*Research article*

# Assessing Fiscal Sustainability in Indonesia: Error Correction Mechanism Diagnostic

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**Abstract:** Indonesia's debt is increasing and is not controlled properly, which will result in a fiscal budget deficit. This study aims to determine the condition of fiscal sustainability in Indonesia by looking at the factors that affect the debt-to-GDP ratio in 2012 Quarter I to 2022 Quarter II. Fiscal sustainability can be seen from the debt-to-GDP ratio proxy variable and the independent variables used are the previous quarter's debt ratio, economic growth, inflation, and the exchange rate. This research is a qualitative type with a brief descriptive about the state of the debt ratio and the variables that influence it and quantitatively using the Error Correction Mechanism (ECM) using statistical software called EViews. The results show that in the long term the debt-to-GDP ratio in Indonesia is significantly influenced by the previous quarter's debt ratio, economic growth, inflation, and the exchange rate. Meanwhile, in the short term, changes in the debt to GDP ratio are significantly influenced by changes in the debt ratio in the previous quarter, changes in economic growth, and changes in inflation.

**Keywords:** Fiscal Sustainability, Debt, ECM, Indonesia

**JEL Classification:** E62, F62, F63

**Abstrak:** Utang Indonesia yang semakin meningkat dan tidak dikontrol dengan baik, akan mengakibatkan terjadinya defisit anggaran fiskal. Penelitian ini bertujuan untuk mengetahui kondisi kesinambungan fiskal di Indonesia dengan melihat faktor yang mempengaruhi rasio utang terhadap PDB tahun 2012 Triwulan I s/d 2022 Triwulan II. Kesinambungan fiskal dapat dilihat dari variabel proksi rasio utang terhadap PDB dan variabel independen yang digunakan adalah rasio utang triwulan sebelumnya, pertumbuhan ekonomi, inflasi, dan kurs. Penelitian ini berjenis kualitatif dengan deskriptif singkat tentang keadaan rasio utang serta variabel yang mempengaruhinya dan kuantitatif dengan metode Error Correction Mechanism (ECM) menggunakan software statistik yakni Eviews. Hasil diperoleh bahwa dalam jangka panjang rasio utang terhadap PDB di Indonesia dipengaruhi secara signifikan oleh rasio utang triwulan sebelumnya, pertumbuhan ekonomi, inflasi dan kurs. Sedangkan dalam jangka pendek, perubahan rasio utang terhadap PDB dipengaruhi secara signifikan oleh perubahan rasio utang triwulan sebelumnya, perubahan pertumbuhan ekonomi, dan perubahan inflasi.

**Kata Kunci :** Kesinambungan Fiskal, Utang, ECM, Indonesia

## 1. INTRODUCTION

The concept of fiscal sustainability has become a concern for the Indonesian government since the 1998 economic crisis. The effects of the crisis on public finances as well as the reciprocal relationship between the financial system and the financial well-being of the government are other lessons that can be learned. The crises also teach people about the importance of fiscal policy (such as fiscal stimulus) and external influences on a nation's internal and external balances (Insukindro, 2018). Fiscal policy held a big role in the economic development of a country. Fiscal

policy can achieve at least three significant goals: preserving macroeconomic stability, attaining sustainable economic growth, and lowering the poverty rate (Rusdiyantoro & Simanjuntak, 2022). In general, the ability of the government to smoothly finance its budget without amassing a significant amount of public debt over the long term is referred to as fiscal sustainability (Brady & Magazzino, 2018; Buckle & Cruickshank, 2014; Bui, 2019; Chua et al., 2021). Sustainability was characterized by the capacity of an organization to maintain the social welfare of its constituents while utilizing the resources at its disposal (Bisogno et al., 2017). Fiscal sustainability is closely related to the ability of the government's budget to pay debts (Checcherita-Westphal et al., 2014; İmrohoroğlu et al., 2019; Sriyana & Hakim, 2017).

Lately, fiscal sustainability has again become interesting topic for research because it is crucial for identifying the sources of risk and vulnerability in a country's fiscal and macro structure and for determining the best course of action to prevent sudden macroeconomic crises. According to the Fiscal Policy Agency chairman, this was due to several indicators that the government's debt had exceeded the limits set by the International Monetary Fund (IMF) and International Debt Relief (IDR). Moreover, the 1998 economic crisis was the beginning of the government's debt which continued to increase due to increasing government spending to overcome the impact of the crisis while government revenues decreased. Moreover, the Covid-19 pandemic has the potential for a 2020 global recession which will impact the medium-term economy (Adiyanta, 2020). This resulted in the government having to borrow to cover the budget deficit.

The condition of a country's fiscal sustainability can be seen from the ratio of debt to GDP (Rahman et al., 2023). If the value of the ratio of debt to GDP from year to year is stable, then fiscal sustainability is considered good (Afonso & Alves, 2023; Basorudin, 2019; Sakuragawa & Hosono, 2011). Fiscal sustainability is challenged when the debt-to-GDP ratio exceeds a certain threshold and government revenues are insufficient to continue supporting new government debt issuance (Afonso & Jalles, 2014; Reiss, 2014; Şen & Kaya, 2015). The balance between the budget deficit and debt must be maintained so that the Indonesian economy remains stable. If the government's debt is too high and exceeds the limit, it can have a negative impact on macroeconomic stability and fiscal resilience of a country (Corsetti et al., 2019; Nakatani, 2021). By knowing what factors affect fiscal sustainability in Indonesia, it is hoped that everything that causes it can be controlled optimally.
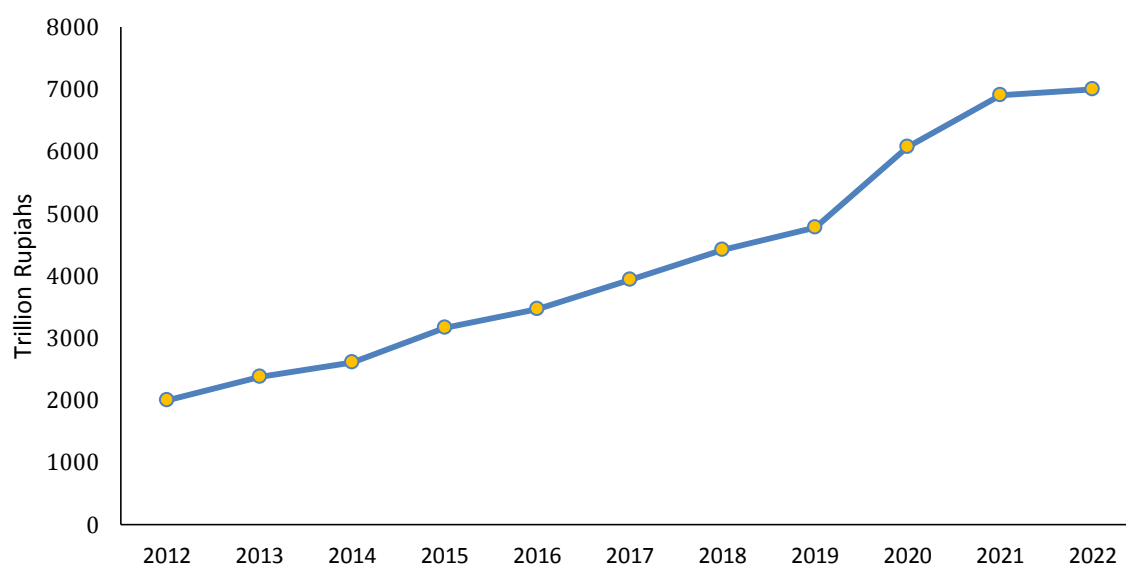


**Figure 1**. Trend of foreign debt Indonesia, 2012-2022
**Source**: Ministry of Finance of the Republic Indonesia

Indonesia's foreign debt soaring sharply every year since 1998. According to data from the Ministry of Finance shows that the amount of debt tends to increase every year. Since 2012,

Indonesia's debt has continued to increase until 2022. Indonesia's foreign debt in 2012 reached IDR 1,997.7 trillion and continues to increase until it reaches IDR 7,002.24 trillion in 2022. Additionally, the debt-to-GDP ratio, fiscal sustainability can also be measured through the primary balance. The primary balance in Indonesia tends to decrease every year. Since 2012, the primary balance has experienced a deficit of IDR 52.3 trillion compared to previous years. At its peak, the primary balance experienced a very sharp deficit in 2020 of IDR 642.2 trillion due to the Covid-19 pandemic. This phenomenon makes it clear that the government makes loans for interest payments, debt repayments and past debt principals because government revenues cannot cover the budget gap. The government continues to increase debt but, it will only slow down economic growth. Therefore, the desire to go into debt to overcome the fiscal gap will in fact lead to an unstable debt-to-GDP ratio and lead to a disproportionate budget deficit to GDP. Thus, it is necessary to know what factors affect fiscal sustainability in Indonesia in 2012-2022.
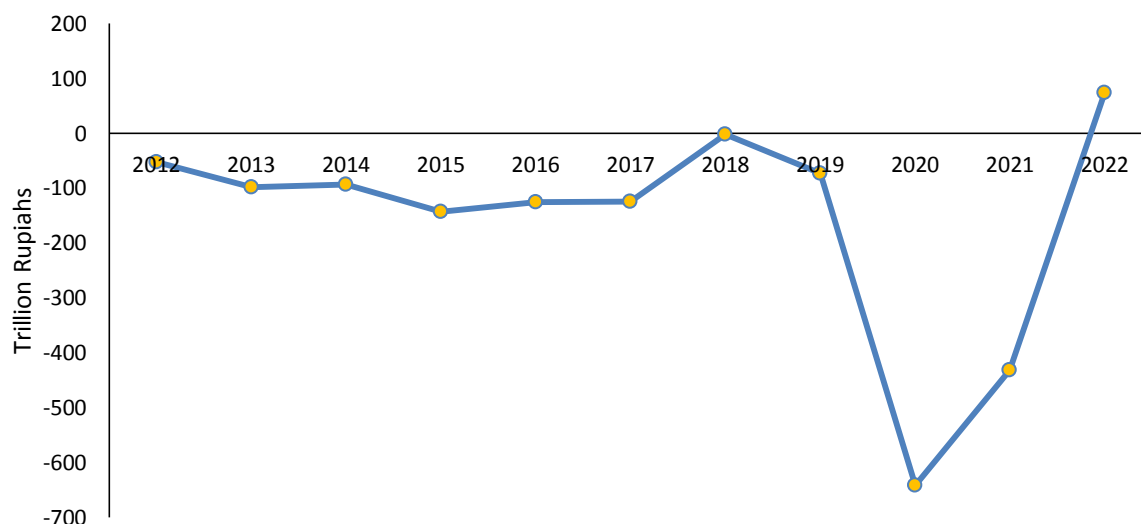


**Figure 2.** Indonesia's primary balance, 2012-2022
**Source**: Ministry of Finance of the Republic Indonesia

There are several variables that are thought to influence fiscal sustainability. Rusdiyantoro & Simanjuntak (2022) found that Indonesia's fiscal sustainability during the Covid-19 pandemic was influenced by the output gap, inflation, and the exchange rate. Cevik & Nanda (2020) conducted research on fiscal sustainability in 16 Caribbean countries which gave result that lagged government debt-to-GDP ratio was positive and statistically significant in the ratio of debt to GDP. In research conducted by Basorudin (2019), the results showed that Indonesia's debt-to-GDP ratio was influenced by the debt-to-GDP ratio in the previous quarter. The influence exerted on the quarterly debt ratio is greater in the short term than in the long term. Another study conducted by Wahyuningsih (2018), fiscal sustainability is influenced by some macro variables including economic growth, inflation, exchange rate growth, world oil prices and poverty levels.

Economic growth refers to an increase in national income through a rise in the production of goods and services, then along with that the average income will increase, so the country has achieved economic growth (Perkins et al., 2017; Wei et al., 2021). Economic growth has a negative effect on the ratio of debt to GDP (Drakes, Thomas, Craigwell, & Greenidge, 2012). When a country experiences an increase in economic growth, there is an increase in GDP which will reduce the ratio of debt to GDP. Inflation as a phenomenon in which prices are imposed which can be triggered by pressure from global commodity difficulties, especially oil prices (Choi et al., 2018; Hazmi et al., 2019; Kilian & Zhou, 2022; Ko, 2020; Zhang, 2022). Inflation has a positive effect on the debt ratio (Reinhart & Rogoff, 2010). When prices experience continuous increases or inflation occurs, fiscal sustainability will decrease as illustrated by an increase in the ratio of debt to GDP. This is due to the declining purchasing power of the people so that the economy tends to slow down.

The exchange rate is the price or exchange rate of a country's currency with another country's currency (Todaro & Smith, 2014). An increase in the USD exchange rate against the rupiah or a depreciation of the rupiah will burden the state budget because the payment of principal installments and interest on loans taken from the state budget will increase or in other words the payment of foreign debt will increase. This will increase the debt-to-GDP ratio so that an increase in the exchange rate will have a positive effect on the debt-to-GDP ratio. The term "Domar's stability condition" refers to Domar's notion of budgetary sustainability. A stabilizing debt-to-GDP ratio or deficit-to-GDP ratio was how he described fiscal sustainability. According to Domar's requirement, for fiscal policy to be sustainable, the rate of national production growth must be higher than the cost of borrowing for the government or, in the absence of new borrowing, the rate at which the public debt is growing (Pradhan K,2019).

Several previous studies looked at the factors that affect fiscal sustainability in a certain period of time without looking at the short term and the long term. This research will pay attention to the short term and long term with quarterly time periods to see the factors that affect fiscal sustainability in Indonesia. This is what distinguishes it from previous research. Through this research, it is hoped that it can assess the soundness of fiscal policy in Indonesia until the latest period 2022 after the Covid-19 outbreak. Based on the background and problems that have been described, this study aims to determine what factors affect fiscal sustainability in Indonesia in 2012-2022 by looking at the factors that affect the ratio of debt to GDP.

## 2. RESEARCH METHODS

### 2.1. Data

This study uses quarterly time series data with 42 observations from 2012Q1-2022Q2. The data used is secondary data sourced from BPS-Statistics Indonesia (Badan Pusat Statistik), Bank Indonesia, and the Ministry of Finance of the Republic of Indonesia. The debt-to-GDP It is calculated by dividing the total public debt by a country's gross domestic product (GDP) and then multiplied by 100 percent. Economic growth is calculated by the natural logarithm of a country's GDP. The inflation rate is calculated using the consumer price index (CPI), by dividing the CPI for this quarter with the previous quarter divided by the CPI for the previous quarter and then multiplied by 100 percent. The exchange rate is calculated from the value of the Dollar America (USD) to the value of the Rupiah Indonesia (IDR).

### 2.2. Model

The analytical method used in this research is descriptive analysis and inferential analysis. Descriptive analysis using graphics is used to see an overview of the debt-to-GDP ratio and the variables that are thought to influence it. Inferential analysis using Error Correction Mechanism (ECM). Data that is not stationary at the level but stationary at the same degree and has cointegration will be modeled through ECM. ECM is a model that can be used to view long-term balance by adjusting the mechanism through short-term balance corrections (Adwendi & Kartiasih, 2016). Short-term balance correction is measured through the speed of adjustment value. A negative speed of adjustment value indicates that the short-term equation will be corrected towards long-term balance. The long-term and short-term equations in this study are as follows.

$$Ratio_t = \alpha_o + \alpha_1 Ratio_{t-1} + \alpha_2 LGDP_t + \alpha_3 Inflation_t + \alpha_4 ER_t + \varepsilon_t \qquad (1)$$

$$\Delta Ratio_t = \beta_o + \beta_1 \Delta Ratio_{t-1} + \beta_2 \Delta LGDP_t + \beta_3 \Delta Inflation_t + \beta_4 \Delta ER_t + \gamma ECT_{t-1} + \mu_t \qquad (2)$$

where, $Ratio_t$: debt to GDP ratio quarter t-th, $Ratio_{t-1}$: debt to GDP ratio quarter (t-1)-th, $LGDP_t$: economic growth quarter t-th, $Inflation_t$: inflation quarter t-th, $ER_t$: exchange rate quarter t-th, $ECT_{t-1}$: error correction term quarter (t-1)-th, $\alpha_o, \beta_o$: intercept, $\alpha_i$: coefficient in the long term of the i-variable, $\beta_i$: coefficient in the short term of the i-variable, $\gamma$: speed of adjustment, and $\varepsilon_t, \mu_t$: error term, t-th: current quarterly period, (t-1)th: previous quarterly period.

## 3. RESULTS AND DISCUSSION

### 3.1. Descriptive statistic and correlation matrix

The debt-to-GDP ratio in Indonesia from 2012 in the first quarter to 2022 in the second quarter is quite stable, although it appears to initially have a positive trend, it will begin to decline in 2021. The debt-to-GDP ratio in Indonesia reached its maximum point in 2020 Quarter IV, namely 39.35 percent, but the amount is still within safe, reasonable, and controllable limits because it is still below 50 percent. Even though based on the previous description, Indonesia's debt tends to increase, but if the debt-to-GDP ratio is still below the safe limit and does not increase sharply, it means that the increase in GDP in Indonesia has also increased sharply as is the case with the increase in debt which can be seen in Figures 3 and 4.
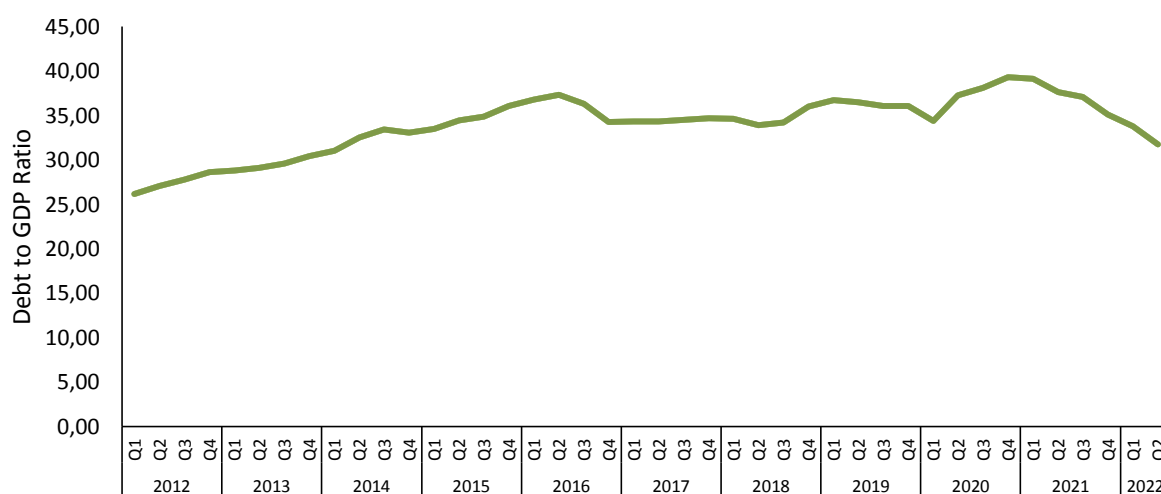


**Figure 3.** Trend of debt to GDP ratio in Indonesia 2012Q1 – 2022Q2
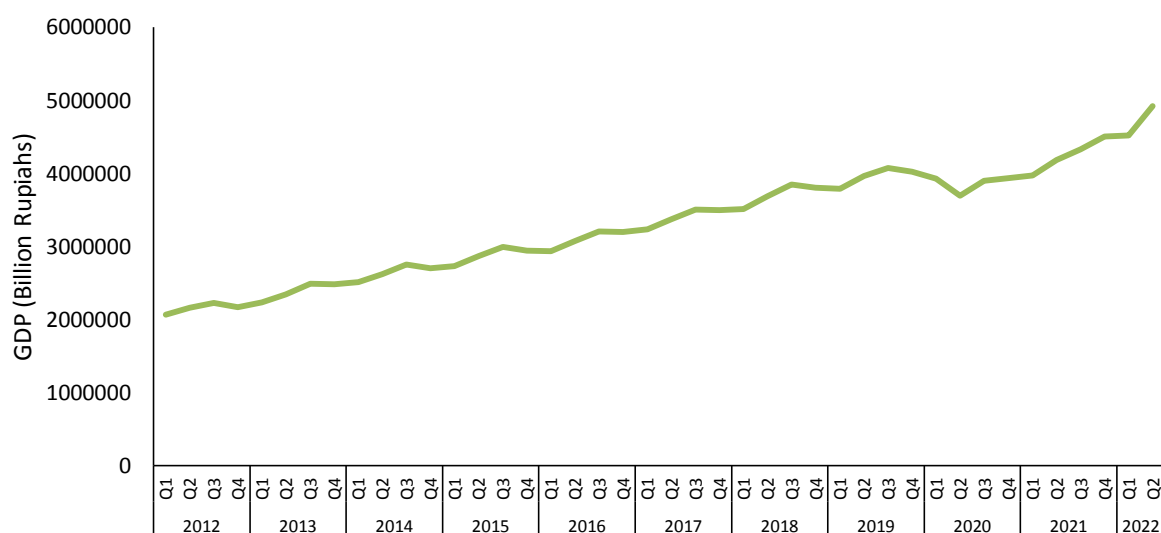**Source**: Ministry of Finance of the Republic Indonesia



**Figure 4.** Trend of GDP Indonesia, 2012Q1 – 2022Q2
**Source:** BPS-Statistics Indonesia (processed)

According to periodic data from Bank Indonesia, the Indonesian exchange rate against the US dollar almost always depreciates, so the graph of the rupiah exchange rate is always increasing. As seen in Figure 3, even though the Indonesian exchange rate tends to be stationary, when viewed carefully it has a positive trend,from the beginning in 2012 in the first quarter 1 USD was equal to 9053 IDR, now in 2022 the second quarter is 1 USD equal to 14519 IDR.
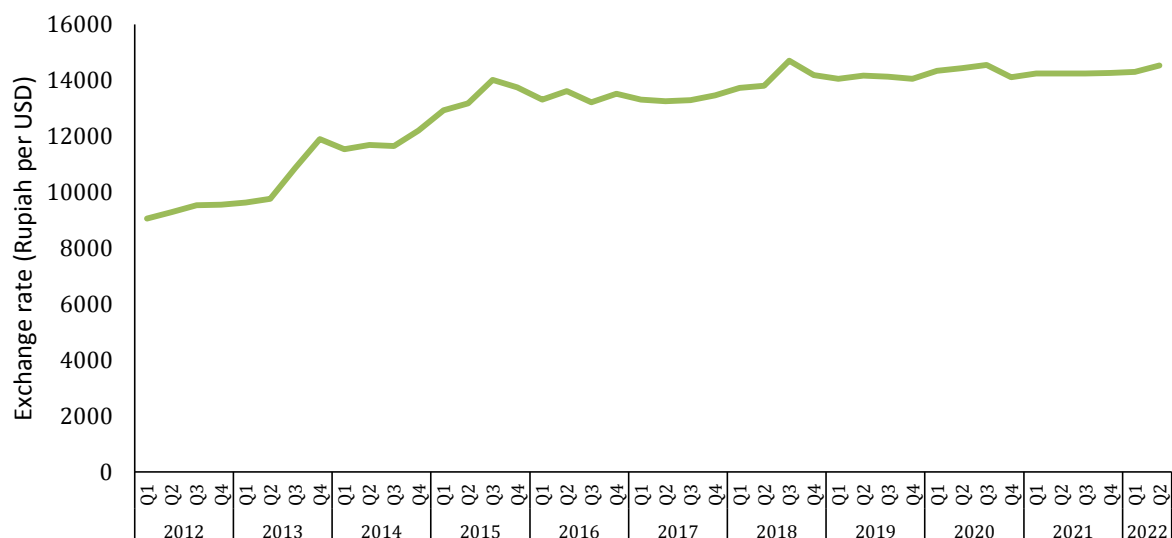
**Figure 5.** Trend of rupiah exchange rate in Indonesia, 2012Q1 – 2022Q2
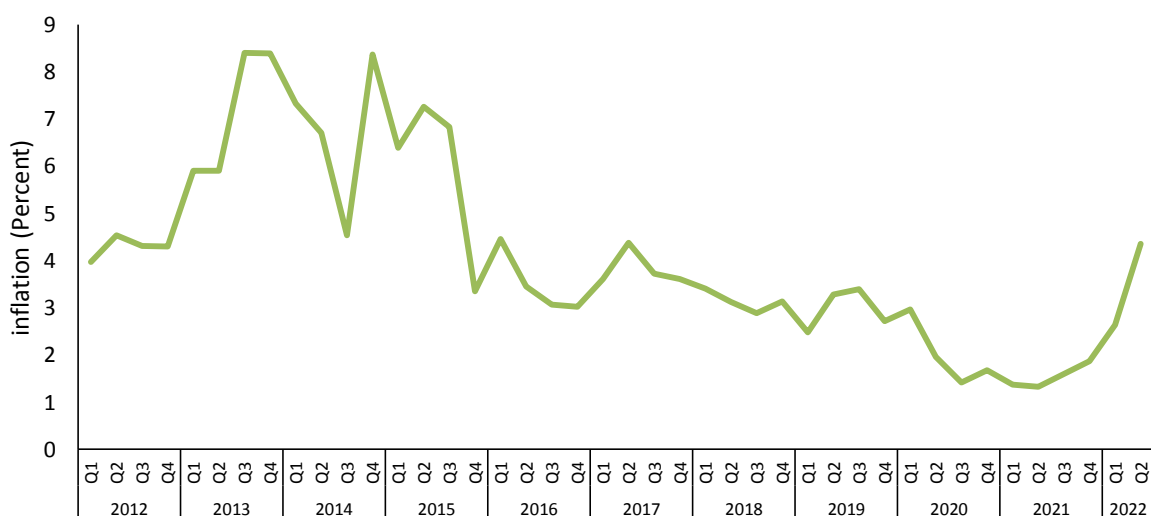**Source:** Bank Indonesia



**Figure 6**. Trend of Inflation in Indonesia, 2012Q1 – 2022Q2
**Source:** BPS-Statistics Indonesia

**Table 1**. Summary statistics and Correlation Matrix

| Variables | Unit | Obs. | Mean | Median | Max. | Min. | Std. Dev |
|---|---|---|---|---|---|---|---|
| Debt to GDP ratio | % | 42 | 33.9855 | 34.445 | 39.35 | 26.20 | 3.2755 |
| Economic Growth | % | 42 | 14.9844 | 15.01 | 15.41 | 14.54 | 0.2347 |
| Inflation | % | 42 | 4.0786 | 3.53 | 8.40 | 1.33 | 1.9922 |
| Exchange Rate | IDR/$ | 42 | 12936.61 | 13558.5 | 14693 | 9053 | 1693.83 |

| Correlation Matrix | Ratio | LGDP | Inflation | ER |
|---|---|---|---|---|
| Ratio | 1,000 | | | |
| LGDP | 0.757 | 1.000 | | |
| Inflation | -0585 | -0.676 | 1.000 | |
| ER | 0.881 | 0.910 | -0.537 | 1.000 |

**Source**: Authors calculation

Table 1 reports the descriptive statistics for the variables, data from the BPS-Statistics Indonesia from 2012 Quarter I to 2022 Quarter II tends to fluctuate. The inflation currently used is the Consumer Price Index (CPI) approach, reaching its highest point in 2013 Quarter III of 8.4 percent, and the lowest point in 2021 Quarter II of 1.33 percent. Based on Figure 4, even though inflation in Indonesia tends to fluctuate, it seems to have a negative/decreasing trend every year. Meanwhile, each variable has a strong correlation with one another that economic growth and exchange rates have a very strong positive relationship with the debt ratio in Indonesia with a Pearson correlation value above 0.75. Inflation and debt ratio has a Pearson correlation value of 0.585, so it can be concluded that inflation and the debt ratio have a strong relationship.

### 3.2. Inferential Analysis

In conducting research with time series data, it is necessary to have a stationary test which is a requirement to produce spurious regression estimates. Stationary testing was carried out using the Augmented Dickey Fuller method. Stationarity test results using a 5% test level are presented in the following Table 2.

**Table 2.** Stationarity test results at level and 1$^{st}$ difference

| Variables | t-Statistic | | p-value | | Summary |
|---|---|---|---|---|---|
| | level | 1$^{st}$ diff | level | 1$^{st}$ diff | |
| Ratio | -0.3162 | -4.5517 | 0.9875 | 0.0041 | Stationer at 1st difference |
| LGDP | -2.4804 | -6.1203 | 0.3356 | 0.0001 | Stationer at 1st difference |
| Inflation | -3.1006 | -8.3661 | 0.1197 | 0.0000 | Stationer at 1st difference |
| ER | -1.7660 | -6.4161 | 0.7027 | 0.0000 | Stationer at 1st difference |

**Source**: Authors calculation

In the long-term equation, the value of the F-statistic (simultaneous test) is 122.35 with a p-value of 0.000 < alpha which shows Ho rejection, so it can be concluded that overall independent variables affect the dependent variable in the long term. Then from the results of the t test (partial test), it was found that the previous quarter's debt ratio and the exchange rate had a positive effect on the debt ratio. Meanwhile, economic growth and inflation have a negative effect on the debt ratio. Then the value of Adjusted R-squared in the long-term model is 0.9238 which means that the diversity of debt ratios can be explained by the previous quarter's debt ratio, economic growth, inflation, and the exchange rate of 92.3 percent and the remaining 8.7 percent is explained by other variables which have not been included in the model.

The cointegration test is carried out by testing the residual stationarity of the model, this is to see whether all variables that are not stationary at the level indicate a long-term equilibrium relationship. If the residual model is stationary at the level, it can be said that the combination is linear, and this equation can remove the stochastic trend from the existing data series. The p-value of the stationarity test on the residual is obtained at 0.0015 <alpha = 5 percent, then reject Ho, meaning that the residual model is stationary at the level (see Table 2). Thus, all variables will be cointegrated and the model formed will no longer be spurious regression so that the estimation results are meaningful.

**Table 3.** Summary of classic assumption test results

| Assumption | Test | Test Statistics | p-value |
|---|---|---|---|
| Normality | Jarque-Bera | JB = 3.6365 | 0.1623 |
| Homoscedasticity | Breusch-Pagan-Godfrey | BPG = 8.7669 | 0.1186 |
| Non-Autocorellation | Breusch-Godfrey | BG = 0.0138 | 0.9154 |
| Non-Multicollinearity | Rasio (-1) | 2.54 | |
| | LGDP | 1.58 | |
| | Inflation | 1.07 | |
| | ER | 1.26 | |

**Source:** Processed

The results of the classical assumption tests performed on all tests including normality, homoscedasticity, non-autocorrelation, and non-multicollinearity yield p-value $<\alpha$ and Variance Inflation Factor (VIF) < 10 (see Table 3). So, all the assumptions used in the regression model with OLS are all met, and the resulting model is BLUE (Best Linear Unbiased Estimator), so that the resulting model can be interpreted.

**Table 4**. Long-term and short-term equation estimation results

| **Dependent Variable: Debt Ratio to GDP** | | | | |
|---|---|---|---|---|
| **Variables** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| **Long-term** | | | | |
| Constant | 9.7930 | 2.8034 | 4.3762 | 0.0001 |
| Ratio (-1) | 0.7420 | 0.1001 | 7.4105 | 0.0000 |
| LGDP | -6.8365 | 1.6318 | -4.1893 | 0.0002 |
| Inflation | -0.2592 | 0.1063 | -2.4366 | 0.0199 |
| ER | 0.0009 | 0.0002 | 3.6087 | 0.0009 |
| F-statistic | 122.359 | | R-squared | 0.9314 |
| Prob(F-statistic) | 0.0000 | | Adjusted R-squared | 0.9238 |
| **Short-term** | | | | |
| Constant | 0.0945 | 0.1629 | 0.5800 | 0.5657 |
| ⌂Ratio (-1) | 0.9636 | 0.1971 | 4.8891 | 0.0000 |
| ⌂LGDP | -9.8477 | 4.3684 | -2.2542 | 0.0307 |
| ⌂Inflation | -0.2288 | 0.1092 | -2.0954 | 0.0437 |
| ⌂ER | 0.0004 | 0.0003 | 1.2753 | 0.2108 |
| ECT (-1) | -0.9660 | 0.2509 | -3.8488 | 0.0005 |
| F-statistic | 7.1757 | | R-squared | 0.5134 |
| Prob(F-statistic) | 0.0001 | | Adjusted R-squared | 0.4418 |

**Source:** Processed

The ECM equation is carried out by regressing all variables in the first difference condition by adding the residual lag of the long-term equation or what is called the error correction term (ECT). In the short-term equation (ECM), the value of the F-statistic (simultaneous test) is 7.1757 with a p-value of 0.0001 <alpha ($\alpha$) which shows $H_0$ rejection, so it can be concluded that overall independent variables affect the dependent variable in the short term (see Table 4). Then from the results of the t-test (partial test), it was found that the debt ratio in the previous quarter, changes in economic growth, and changes in inflation had a significant effect on changes in debt ratios, while changes in the exchange rate had no significant effect. The slope coefficient value at ECT is -0.9660 and has a significant effect, thus the requirements for the formation of an ECM have been fulfilled. Then the Adjusted R-squared value in the short-term model is 0.4418 which means that the diversity of changes in debt ratios can be explained by changes in debt ratios in the previous quarter, changes in economic growth, changes in inflation, and exchange rate changes of 44.18 percent and the remaining 55.82 percent is explained by other variables that have not been included in the model.

### 3.3. Discussion

The previous quarter's debt ratio had a significantly positive effect both in the long and short term. In the long-term equation, the slope coefficient of the previous quarter's ratio is 0.7420, which means that if the previous quarter's debt ratio rises 1 percent, it will increase the debt ratio by 0.74 percent. Meanwhile, in the short-term equation, if the change in the previous quarter's debt ratio increased by 1 percent, it would increase the change in the debt ratio by 0.96 percent. This happens because economically the government will look at the debt-to-GDP ratio in the previous period as the policy basis for determining the amount of debt taken (Basorudin, 2019);

(Roy, 2023). Especially currently, Indonesia is carrying out economic development such as infrastructure, education, health, and others so that it requires funds, one of which comes from debt (Basorudin, 2019).

Economic growth has a significant negative effect on debt ratios both in the long and short term. In the long-term equation, the slope coefficient for economic growth is -6.8365, which means that if economic growth increases by 1 percent, the debt ratio will decrease by 6.836 percent. This is because economic growth is a very important indicator in analyzing economic developments that occur in a country, so that economic growth that grows well can indicate good fiscal sustainability through reducing a country's debt ratio (Kamiguchi & Tamai, 2023). Whereas in the short-term agreement, if economic growth increases by 1 percent, it will reduce changes in the debt ratio by 9,847 percent. In the short term, economic growth represents an increase in real output, which can be seen from changes in real GDP. Thus, when there is an increase in GDP changes it will increase people's income and the taxes that will be received by the state will also increase (Muqorrobin, 2015); (Agyeman et al., 2022). State revenue will be used to pay debts, so that positive economic growth can reduce the debt ratio. Other conditions can also be expressed by a large real GDP growth which can mathematically reduce the value of the debt ratio if the change in debt that occurs is smaller than the change in real GDP (Basorudin, 2019).

The exchange rate has a significant positive effect on the debt ratio in the long term, but not significant in the short term. In the long-term equation, the coefficient of the slope of the exchange rate is 0.0009, which means that if the exchange rate depreciates by 1-rupiah, it will increase the debt ratio by 0.0009 percent. The exchange rate has a strong impact on the domestic economy. A decline in the exchange rate (exchange rate) can be the beginning of an economic crisis, if the exchange rate (exchange rate) becomes very vulnerable, fluctuations in the exchange rate can lead to an increase in the foreign debt burden. This affects current government spending because the value of foreign debt is settled in foreign currency (Cahyaningrum, 2022).

The Inflation has a significant negative effect on debt ratio both in the long and short term. In the long-term equation, the slope coefficient for inflation is -0.2592, which means that if inflation increases by 1 percent, the debt ratio will decrease by 0.25 percent. whereas in the short-term equation, if the change in inflation increases by 1 percent, it will reduce the change in the debt ratio by 0,22 percent. Inflation is an increase in prices in general, which through *APBN kita* Press Release in August 2022, state tax revenues have increased due to the support of rising commodity prices and economic recovery which will have an impact on fiscal sustainability in Indonesia. Inflation can also be an alternative to reduce debt. Inflation can reduce the burden of debt through its nominal value. Therefore, if debt is reduced, it does not require fiscal effort (Pamungkas, 2016). Another research says that inflation below 10 percent is mild inflation where the occurrence of this inflation is able to encourage producers to increase their production as a result of rising prices. So that producers get more profits, with this increase giving another positive impact, namely the availability of new jobs (Simanungkalit, 2020). However, if inflation is not controlled properly, it will have an impact on an economic slowdown, this is because the higher prices of goods and services will reduce public consumption so that producer income will also decrease. The coefficient value in the $ECT_{t-1}$ short-term equation explains the speed of adjustment. The magnitude of the $ECT_{t-1}$ coefficient of -0.96 indicates that the imbalance in the previous year will be corrected by 0.96 units in the following quarter due to the short-term influence of the previous quarter's debt ratio, economic growth, and inflation. while the rest will be corrected in the next quarter.

## 4. CONCLUSIONS

The conclusions that can be drawn in this study are: (i) In the first quarter of 2012 to the second quarter of 2022, the debt-to-GDP ratio in Indonesia tends to be stable, although it appears to have an increasing trend, the debt ratio is still within safe and controllable limits. Therefore, Indonesia has a state of well-maintained fiscal sustainability; (ii) In the long term, the previous quarter's debt ratio and the exchange rate have a positive effect on the debt ratio, while economic

growth and inflation have a negative effect on the debt ratio; (iii) In the short term, changes in the debt ratio in the previous quarter have a positive effect on changes in the debt ratio. Meanwhile, changes in economic growth and changes in inflation have a negative effect on debt ratios, and changes in exchange rates do not significantly affect changes in debt ratios. The results of this study indicate that controlling these four variables is very important to accelerate the process of fiscal sustainability in Indonesia. The debt ratio is the main factor that can serve as an early warning and as an indicator of fiscal sustainability in Indonesia. One of them, when Indonesia's debt ratio has increased quite drastically, there is a sign that the fiscal conditions in Indonesia are not sustainable.

Based on this research, suggestions that can be made for various parties: (i) Economic growth and the lag of the debt ratio have a significant effect both in the long term and in the short term, so the government can implement economic policies that promote higher quality economic growth, so that GDP increases, and the debt ratio can decrease, and with a decrease in the current debt ratio it will reduce the debt ratio which will come; (ii) Inflation also has a significant effect on both the long and short term, this shows that inflation does not always have a negative impact on fiscal sustainability. Precisely in this study has a good effect that is when inflation rises, the debt ratio decreases. So that corrected inflation can improve the maintenance of financing conditions. Like the exchange rate which has a significant effect in the long term, this is also a record for Bank Indonesia in maintaining exchange rate stability; (iii) As a suggestion for further research, it is hoped that it can accommodate other economic variables so that the resulting model can describe the diversity of changes in debt ratios more than this study, which is above 44.1 percent.

## ACKNOWLEDGMENTS

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