Jambura Equilibrium Journal, 7(1) 2025

Volume 7. Issue 1. January 2025
P-ISSN 2655-9110
E-ISSN 2656-0445
http://ejurnal.ung.ac.id/index.php/equij

Analysis of Factors Affecting Budget Deficit in Indonesia

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Abstract: *This study analyzes the factors influencing Indonesia's budget deficit during 1996-2023. The method used in this study is Ordinary Least Square (OLS) regression. The dependent variable in this study is the budget deficit, while the independent variables include Gross Domestic Product (GDP), foreign exchange reserves, exchange rates, inflation, and Indonesia's state debt. The study results indicate that gross domestic product (GDP), inflation, and government debt do not significantly affect the budget deficit in Indonesia. In contrast, the foreign exchange reserves and exchange rate variables have a positive and significant effect on foreign exchange reserves, meaning that an increase in these variables tends to increase the budget deficit. By understanding the factors that influence the budget deficit, it is hoped that the government can take more effective steps in maintaining the country's fiscal and economic stability.*

Keywords: Foreign Exchange Reserves; Deficit; Inflation; Exchange Rate

Article History:

Received on 01 Oct 2024
Revised on 20 Oct 2024
Accepted on 17 Nov 2024

Doi: 10.37479

Indexing:
*Google Scholar**;** Portal Garuda**;** Crossref**;** SINTA 3 (Science And Technology Index)*

INTRODUCTION

The budget deficit is an important indicator in assessing a country's fiscal health. The budget deficit can finance government spending to increase economic productivity, such as government investment in capital projects. (Soebagiyo, 2012). Over the past few decades, Indonesia has had a serious problem with its financial deficit. Since the Asian financial crisis of 1997–1998, there have been many economic difficulties in Indonesia that have impacted the fiscal policies of the nation. Because of the crisis, state revenues declined and spending for economic recovery increased, resulting in a notable increase in the budget deficit. The budget deficit is also influenced by changes in internal political dynamics, shifts in monetary and fiscal policy, and variations in the price of commodities globally. A decline in foreign exchange reserves as a result of the growing budget deficit has the potential to lead to a currency crisis (Annicchiarico et al., 2014). Because implementing a budget deficit policy will only raise foreign debt and hence increase state debt, it is deemed unimportant (Citaningati, 2022). To meet the requirements of its residents, the government must strike a balance between the money it receives from taxes and social security contributions, among other sources, and the needs that arise. According to (Espínola, 2009), budget imbalances may result in public deficits if public administration savings are insufficient to fund public investment.

A budget deficit occurs when the amount of money spent is greater than the total income. In the context of government, this means that state spending is greater than the income obtained from taxes and other sources. Some factors that can cause a budget deficit are uncontrolled spending or not following the established budget, inflation, decreased income due to economic recession, foreign exchange reserves, exchange rates, decreased commodity prices, or decreased tax revenues and government policies that increase spending to encourage economic growth, such as subsidies or large infrastructure projects.

Gross Domestic Product (GDP) is an important measure that reflects a country's economic health. According to Keynesian theory, an increase in GDP can lead to higher tax revenues for the government. This theory is based on the idea that when GDP grows, economic activity also increases, leading to higher production and consumption of goods and services. This, in turn, results in higher incomes for people, leading to increased tax payments. With higher tax revenues, the government has more resources to reduce budget deficits. Increased tax revenues enable the government to cover shortfalls and reduce deficits. Several studies conducted by (Epaphra, 2017; Ratnah, 2015) found that GDP has a significant effect on the budget deficit.

High inflation can increase government spending, especially in terms of subsidies and social spending, which in turn can widen the budget deficit. Inflation happens when the amount of money in the economy increases faster than economic output, according to the Quantity Theory of Money. Inflation may increase if the government produces money to cover the budget deficit since more money would be in circulation. Research conducted by (Ratnah, 2015; Yahaya et al., 2021) inflation has a significant impact on the budget deficit.

According to the Ricardian Equivalence theory, an increase in government debt is not always negative if the public anticipates higher taxes in the future to pay for the debt. However, in practice, a high debt burden can limit the government's ability to finance other expenditures, thus worsening the budget deficit.

High foreign exchange reserves can help to keep exchange rates stable by serving as a cushion against outside shocks. This, in turn, can impact the budget deficit. According to the Mundell-Fleming theory, robust foreign exchange reserves can help uphold macroeconomic stability in a flexible exchange rate system.

Fluctuations in currency exchange rates can affect state revenues and expenditures, especially those related to international trade and foreign debt payments. The exchange rate between the Indonesian rupiah and the US dollar has fluctuated significantly, resulting in a rapid depreciation. This has exacerbated the budget deficit by increasing import expenses and foreign debt payments. A study conducted by (Kusumasari & Soebagiyo, 2024) found that the exchange rate had a significant effect on the budget deficit as well as research conducted by (Epaphra, 2017; Ratnah, 2015).

In Indonesia, the budget deficit from 1996 to 2023 reflects various challenges and policies implemented by the government. The issue of budget deficit has been a major focus for Indonesia since the New Order era. This is because the budget deficit financed through money printing causes significant inflation. This condition attracts attention because of its impact on the country's economic stability (Soebagiyo, 2012).

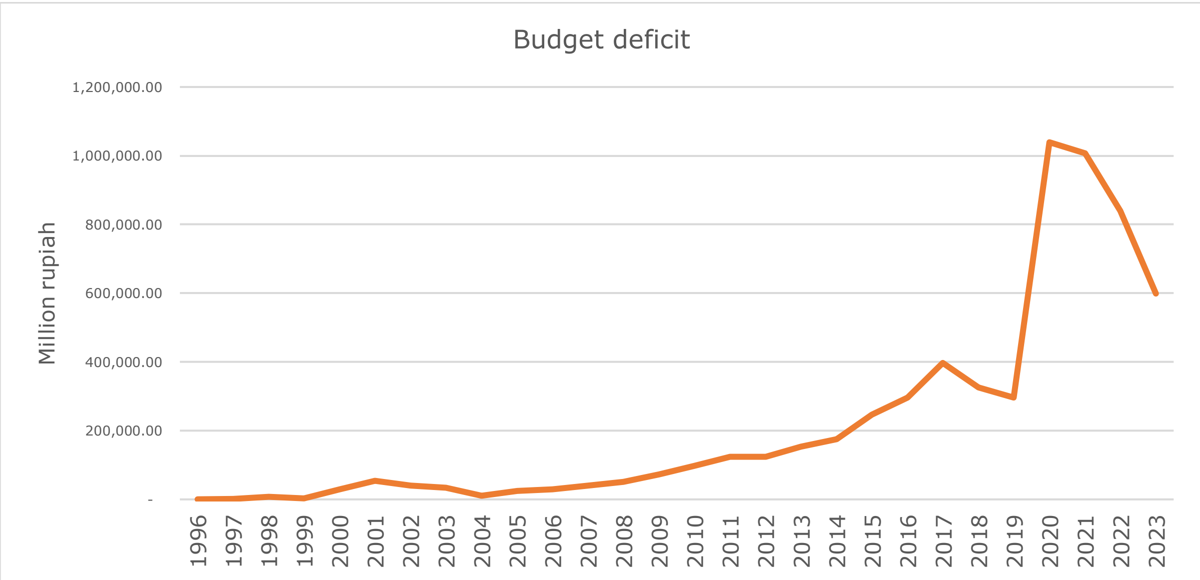

Figure 1. Development of Indonesia's Deficit 1996-2023

In Figure 1. we can see how the development of Indonesia's budget deficit tends to increase in the period 1996 - 2023. In the late 1990s, Indonesia experienced the Asian economic crisis which caused a significant budget deficit. In 1997, the budget deficit reached around 298 billion rupiah. This crisis peaked in 1998 with a larger deficit due to a decrease in state revenue and an increase in spending for economic stabilization of 8.32 trillion rupiah. After the crisis, the Indonesian government tried to stabilize the economy. In 1999, the budget deficit reached around 2.91 trillion rupiah. During this period, the budget deficit gradually decreased along with economic recovery and fiscal reform.

In the 2000s, Indonesia experienced strong economic growth from before. However, the budget deficit also increased almost every year this year. In 2020, the COVID-19 pandemic led to a substantial increase in the budget deficit, which reached around 1039.21 trillion rupiah due to heightened spending on pandemic management and economic stimulus. Throughout 2021 and 2022, the budget deficit remained high but started to decrease in 2023, reaching 598.15 trillion rupiah. From the above as a whole, Indonesia's budget deficit has fluctuated, influenced by various economic factors and government policies. The government strives to maintain fiscal balance while supporting economic growth and public welfare.

The purpose of this study is to examine the factors that caused Indonesia's budget deficit between 1996 and 2023.

The hypothesis of this study is as follows:

a) It is suspected that the Gross Domestic Product has a negative effect on the budget deficit in Indonesia
b) It is suspected that Foreign Exchange Reserves have a positive effect on the budget deficit in Indonesia
c) It is suspected that Inflation has a positive effect on the budget deficit in Indonesia
d) It is suspected that the Exchange Rate has a positive effect on the budget deficit in Indonesia
e) It is suspected that Government Debt has a positive effect on the budget deficit in Indonesia

This study is designed to provide deeper insight into the variables that influence Indonesia's budget deficit. Understanding these characteristics is expected to help the government formulate more effective policies to manage the state budget and ensure fiscal stability.

METHODOLOGY

The author of this analysis uses time series data from 1996 to 2023. The secondary data used includes dependent variables, such as the budget deficit, as well as independent variables such as GDP, foreign exchange reserves, inflation, exchange rate, government debt, and currency exchange rate (Kurs). Secondary data sources include BPS Indonesia, the World Bank, and Bank Indonesia (BI). The analysis was performed using Ordinary Least Squares (OLS) regression. The data were examined with the Eviews12 application.

The analysis model in this study is a modification of the research studies that have been used by (Kusumasari & Soebagiyo, 2024; Soebagiyo, 2012) and (Prastyawati & Hasmarini, 2023). The following is the econometric model that will be used:

$$logDEFISIT_t = \beta_0 + \beta_1 logPDB_t + \beta_2 logCADEV_t + \beta_3 INFLASI_t + \beta_4 logKURS_t + \beta_5 logUTANG_t + \varepsilon_t$$

Where:

Deficit	: Budget Deficit
GDP	: Gross Domestic Product
CADEV	: Foreign Exchange Reserves
INFLATION	: Inflation
EXCHANGE	: Rupiah Exchange Rate
DEBT	: Government debt
ε	: Error term (error factor)
β_0	: Constant
$\beta_1 \cdots \beta_4$	: Regression coefficient of independent variables
log	: Natural logarithm operator
t	: Year t

RESULTS

Data analysis using EViews 12 shows the influence of independent variables on dependent variables. The relationship between these two variables can be seen in detail in the following estimation results table.

Table 1. Econometric Model Estimation Results

$\widehat{logDEFISIT_t}$ =-20.6999 – 0.4791 $logPDB_t$+ 1.2114 $logCADEV_t$+ 0.003 $INFLASI_t$+ 1.9455 $logKURS_t$ + 0.6660$logUTANG_t$

(0.6095) (0.0212)* (0.6879) (0.0120) * (0.1573)

R^2 = 0.9542; DW-Stat. = 1.6832; F = 91.2945; Prob. F = 0.0000

Diagnostic Test

(1) Multicollinearity (*VIF*)

logGDP = 14.9257; logCADEV = 14.6601; INFLATION = 1.5132; logEXCHANGE = 9.4778; logDEBT = 20.3531

(2) Residual Normality (Jarque Bera)

JB = 4.8955; Prob. *JB* = 0.0864

(3)	Autocorrelation (Breusch Godfrey)
	χ^2 (3) = 7.1062; Prob. χ^2 (3) = 0.0686
(4)	Heteroscedasticity (White)
	χ^2 (20) = 24.5669; Prob. χ^2 (20) = 0.2185
(5)	Linearity (Ramsey Reset)
	F (2,20) = 0.1394 ; Prob. F (2,20) = 0.8707

Source: Secondary Data, processed

Note: * Significant at α = 0.05. The numbers in brackets are empirical probabilities (p-value) t-statistic

The estimation results in Table 1 show that statistical tests for Residual Normality, Autocorrelation, Heteroscedasticity, and Linearity have empirical probability values of 0.0864 (> 0.05), 0.0686 (> 0.05), 0.2185 (> 0.10), and 0.8707 (> 0.10), in that order. These results indicate that the estimated model has appropriate linear model parameters, normal residual distribution, and no autocorrelation or heteroscedasticity problems. Variables related to government debt, gross domestic product (GDP), and foreign exchange reserves all have VIF values greater than 10, specifically 14.9257, 14.6601, and 20.3531. This causes multicollinearity.

The estimated model's existence is supported by the goodness of fit statistic and the F statistic's extremely low empirical probability value of 0.0000 (<0.01). A 0.954 R-squared score indicates that approximately 95.4% of the variations in the budget deficit can be explained by the independent variables, which include GDP, foreign exchange reserves, inflation, exchange rate, and debt. This shows how well the estimated model works to predict changes in the budget deficit depending on certain economic factors.

The estimation results obtained empirical probability t of each foreign exchange reserve and exchange rate of 0.0212 (<0.05) and 0.0120 (<0.05), this indicates that the foreign exchange reserves and exchange rate variables have a significant impact on the budget deficit if considered partially.

This means that for every 1 billion US dollar increase in foreign exchange reserves, there is an increase in the budget deficit of around 1.211 trillion rupiah, following a log-log relationship. This shows a proportional change where the increase or decrease in foreign exchange reserves is reflected by the adjustment of the budget deficit in the same direction, which is scaled with a coefficient of 1.211474.

The regression analysis indicates that the exchange rate has a coefficient of 1.945540, suggesting a log-log relationship with the budget deficit. In practical terms, this implies that for every one rupiah increment in the exchange rate, there is a corresponding increase in the budget deficit by approximately 1.94 trillion rupiah, and similarly, a decrease in the exchange rate by one rupiah would result in the budget deficit decreasing by the same amount.

Meanwhile, the probability of the GDP, inflation, and debt variables is 0.609 (>0.10), 0.687 (>0.10), and 0.157 (>0.10), respectively, which indicates that these variables do not have a significant impact on the budget deficit. This means that, although these variables may have some relationship with the budget deficit, the estimation results in this study show that the relationship is not strong enough to be considered to have a significant influence on the budget deficit in Indonesia.

DISCUSSION

In the period 1996-2023, the budget deficit in Indonesia was influenced by foreign exchange reserves and the exchange rate. However, variables such as Gross Domestic Product (GDP), inflation, and debt did not have a significant influence.

Foreign exchange reserves have a positive effect, indicating that an increase in reserves will result in a rise in the budget deficit. In keeping with earlier studies, (Prastyawati & Hasmarini, 2023) discovered that foreign exchange reserves have a favorable impact on the budget deficit through the use of the linear regression method. This mechanism might theoretically happen for many reasons. First off, rising foreign exchange reserves are frequently accompanied by rising imports of products and services, which raises the possibility of rising government spending and the budget deficit. Second, a country's substantial foreign exchange reserves may be a sign of investor confidence in its economy. This might motivate the government to fund large-scale investment programs like infrastructure, which would increase the budget deficit.

The Indonesian budget deficit is positively impacted by the currency rate. When compared to earlier studies by (Annicchiarico et al., 2014; Kusumasari & Soebagiyo, 2024; Ratnah, 2015; Ventika & Setyowati, 2021). The annual growth in the US dollar's value relative to the rupiah and the yearly rise in Indonesia's budget deficit were both seen between 1996 and 2023. This could happen if the price of imported goods and services rises due to the weakening of the local currency exchange rate versus foreign currencies and the need to make payments in a higher foreign currency. This immediately raises government spending, particularly in cases where a significant reliance on imports of products and services exists. Additionally, foreign debt is impacted by the depreciation of the currency rate. When debt acquired in foreign currencies is contracted, it costs more to repay since more rupiah is needed to be exchanged for foreign currency, increasing Indonesia's budget deficit.

The study's findings indicate that GDP has no bearing on the deficit in the budget. This is because currency rates and large foreign exchange reserves have a bigger impact than GDP. Additionally, the budget deficit is more driven by government fiscal policy than it is by economic development, which is why GDP does not affect it. For instance, even while GDP rises, the government may decide to spend more for social or economic reasons, which would result in a deficit.

Inflation does not affect the budget deficit in Indonesia for several reasons. First, a budget deficit develops when the government spends more than it generates. Meanwhile, inflation is a general and sustained increase in the prices of goods and services. If the government has locked in spending and revenues in the budget, price fluctuations due to inflation may not directly affect the budget balance. Second, the government can use monetary and fiscal policy instruments to control inflation. For example, in 1998, Indonesia faced one of the most critical times in its economic history. Inflation in 1998 reached 77.63%. In response to the crisis that affected the stability of the national economy, Bank Indonesia, the country's monetary authority, took drastic steps by sharply raising interest rates. This step was taken with the hope that by limiting liquidity, inflationary pressures would subside and the rupiah exchange rate would stabilize again. On March 23, 1998, the interest rate on the one-month Bank Indonesia Certificate (SBI) was raised from 22 percent to 45 percent, with an annual effective yield reaching 55 percent, and the overnight SBI interest rate was at 40 percent with an annual effective yield of 49 percent.

Debt does not affect the budget deficit in Indonesia. This is because of several reasons: first, debt is often used to finance development projects aimed at increasing economic growth. When the government takes on debt, the funds are invested in infrastructure, education, health, and other sectors that can stimulate the economy. Second, debt obtained from domestic or international sources often has a long repayment period, allowing the government to reorganize the budget without creating a short-term deficit.

Because the results of the above research have implications for government policy. Increased foreign exchange reserves resulting in a budget deficit can also have an impact on the balance of payments, and require fiscal policies such as tax reform to expand the tax base and reduce dependence on unstable income such as from the natural resource sector. Tax increases can provide additional revenue needed to cover the budget deficit, but must be done carefully so as not to hamper economic growth. Furthermore, Indonesia's budget deficit is affected by the exchange rate, this can also be overcome by monetary policy where the central bank can raise interest rates. Higher interest rates make investment instruments such as bonds more attractive to foreign investors. This will encourage foreign capital flows into the country. To buy assets in Indonesia, foreign investors need to exchange their currency for domestic currency, thereby increasing demand for domestic currency and ultimately strengthening the exchange rate. Strengthening the exchange rate can increase government revenues from the non-oil and gas sector, especially from the tourism and export sectors. Thus, this can help reduce the budget deficit. In addition, if most of the government's debt is in foreign currency, then strengthening the exchange rate will reduce the burden of debt payments in domestic currency.

CONCLUSION

The study entitled "Analysis of Factors Affecting Budget Deficit in Indonesia 1996-2023" shows that GDP, inflation, and government debt are not the main determinants of Indonesia's budget deficit. However, it was found that the budget deficit is greatly influenced by the level of foreign exchange reserves and exchange rate fluctuations. Based on the research that has been conducted, the budget deficit condition is increasing every year due to the level of foreign exchange reserves and the exchange rate. The increasing deficit condition can be suppressed if the level of government revenue increases.

Monetary policy, especially through increasing interest rates, can play an important role in strengthening the national currency. An increase in interest rates is usually followed by the influx of foreign investment, which not only strengthens the currency but also increases public investment. This in turn can help reduce the budget deficit by increasing state revenues from the investment sector. On the other hand, fiscal policy also has an equally important role. Raising taxes, for example, can be an effective step to reduce the budget deficit. This policy can increase government revenue without having to increase debt. However, this policy must be carried out carefully so as not to burden the community, especially low-income groups. Thus, a wise combination of fiscal and monetary policies can help Indonesia overcome its budget deficit. Exchange rate stability and effective foreign exchange reserve management, together with appropriate monetary and fiscal policies, can form a strong foundation for sustainable and inclusive economic growth.

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