error Correction Term,  $\varepsilon$  is an error term, and t is time series (1990-2021).

The unit root station test is the first to perform before performing an ECM analysis. A critical concept for time series data is the condition of stationary or not stationary data. Data is said to be inactive if it is close to its average and unaffected by time. With stationary data, the time series model can be more stable. If the estimation uses non-stationary data, the data is reconsidered for validity and stability because regression results from non-stationary data will cause spurious regression. Spurious regression means that regression results from the one-time series variables on one or another time series variable tend to produce biased estimation conclusions indicated by characteristics such as obtaining a high  $R^2$ . Still, in reality, the relationship between these variables has no meaning. The condition is that if the probability value is smaller than the significance level, the data period is declared stationary, and vice versa. The data is not static when the probability value exceeds the significance level.

When the data is stationary, a cointegration test is carried out. The primary purpose of this cointegration test is to determine whether the residual is stationarily cointegrated. If the variables are cointegrated, there is a stable relationship in the long run. Conversely, if there is no cointegration between variables, the implication is that there is no relationship in the long run. Cointegration is also an error because the deviation from the long-run equilibrium is corrected gradually through a partial series of short-run adjustments. The condition is that the data are cointegrated when the probability value is smaller than the significance level (0.05).

If the data is not stationary at the level but stationary at the level of differential and the two variables are cointegrated or, in other words, have a long-term relationship or equilibrium. In the short term, there may be an imbalance. That is, what economic actors want is different from what happens. There are differences in what economic actors wish to do and what happens, so adjustments are needed. The model that incorporates adjustments

to make corrections for imbalances is called the Error Correction Model (ECM), [15].

## 3 Result and Discussion

### 3.1 Result

#### 3.1.1 Unit Root Test Results

Data stationery is one of the requirements for conducting an ECM test. Unit root tests determine whether the time series data is stationary. This study uses the Augmented Dicky Fuller (ADF) test. The provision of the root test of this unit is that when the probability value is below the critical value (0.05), the data is said to be stationary, [16]. Here are the results of static testing.

Based on Table 1, it is known that all variables are not stationary at the level. While in the first difference, all variables are stationary, this can be seen in probability values that are less than 0.05. When the data is stationary, it can be continued by conducting a cointegration test.

#### 3.1.2 Cointegration Test

Furthermore, a cointegration test is carried out when the data is stationary. A cointegration test is performed to test whether the variables used have a long-term relationship. The process to find out the results of the cointegration test is to create an equation using the least squares approach (OLS), then find the residual value and perform the test using the Augmented Dicky Fuller (ADF) test. After that, it can be known whether the residual value is stationary. Here are the results of the cointegration test.

The cointegration test in Table 2 shows a probability value of 0.0329, smaller than the critical value (0.05). Thus it can be concluded that there is a cointegration between the variables used in this study.

#### 3.1.3 Error Correction Model Analysis

After it has been confirmed that stationary and cointegrated data can be carried out short-term and long-term testing using the ECM method. Here are the results of the short-term and long-term estimates in this study.

Based on Table 3, the short- and long-term equations can be obtained as follows:

$$D(UL_t) = -1.450698 - 0.000692D(NT_t) + 27.8155D(LNCD_t) + 0.17865D(PEN_t) - 0.198322ECT_{t-1}$$

$$UL_t = -471.6861 - 0.001465NT_t + 20.07647LNCD_t + 1.196303PEN_t \quad (4)$$

Based on the short-term equation in equation (3), it can be seen that the exchange rate, at a coefficient of -0.000692, has a negative and significant influence on Indonesia's external debt. If the exchange rate increases by 1 rupiah, the external debt will decrease by 0.000692%, ceteris paribus. The variable foreign exchange reserves, with a coefficient of 27.81551, have a significant favorable influence on Indonesia's external debt, meaning that if foreign exchange reserves increase by 1%, then the external debt will increase by 0.278155%, ceteris paribus. Furthermore, the variable income has a coefficient value of 0.178656 and does not affect Indonesia's external debt in the short term. In Table 3, it can be seen that the probability of the F-statistic is 0.000, meaning that the variables of exchange rates, foreign exchange reserves, and state revenues together can affect Indonesia's external debt. In addition, in Table 3, it can be seen that the short-term R<sup>2</sup> value is 0.808102, meaning that the exchange rate, foreign exchange reserves, and state revenues can affect external debt by 80.8102%. At the same time, the remaining 0.191898 is influenced by other variables that are not included in the model. Based on Table 3, it can be seen that negative and significant ECT values indicate that the model is accurate, or in other words, there is no reason to be rejected, [17].

Based on the long-term equation in equation (4), it can be seen that all independent variables affect Indonesia's external debt. The exchange rate variable, with a coefficient of -0.001465, means that if the exchange rate decreases by 1 rupiah, Indonesia's external debt will increase by 0.001465%, ceteris paribus. The variable foreign

exchange reserves with a coefficient of 20.07647 significantly positively influence Indonesia's external debt, meaning that if foreign exchange reserves increase by 1%, external debt will increase by 0.200764%, ceteris paribus. Furthermore, the variable income has a coefficient value of 1.196303, meaning that in the long run, if income increases by 1%, external debt will increase by 1.196303%, ceteris paribus. Has no influence on Indonesia's external debt in the short term. Table 3 shows that the probability of the F-statistic is 0.000, meaning that in the long run, the variable exchange rate, foreign exchange reserves, and state revenues together can affect Indonesia's external debt. In addition, in Table 3, it can be seen that the long-term R<sup>2</sup> value is 0.888820, meaning that the exchange rate, foreign exchange reserves, and state revenues can affect external debt by 88.8820%. At the same time, the remaining 0.11118 is influenced by other variables that are not included in the model.

Table 1. Stationary Test Results with ADF Method

Variable	Level/1 <sup>st</sup> Difference	Prob.	Information
ULN	Level	0.5496	Non-Stationary
	1 <sup>st</sup> Difference	0.0000	Stationary
NT	Level	0.9192	Non-Stationary
	1 <sup>st</sup> Difference	0.0000	Stationary
LNCD	Level	0.3400	Non-Stationary
	1 <sup>st</sup> Difference	0.0000	Stationary
PEN	Level	0.1599	Non-Stationary
	1 <sup>st</sup> Difference	0.0000	Stationary

Source: EViews 10

Table 2. Cointegration Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RES(-1)	-0.391835	0.174922	-2.240061	0.0329
C	-0.297084	0.591201	-0.502510	0.6191

Source: EViews 10

Table 3. ECM Test Results

**Short-Term ECM Estimation Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.450698	0.437028	-3.319460	0.0027
D(NT)	-0.000692	0.000271	-2.553518	0.0169
D(LNCD)	27.81551	2.806097	9.912525	0.0000
D(PEN)	0.178656	0.190863	0.936041	0.3579
ECT(-1)	-0.198322	0.114836	-1.726998	0.0096
R-squared	0.808102	Mean dependent var		0.722599
Adjusted R-squared	0.778579	S.D. dependent var		3.922203
S.E. of regression	1.845609	Akaike info criterion		4.210185
Sum squared resid	88.56306	Schwarz criterion		4.441474
Log-likelihood	-60.25787	Hannan-Quinn criteria		4.285580
F-statistic	27.37209	Durbin-Watson stat		1.218358
Prob(F-statistic)	0.000000			

**Long-Term ECM Estimation Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-471.6861	51.67956	-9.127130	0.0000
NT	-0.001465	0.000394	-3.717661	0.0009
LNCD	20.07647	2.076552	9.668176	0.0000
PEN	1.196303	0.401152	2.982167	0.0059
R-squared	0.888820	Mean dependent var		27.50490
Adjusted R-squared	0.876907	S.D. dependent var		11.44920
S.E. of regression	4.016900	Akaike info criterion		5.735367
Sum squared resid	451.7936	Schwarz criterion		5.918583
Log-likelihood	-87.76586	Hannan-Quinn criteria		5.796098
F-statistic	74.61435	Durbin-Watson stat		0.820788
Prob(F-statistic)	0.000000			

Source: EViews 10

**3.1.4 Test Classical Assumptions**

Before discussing it too far, the data must be tested for classical assumptions. This is done so that the estimate meets the requirements of the Best Linear Unbiased Estimator (BLUE), namely avoiding the problems of normality, multicollinearity, heteroskedasticity, and autocorrelation.

**3.1.4.1 Normality Test**

The normality test was carried out by comparing the Jarque-Fallow probability value and significant level. Where this study used a substantial level of 0.05. The following is presented normality test for short-term and long-term equations.

Based on Figure 5 and Figure 6, it is known that the probability values of Jarque-Bera for the short-term and long-term, respectively, are 0.903472 and

0.745847, more significant than the significance level of 0.05. By keeping both in the short and long term, the data is free from the problem of normality.

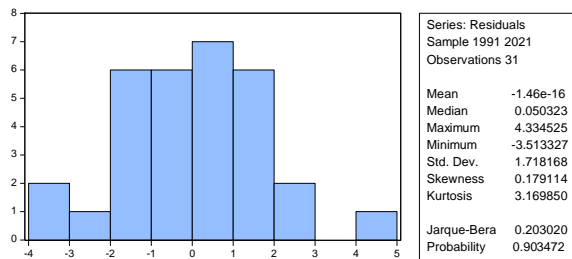


Fig. 5: Short-Term Normality Test  
Source: EViews 10

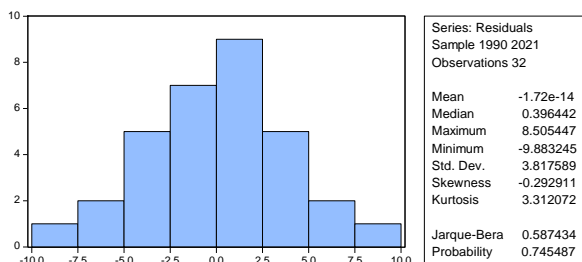


Fig. 6: Long-Term Normality Test  
Source: EViews 10

### 3.1.4.2 Multicollinearity Detection

In the regression model, one of the things that must be fulfilled is the absence of correlation between free variables or commonly referred to as multicollinearity. Multicollinearity testing in this study used the Variance Inflation Factor (VIF) method. By looking if the VIF value is more than 10, there is a multicollinearity problem, [18]. Here are the results of multicollinearity in the short and long term.

Based on Table 4, it is known that the value of the VIF is less than 10. Thus it can be concluded that in the short-term and long-term equations, there is no problem of multicollinearity.

Table 4. Short-Term and Long-Term Multicollinearity Detection

Variable	Short-term	Long-term
D(NT)	1.423643	5.343201
D(LNCD)	1.089159	6.777160
D(PEN)	1.145525	2.152563

Source: EViews 10, processed

### 3.1.4.3 Heteroskedasticity Test

The next test of classical assumptions is the heteroskedasticity test. This test is carried out to determine whether the residual's variance is constant or arbitrary. If the residual variance changes, there is

a heteroskedasticity problem, [15]. This study used the Breusch-Pagan-Godfrey method to examine heteroscedasticity problems' presence or absence. Here are the results of the heteroskedasticity test in the short and long term.

Based on Table 5, it is known that the short-term and long-term F probability values are continuously 0.9794 and 0.1549. This value is greater than the significance level of 0.05. According to, [16], if the probability value is greater than the significance level, there is no heteroskedasticity problem. Thus it can be concluded that there is no problem with heteroskedasticity in the model used.

### 3.1.4.4 Autocorrelation Test

One of the classic assumption tests that must be met is the autocorrelation test. This study uses the Durbin-Watson (DW) method to test the presence or absence of autocorrelation. According to, [16], it was revealed that when DW values are located between -2 to +2, the regression model is free from autocorrelation problems. Based on Table 3, it is known that the DW values of the short-term and long-term models are respectively 1.218358 and 0.820788. It can be concluded that the data used in this study are free from autocorrelation problems.

Table 4. Short-Term and Long-Term Multicollinearity Detection

Variable	Short-term	Long-term
D(NT)	1.423643	5.343201
D(LNCD)	1.089159	6.777160
D(PEN)	1.145525	2.152563

Source: EViews 10, processed

Table 5. Heteroskedasticity Test

	Short-term	Long-term
Prob. F(3,28)	0.9794	0.1549
Prob. Chi-Square(3)	0.9738	0.1461
Prob. Chi-Square(3)	0.9842	0.1902

Source: EViews 10, processed

## 3.2 Discussion

### 3.2.1 Effect of Exchange Rate on Foreign Debt

Based on the ECM results, the exchange rate has a negative and significant effect on external debt both in the short and long term. This means external debt will decrease when the exchange rate rises, and vice versa. When the exchange rate falls, external debt will increase. The results of this study are in line

with the research conducted by, [19], in research entitled “Utang Luar Negeri Negara-Negara Anggota ASEAN (Studi pada Indonesia dan Philippines periode 1970-2014”. The increase in external debt occurred due to the weakening of Indonesia's exchange rate against other currencies; the depreciation of the rupiah resulted in increased production costs and the need for additional capital, so one of the alternatives was for the government to raise external debt in addition to overcoming the surge in production costs, [19]. Thus, external debt will increase when there is a decrease in the rupiah exchange rate against the dollar.

This study's results align with the research conducted by, [7], entitled “Determining the Macroeconomic Factors of External Debt Accumulation in Nigeria: An ARDL Bound Test Approach.” Indonesia experiences a greater risk of External debt exchange rates because external debt is in the form of foreign exchange. When there is an appreciation or depreciation of the rupiah against foreign currencies, it will impact foreign debt. When the rupiah appreciates, it will cause Indonesia's external debt to decline.

However, there is research that needs to be in line with the results of this study, namely research conducted by, [6], which found that the exchange rate positively affects foreign debt. In addition, the research from, [5], entitled “Pengaruh Nilai Tukar, Suku Bunga dan Inflasi Terhadap Utang Luar Negeri Indonesia Tahun 2001-2020” found that the exchange rate had a positive and significant effect on foreign debt. According to, [5], when there is turmoil in the depreciation of the rupiah exchange rate where the country makes foreign loans, it will cause an increase in foreign debt because the loan value is calculated in foreign currencies.

### **3.2.2 Effect of Foreign Exchange Reserves on External Debt**

In the short and long term, foreign exchange reserves positively affect Indonesia's external debt for the 1990-2021 period. This study's results align with the research conducted by, [9]. The government rolled out an external debt policy to accumulate foreign exchange reserves because foreign exchange reserves are one of the essential indicators to show the strength or weakness of an economy, [9]. External debt policy is carried out to cultivate foreign exchange reserves, where foreign exchange reserves are one of the essential monetary indicators to show the strength or weakness of an economy. Foreign exchange reserves are a guarantee of achieving the financial and macroeconomic stability of a country. However, in

the long term, the repayment of external debt will erode the foreign exchange reserves themselves; coupled with the considerable interest, it can be interpreted that if a country's foreign exchange reserves increase, the amount of external debt also increases.

Foreign exchange reserves can come from export activities, tourism, loans, grants, and labor working abroad. Thus, to increase the value of foreign exchange reserves, the government should increase export activities and reduce imports. This is because imports erode available foreign exchange reserves. Furthermore, the government is working together to increase Indonesian tourism to attract foreign tourists to visit Indonesia. Other activities indeed accompany this to increase foreign exchange reserves.

This study's results differ from the research conducted by, [10], which found that external debt will decrease when foreign exchange reserves increase. According to, [10], the increase in foreign exchange reserves, the component of a country's foreign income or assets, will also increase; this increase will undoubtedly raise a country's ability to conduct international transactions; Therefore, increasing foreign exchange reserves will increase the ownership of foreign assets as well as a country's ability to complete international transactions so that dependence on debt can decrease.

### **3.2.3 Effect of State Revenue on Foreign Debt**

The study results found that state revenue has no effect on Indonesia's external debt in the short term, but it has a positive and significant impact in the long term. This study's results align with research conducted by, [13], which found that state revenues positively affect foreign debt. One of the state revenues is from taxes. The existence of the Covid-19 pandemic in 2020-2021 requires the Indonesian government to implement a comprehensive fiscal policy. This results in state spending always being higher than state revenue. With higher tax revenues, the government dares to increase debt because it is optimistic about its ability to repay debt from increasing tax revenues, [13].

Indonesia is a developing country that requires a lot of infrastructure development in various regions. The government needs a large budget to realize adequate infrastructure for the Indonesian people. Significant state revenues and great needs in Indonesia will encourage the government's optimism in paying debts, so a positive correlation exists between state revenues and Indonesia's external debt.



Meanwhile, state revenues do not affect foreign debt in the short term. This is because the fiscal policy requires greater inaction than monetary policy. Mochtar (2004), [20], related to the policy implications for Bank Indonesia to be effective in maintaining price stability is the existence of fiscal backing in the form of the role of budgetary policy while keeping the government spending program proportional to the condition of existing government debt. And monetary policy has a much shorter deep inaction than fiscal policy because central banks can decide and implement policy changes in less than a day. Still, monetary policy has many outside inactions, [21]. Thus, state revenue, which is one of the fiscal policies in the short term, has yet to be able to affect Indonesia's external debt.

#### 4 Conclusion

This study analyzes the short-term and long-term relationship between exchange rates, foreign exchange reserves, and state revenues against Indonesia's external debt from 1990-2021. The results of this study show that all independent variables affect Indonesia's short-term and long-term external debt. In the short and long term, exchange rate variables negatively affect Indonesia's external debt. Meanwhile, foreign exchange reserves in the short and long term have a significant positive effect on Indonesia's external debt. Finally, the variable of state revenue in the short term has no impact on Indonesia's external debt. Conversely, over a long time, it positively impacts Indonesia's external debt for the 1990-2021 period.

The results of this study can be used as one of the policy recommendations for related agencies. An appreciating exchange rate will reduce Indonesia's external debt. Efforts that can be made include increasing exports, reducing imports, and promoting tourism in the international arena. In addition to strengthening the rupiah value, such actions can increase foreign exchange reserves and state revenue. Although foreign exchange reserves and state revenues positively affect national debt, the identification of government optimism in servicing debt needs to be prioritized in areas that can boost economic growth in the short and long term so that the welfare of the Indonesian people can be achieved.

Using the ECM method is beneficial for the government related to regulation in the short and long term so that the output produced is optimal. Further research can use a combination of

macroeconomic variables and add research data. In addition, the study can analyze how debt is during crisis conditions and when it is in normal conditions.

#### References:

- [1] D. Rodrik, "Growth: Building Jobs and Prosperity in Developing," *Why Growth Should be Heard. Dev. Policy*, pp. 1–25, 2007.
- [2] I. Zuhroh and D. Pristiva, "External Debt and Economic Growth: Evidence from South Asian Countries," *JEJAK J. E*, vol. 15, no. 1, pp. 92–101.
- [3] F. Husin *et al.*, "The Effect of Foreign Debt, Exports and Labor on Gross Domestic Products in Indonesia 1991-2020," *J. Econ. Bus.*, vol. 11, no. 3, 2022.
- [4] I. Irfan, "Analysis of factors affecting external debt and their impact on Indonesia's economic growth," Muhammadiyah Makassar University, 2018.
- [5] M. F. Afandi, "The Effects of Exchange Rates, Interest Rates and Inflation on Indonesia's External Debt in 2001-2020," *J. Ilmu Ekon. JIE*, vol. 6, no. 3, pp. 513–524, 2022, doi: 10.22219/jie.v6i3.22297.
- [6] S. S. Wahyuni and S. Muhammad, "Does Exchange Rate Determine Foreign Debt? An Empirical Evidence from Indonesia," *East African Sch. J. Econ. Bus. Manag.*, vol. 4464, no. 6, pp. 326–332, 2019, doi: 10.36349/easjebm.2019.v02i06.008.
- [7] M. M. Abdullahi, N. A. B. A. Bakar, and S. B. Hassan, "Determining the Macroeconomic Factors of External Debt Accumulation in Nigeria: An ARDL Bound Test Approach," *Procedia - Soc. Behav. Sci.*, vol. 211, pp. 745–752, 2015, doi: 10.1016/j.sbspro.2015.11.098.
- [8] R. Nurjanah and C. Mustika, "The influence of imports, foreign exchange reserves, external debt, and interest rates on the currency exchange rates against the United States Dollar in Southeast Asia Countries," *J. Perspect. Financ. Reg. Dev.*, vol. 9, no. 4, pp. 365–374, 2021, doi: 10.22437/ppd.v9i4.12706.
- [9] E. Frisnawati, "Analysis of Determinants of Foreign Debt in Indonesia for the 2006–2020 Period," Siliwangi University, 2022. [Online]. Available: <http://repositori.unsil.ac.id/6393/>
- [10] A. Satrianto, "Analysis of Determinants of Budget Deficit and External Debt in

- Indonesia,” *J. Kaji. Ekon.*, vol. 4, no. 7, p. 103736, 2015.
- [11] H. Malini and Y. E. Seinna, “Indonesia’s Foreign Debt Development and Macroeconomic Variables,” *JEBIK*, vol. 11, no. 2, pp. 144–158, 2022.
- [12] S. Karimah, “The Threshold of External Debt Ratio in Indonesia,” *JBPE J. Bus. Polit. Econ.*, vol. 2, no. 1, pp. 99–111, 2020.
- [13] A. Fahmi, “The Effect of Tax Revenue, Budget Deficit, Rupiah Exchange Rate, and Inflation on Government Debt,” *Forum Ekon.*, vol. 23, no. 3, pp. 561–569, 2021, [Online]. Available: <http://journal.feb.unmul.ac.id/index.php/FORUMMEKONOMI>
- [14] R. P. Patria and S. Nur, “Analysis of Factors Affecting Foreign Debt in Indonesia,” *J. Indones. Sos. Sains*, vol. 3, no. 1, pp. 57–68, 2015, doi: 10.36418/jiss.v3i1.512.
- [15] A. Widarjono, *Econometrics Introduction and Its Applications Dissertation Guide EViews*, 5th ed. Yogyakarta: UPP STIM YKPN, 2018.
- [16] W. W. Winarno, *Econometric and Statistical Analysis with EViews*, 5th ed. Yogyakarta: UPP STIM YKPN, 2017.
- [17] M. R. Ridha, “Error Correction Model Analysis of the Determinant of Stability of Financial System in Indonesia,” *Lebesgue*, vol. 1, no. 2, pp. 82–90, 2020.
- [18] D. Gujarati, *Basic Econometrics*, 5th Editio. New York: McGraw-Hill, 2009.
- [19] T. P. R. Sari and S. Shofwan, “External Debt of Asean Member Countries (Study on Indonesia and the Philippines for the period 1970-2014),” 2014.
- [20] F. Mochtar, S. Sahminan, and A. s Budiman, “Monetary Policy Transmission in Indonesia Towards the Digital Economy Era,” *Bank Indones.*, vol. 53, no. 9, pp. 1689–1699, 2020.
- [21] M. R. Assel, “Cointegration Approach, Error Correction Model and Financial Deepening,” *Cita Ekon. J. Ekon.*, vol. XIII, no. 1, 2019.

### **Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)**

-Heru Wahyudi made a research framework. Driya Wirawan made proposed policy recommendations.  
-I Wayan Suparta collected literature reviews.  
-Widia Anggi Palupi wrote the research and collected and processed research data.

### **Sources of Funding for Research Presented in a Scientific Article or Scientific Article Itself**

The research in this manuscript is supported by Lembaga Penelitian dan Pengabdian kepada Masyarakat (LPPM) Universitas Lampung.

### **Conflict of Interest**

The authors have no conflict of interest to declare.

### **Creative Commons Attribution License 4.0 (Attribution 4.0 International, CC BY 4.0)**

This article is published under the terms of the Creative Commons Attribution License 4.0

[https://creativecommons.org/licenses/by/4.0/deed.en\\_US](https://creativecommons.org/licenses/by/4.0/deed.en_US)