



ARE MONETARY AND FISCAL POLICIES EFFECTIVE IN CONTROLLING BUDGET DEFICITS?

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ABSTRACT

The state budget's countercyclical policy and government revenue imbalance to support government expenses have contributed to a prolonged period of budget deficits in Indonesia. Understanding the correlation between monetary and fiscal policies could help policymakers to formulate effective strategies to control and manage budget deficits. The research's novelty is rooted in the complexity variables, which consists of three variable classifications. The first is monetary policy variables (interest rates and money supply), the second is fiscal policy variables (government revenue and expenses), and the third is macroeconomic variables (economic growth, inflation, and exchange rate). All data are processed using the VAR/VECM. The results show that fiscal policy, primarily through the control of revenue and expenditure has a 37.6% contribution. Meanwhile, monetary policy through the number of broad money and BI Rate, contributes 7.6%. Macroeconomic factors, including exchange rate fluctuations, inflation rates, and economic growth, significantly impact the outcome, accounting for 41.6%. Finally, the budget deficit itself contributes 13.2% to the overall findings. Furthermore, using the Granger Causality Test, the authors also found that government revenue, economic development, and BI rate have a causality impact on budget deficit. Therefore, strategic management of these variables is crucial in controlling the budget deficits.

Keywords: Budget Deficit, Fiscal Policy, Monetary Policy

JEL Classification: E52, H61, H62

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INTRODUCTION

Countries worldwide have faced a prolonged surge in budget deficit over the past three decades. This situation poses a substantial challenge as high budget deficits and their volatility significantly harm nations' economies (Pontoh, 2017). The COVID-19 pandemic has significantly contributed to the increase in budget deficits globally. Governments have implemented various fiscal measures to mitigate the effects of the pandemic, resulting in substantial spending and reduced revenues. The long-term implications of these

deficits and the growing national debt will require careful consideration and effective fiscal management in the post-pandemic period. To overcome the economic and social crisis during COVID-19, almost all Regulators and governments issued budgetary and monetary stimulus policies (Syamsurijal et al., 2023). IMF and World Bank estimate a global recession in 2022 and 2023, with major economies like Europe, the USA, China, and India facing low growth and high inflation, aligning with your statement (Sianturi et al., 2024). A comprehensive understanding of monetary, fiscal,

and macroeconomic factors is essential for policymakers to formulate effective strategies and sound policies for sustainable fiscal management.

Government budgets and fiscal policy have a crucial role in the economic management of a country. Budget deficits, which occur when government spending exceeds revenue, can significantly affect the overall economy. Policymakers employ monetary and fiscal policies to address budget deficits and maintain economic stability. The monetary and fiscal regulators in every country could be different. In Indonesia, monetary policy is formulated and implemented by the Central Bank, while the Ministry of Finance determines budgetary policy through its spending and revenue regulations. The role of monetary and fiscal policies in controlling budget deficits has been a subject of debate among economists and policymakers. Monetary policy primarily focuses on managing the economy's interest rates, money supply, and credit availability. It aims to influence aggregate demand, promote economic growth, and control inflation. On the other hand, fiscal policy consists of government spending and revenue to influence demand and supply in production economics, with the main focus on stabilizing the economy. In the case of a nation with higher debt, the Central Bank plays an active role in balancing the effectiveness of a substitution relationship between monetary and fiscal policies (Afonso et al., 2019).

Marimuthu et al. (2021) indicate that a fiscal deficit in any Southeast Asia or ASEAN country can lead to inflation when the deficit is financed through outstanding debt. The study highlights the significant risk of ASEAN's fiscal deficit. This conclusion is based on several factors, including the pattern of government revenues, dynamics of interest rates, political stability conditions, and the reliance on debt for deficit financing. Husriah (2020) states that budget deficit financing by debt has a significant negative effect on economic growth in Indonesia.

Figure 1 shows the budget deficit in the Indonesian state budget during the observation period from 2012 to 2022. There is a significant increase that requires attention in nominal terms, with a rise of 148% from Rp124.02 trillion in 2012 to Rp296 trillion in 2019, before the Government made the budget adjustments during the COVID-19 pandemic. However, the debt-to-Gross Domestic Product (GDP) ratio during the period is relatively stable, consistently falling within the 3% threshold as regulated by Law Number 23 of 2023. It is also interesting to note that the budget deficit also occurs in the primary balance, which shows that even the government's non-interest expenditures also exceed its revenues.

The potential impact of monetary policy on budget deficits can be observed through its effect on

APPLICATIONS FOR PRACTICE

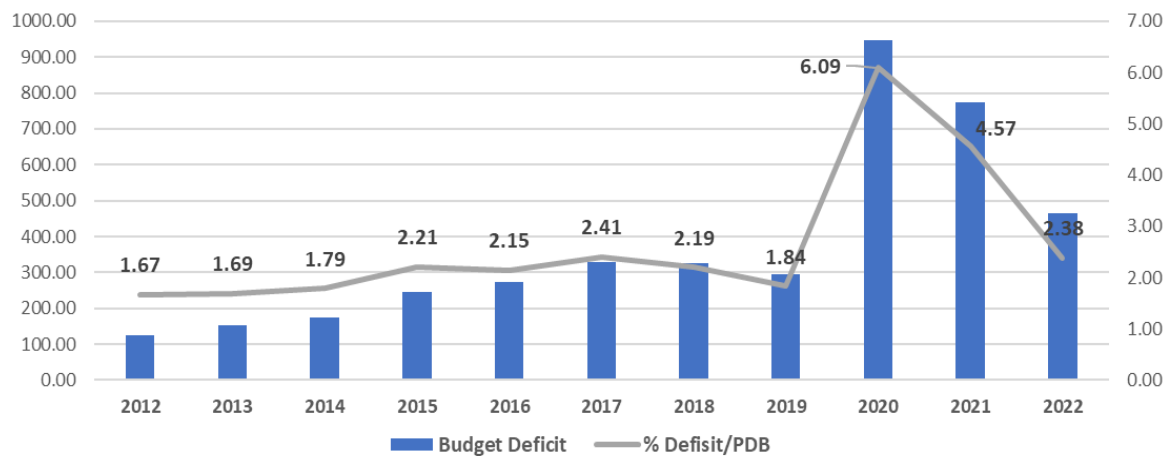
- This research aims to understand the impact of monetary policy (interest rates and money supply), fiscal policy (government revenue and expenses), and macroeconomic (economic growth, inflation, and exchange rate) on Budget Deficit.
- The results of this study indicate that 35.75% Government revenue, 18.87% inflation, 12.79% exchange rate, and 9.71% economic growth contribute the most to changes in the budget deficit.
- To control the budget deficit, policymakers should apply the right strategies that have direct impact on increasing government revenue, controlling inflation and economic growth, and stabilizing the exchange rate.

the cost of servicing public debt, the provision of financing through the central bank's balance sheet, and the remittance of profits to the government. Lowering interest rates, for example, can reduce the cost of servicing public debt and positively affect the government's financial position. However, the long-term impact of expansionary monetary policy on budget deficits remains a topic of discussion. Fiscal policy, on the other hand, directly influences budget deficits through government spending and revenue decisions. Expansionary fiscal policy, triggered by increasing government spending or lowering taxes, can stimulate economic activity but may lead to higher budget deficits.

Conversely, contractionary fiscal policy, involving decreasing government spending or increasing taxes, aims to reduce inflationary pressures but may also result in reduced deficits. Understanding the role of monetary and fiscal policies in controlling budget deficits requires an examination of their impact on aggregate demand, economic growth, inflation, and other macroeconomic factors. Additionally, factors such as political considerations, economic conditions, and the timing of policy implementation can influence the outcomes.

The inflation rate in Indonesia has had a downward trend from June 2017 to May 2023. After the pandemic, there was a disruption of supply and demand. Many factories and businesses' premises were closed during the pandemic, and afterwards, there was an increase in demand which were not met with the industrial sector recovery, resulting in the shortage of goods, inadequate services, and ultimately led to inflation. In addition to this, Indonesia has also begun to reduce energy subsidies, which coincided with the global energy crisis resulted by the geopolitical crisis in Russia-Ukraine. This post-pandemic escalation of inflation happened in countries all over the world. Indonesia's inflation in December 2022 was 5.5%,

Figure 1 Indonesia's Budget Deficit 2012-2022



Source: Ministry of Finance, (2012-2022), Processed

while inflation in developed country such as the United States was 6.5% and previously 10.5% in July 2021. Compared with ASEAN countries such as Philippines, Singapore, and Thailand during the last 10 years, Indonesia's inflation has been relatively stable and relatively low. The trend of rising inflation started in the early 2021 in Malaysia, Singapore, Thailand, and the Philippines. Meanwhile, rising inflation in other ASEAN countries, including Indonesia, did not occur until a year later or at the end of 2021.

The majority of central banks increased their interest rate as a response to the global spike of inflation rate, a move that usually followed by the commercial bank and capital markets by increasing the interest rate for deposits and Bonds. The rising interest rates subsequently encouraged investors to invest their money in the Financial Sector, particularly those within the Banking, Money Market, and Capital Market segments.

Bank Indonesia sets and re-balances policy interest rates to stimulate borrowing costs, investment levels, and consumption. While lower interest rates can influence borrowing and stimulate economic activity, higher interest rates could help to decrease inflationary pressures. Bank Indonesia's interest rate policies play a crucial role in controlling inflation, but their effectiveness varies compared to other central banks. The interest rate channel, particularly the BI-7-Days-Repo-Rate (BI7DR), has shown strong responses to inflation shocks, making it a key operational target for Bank Indonesia (Fadilah & Kusumastuti, 2023). Furthermore, while high-interest rates typically regarded more favorable by the investors, they also lead to higher cost of funding, imposing significant financial burden on debtors and Indonesian governments. The impact of a deficit budget is that the cost of funds is higher, and for the industry sector, it will cause expensive capital for production and will impact product prices. Thus, the end

product will be priced higher, which in turn leads to increased inflation.

In this study, we explore the role of monetary and fiscal policies in controlling budget deficits. We analyze the interplay between these policies, their potential economic effects, and the challenges associated with their implementation. By gaining insights into the relationship between policy measures and budget deficits, we can better understand their efficacy in promoting fiscal stability and economic growth.

The novelty of this research is the complexity of variables, which consists of three classifications. The first is monetary policy, consisting of the interest rate set up by Bank Indonesia and the broad money circulated. The second is fiscal policy, consisting of revenue and expense of government. The third is macroeconomics factors, including GDP growth, inflation, and the IDR-USD exchange rate. All data are processed using Vector Autoregressive/Vector Error Correction Model (VAR/VECM Model) as variables were treated as endogenous or executed as a theory economic.

LITERATURE REVIEW

Budget Deficit Strategies

There are some different perspectives on the implications and consequences of budget deficits. The first is the Keynesian perspective which highlights the role of aggregate demand and advocates for government intervention, including budget deficits, to address economic downturns. Second, the Neoclassical perspective which emphasizes aggregate supply, limited government intervention, and concerns about the consequences of budget deficits. These two differing views offer distinct insights into budget deficits and provide a basis for analyzing and formulating economic policies. The third is the Ricardian Equivalence theory. According to this theory, increasing government spending and borrowing to stimulate the economy has no impact because individuals

anticipate future tax increases to pay off the current deficit. As a result, individuals save more to compensate for the expected tax increase, leading to a decrease in consumption and offsetting the economic impact of deficit spending.

The fourth is the Crowding Out theory, which states that the increase in government spending and borrowing tends to the decreasing private sector investment, (Loo, 2020). When the government borrows money by issuing bonds to the market or getting foreign loans, it increases the demand for loanable funds. It raises interest rates in the banking and finance markets. The impact of higher interest rates can deter market investment and limit funds available for borrowing, partially offsetting the expansionary effects of government spending.

The fifth is Modern Monetary Theory (MMT), which challenges the conventional view of budget deficits and argues that a government with sovereign control over its currency can always print money to cover deficits and fund its expenditures. Proponents of MMT claim that deficits do not matter as long as there is no excessive inflation. However, critics argue that MMT overlooks the long-term constraints imposed by a government's ability to satisfy creditors and the potential economic risks associated with excessive money creation (Krause et al., 2023). In conclusion, while the third, fourth, and fifth theories provide different perspectives on the implications and consequences of budget deficits, they also highlight the potential effects on private sector investment, future taxation, inflation, and the role of monetary policy in managing deficits. It is important to note that these theories have varying acceptance levels and continue to be subjects of debate and research in economics.

The determinants of budget deficits have been extensively studied. Husriah (2020) defines a government budget deficit as excess government spending from government revenue in taxes, fees, and levies the government receives. Deficit policy is a fiscal expansionary action taken by the government to encourage economic growth, decrease unemployment, and poverty to improve people's welfare. According to Boediono (1980), there are three main components of expenditures: government spending on goods and services, government expenses on employee salaries, and government spending on transfer payments. Transfer payments include payments of subsidies/fund assistance to selected categorized lower-income group, pension payments, and lower interest rates for selected debtors in government programs.

The revenue side shows where the funds come from: taxes (various kinds), central bank loans, domestic community loans, and foreign loan. Indonesia has been experiencing fiscal decentralization for two decades (2001–2021), a substantial period for public policy implementation.

In accordance with the Government Law Number 22 of 1999 and Number 25 of 1999, the regional autonomy program in Indonesia was formally implemented starting January 1, 2001. Regional autonomy reform and fiscal decentralization imply that the transfer of authority and resources from the central government to the regional governments (Nawawi, 2021). One of the objectives of implementing fiscal decentralization is to minimize vertical fiscal imbalance or fiscal gap between central and local governments and horizontal fiscal imbalance or fiscal imbalance between regions in the nations.

The study from Ngo & Nguyen (2020) regarding the role of economics, politics, and institutions on the budget deficit volatility across some ASEAN countries shows that corruption and political factors are essential in controlling the budget deficit. Economists argue that a parliamentary supermajority is necessary to justify significantly high fiscal deficits—the same viewpoint by Becker et al. (2010). Grüner (2017) also focuses on the decision-making dynamics of fiscal regulators and political groups in determining public expenditure and engaging in budgetary negotiations.

The Relationship between Monetary and Fiscal Policy

Interactions between monetary and fiscal policies have significant implications for economic stability. Research has examined how the relationship between these policies influences inflation, debt, and economic growth (Afonso et al., 2019). The result suggests that inflation is more related with the monetary policy, while fiscal policy responds to changes in government debt levels. Saliba (2013) analyzed the effectiveness of monetary policy in the economic recovery after the 2008-2009 global financial crisis. The research findings indicated that monetary and fiscal policies played an important role in economic growth after the recession.

Additionally, in the context of small countries, monetary policy has had a more significant impact than fiscal policy in mitigating and controlling the impact of economic recession. These findings emphasize the importance of implementing appropriate policy measures for economic recovery and stability. Research has explored the interaction of fiscal policy, current account balances, and economic growth. Factors such as government expenditure, taxation, political fragmentation, budget institutions, and external balances have been identified as essential determinants of budget deficit (Mawejje & Odhiambo, 2020). Meanwhile, research by Brzozowski & Siwińska-Gorzela (2010) which observed the influence of fiscal rules on the volatility of fiscal policy, indicates that the

impact of budget deficit and debt limitation on fiscal volatility vary.

Specifically, budget balance constraint behavior tends to increase volatility, while debt constraint role decreases it. These results highlight the importance of implementing appropriate fiscal policies to achieve more effective fiscal policy stabilization. Silva & Vieira (2016) evaluated monetary and fiscal policy in emerging countries during the financial crisis (2009 – 2012). The authors stated that prior to the global financial crisis, only industrialized economies appeared to benefit from countercyclical monetary policy. Fiscal policy exhibits procyclical behavior only in the years leading up to the crisis. Moreover, it seems that interest rate smoothing is a crucial instrument in the global implementation of monetary policy.

Macro Economy Correlation with Budget Deficit

There are some debates regarding the correlation between the macro economy (inflation, exchange rate, crude oil price, capital market index, etc.) and budget deficit. Neoclassical economists believe a complex link exists between the budget deficit and macroeconomic principles. For instance, whereas neoclassical theory suggests that budget deficits and macroeconomic variables have a negative connection, according to Keynesian economists, macroeconomic variables and budget deficits have a positive association. The Keynesian counterarguments against the crowd-in impact refer to the expansive effect of the budget deficit, wherein fiscal shortfall usually leads to a rise in both domestic production and overall demand. Simultaneously, it boosts private savings and investment at a specified interest rate.

According to Keynesian absorption theory, an augmentation in the budget deficit will invigorate domestic absorption, consequently fostering import expansion and resulting in a current account deficit (Orji, 2015). Even Ricardian equivalence encompasses varied perspectives regarding budget deficits and economic factors. This standpoint posits that a government's budget deficit does not influence economic growth and advancement. The underlying hypothesis is that governments can fund their expenditures by taxing current taxpayers or borrowing funds. Nonetheless, the eventual repayment of these loans will require future tax hikes beyond what is planned initially. According to this theory, a surge in government debt resulting from a deficit will lead to future tax implications, with a present value equivalent to the debt's value.

In a previous study done by Kerimu et al. (2022) with Kenya as the object study using the Auto Regressive Distributed Lag (ARDL) model, in the long run, it was determined that the exchange rate had a positive impact on the budget while increased interest rates led to conditions of economic and driving budget deficit upwards in the

future. Epaphra (2017) studied the budget deficit in Tanzania using the VAR/VECM model and concluded a noteworthy negative correlation exists between real GDP, the exchange rate, and the budget deficit. Conversely, inflation and lending interest rates positively correlate with the budget deficit. Analyzing variance decomposition reveals that the variations in budget deficits are primarily explained by changes in real GDP, followed by inflation and the real exchange rate.

RESEARCH METHODOLOGY

In this research, data is categorized as time series data. Time series analysis can be applied to a single variable (univariate) or data sets with multiple variables (multivariate). Multivariate time series problems are typically addressed using statistical methods such as the VAR model and the VECM model. In 1980, Christopher A. Sims was the person who made the VAR model as a one of the most powerful alternatives to approach macroeconomic analysis. The VAR model was described as a multivariate time series model that extends the autoregressive (AR) model by incorporating multiple independent variables. It consists of multiple equations, each with lagged values of all the variables as explanatory variables. Gujarati (2012) states the VAR model is often applied to stationary series with first differences to ensure stationarity. However, this approach may overlook important long-run relationships between the levels of the variables. To address this, cointegration analysis can be conducted using methods like Johansen's test to determine if cointegration exists.

If cointegration is found, a VECM can be estimated instead of a VAR. The VECM combines levels and differences, allowing the incorporation of both short-term dynamics and long-run relationships.

To analyze the data using the VAR /VECM framework in Eviews 9, the following steps are taken: the First step involves preparing the data to ensure its suitability for analysis. The second step involves stationarity testing using the Augmented Dickey-Fuller (ADF) test for each series. If any string is non-stationary, consider differencing to achieve stationarity. The third is order selection to determine the appropriate lag order for the VAR model, which can be done using information criteria such as the Akaike Information Criterion (AIC) or Bayesian Information Criterion (BIC). Selecting an appropriate lag order helps capture the dynamics of the relationships between variables.

The fourth step involves estimating the VAR model using the selected lag order. The process involves evaluating the coefficients for each equation in the VAR model, which represents the relationships between the lagged values of the variables. The fifth is Model Diagnostics: Assessing

Table 1 Variables Description and Sources

No	Variables	Symbol	Data Sources	Measurement
1	Inflation	INF	Central Bureau Statistics Indonesia	Percent
2	Money Exchange Rate	KURS	Bank Indonesia	Nominal
3	Government Expense	EX	Ministry of Finance Indonesia	Nominal
4	Government Revenue	REV	Ministry of Finance Indonesia	Nominal
5	7-Day BI Reverse Repo Rate	RATE	Bank Indonesia	Percent
6	The number of Broad Money	M2	Bank Indonesia	Nominal
7	Indonesia Growth Economic	GDP	Central Bureau Statistics Indonesia	Percent
8	Budget Deficit/GDP	DEF	Ministry of Finance Indonesia	Percent

Source: Author preprocessing

the model's goodness of fit and conducting diagnostic tests to ensure that the model assumptions are satisfied, including checks for autocorrelation, heteroscedasticity, and normality of residuals. The sixth is cointegration testing (VECM): If the VAR model indicates a long-run relationship between variables, cointegration tests will be performed, such as the Johansen cointegration test. The test is to determine if cointegration exists, indicating a stable long-term relationship between the variables.

The seventh is VECM Estimation: If cointegration is present, VECM will be estimated by combining the differences of the variables with the error correction term, allowing for both short-term dynamics and long-run equilibrium adjustments. The last step is Model Selection: Comparing the performance of VAR and VECM models based on criteria such as forecast accuracy, model fit, and diagnostic tests. As a result, the appropriate model that best suits the analysis objectives are selected. The VECM is a restricted VAR used for variables that are non-stationary but have the potential to be cointegrated. In VAR/VECM, there is a short-to-long-term adjustment. The basic equation of VAR/VECM is:

$$\Delta Z_t = \sum_{i=1}^{p-1} \Gamma_i \Delta Z_{t-i} + \Pi Z_{t-1} + \mu_0 + \pi_1 t + \varepsilon_t$$

The above equation is interpreted as follows: Π is α parameter matrix, α is representative of ECM coefficient matrix while β represents the transpose

cointegration vector. The symbol of $p-1$ is VAR/VECM order, which came from the optimum lag of VAR/VECM. ΔZ_t is the first difference vector ($Z_t - Z_{t-1}$), with Z_t as the eighth observation variables. Γ_i shows the matrix of the regression coefficient. At the same time, π_0 is the intercept vector, π_1 is the regression coefficient vector, ε_t is the error term vector, and t is the according time observation.

The variable data in this research consists of seven variables, as shown in Table 1. Data is categorized as monetary, fiscal, and macroeconomic variables. Monetary policy variables are the number of broad money and Bank Indonesia Interest Rate (BI7DRR). Fiscal policy variables are revenue and government expenses in the state budget. Macroeconomic variables are inflation, IDR- USD exchange rate, and Indonesia's economy (GDP) growth. The data was obtained as secondary data were retrieved from the official websites of Indonesian Central Agency of Statistic, Central Bank of Indonesia, and the Ministry of Finance of the Republic of Indonesia.

RESULT AND DISCUSSION

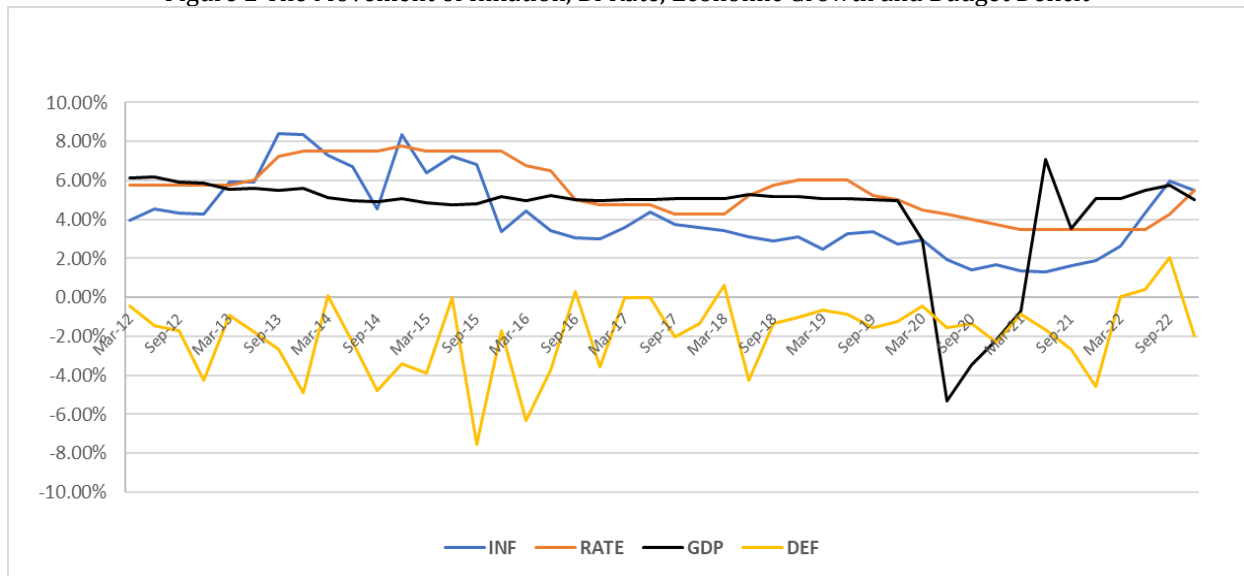
The descriptive analysis presented in Table 2 and Figure 2 is based on quarterly data from 2013 to 2022. Table 2 shows that the mean and median values were almost identical, which shows the profile of variables in normal distribution. The mean value of inflation is 4%, with the maximum value of 8.4% in December 2014. The trend of inflation decreased from 2014 up to September 2021. After COVID-19, inflation was increased due

Table 2 Statistic Descriptive

	INF (%)	KURS (IDR)	RATE (%)	M2 (BioIDR)	GDP (%)	EX (BioIDR)	REV (BioIDR)	DEF (%)
Mean	0.04	13,235.73	0.06	5,312,239.00	0.04	800,310.00	904,240.90	-0.02
Median	0.04	13,652.00	0.06	5,239,653.00	0.05	462,956.50	522,984.50	-0.02
Maximum	0.08	16,367.00	0.08	8,528,022.00	0.07	2,626,420.00	3,090,700.00	0.02
Minimum	0.01	9,180.00	0.04	2,914,194.00	-0.05	236,991.00	18,833.00	-0.08
Std. Dev.	0.02	1,780.58	0.01	1,531,995.00	0.02	625,926.90	738,120.50	0.02
Skewness	0.65	-0.92	0.14	0.31	-2.75	1.18	1.32	-0.76
Kurtosis	2.56	3.08	1.81	2.12	9.74	3.30	3.86	3.53
Jarque-Bera	3.44	6.21	2.74	2.11	138.77	10.29	14.10	4.73
Probability	0.18	0.04	0.25	0.35	0.00	0.01	0.00	0.09
Observations	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00

Source: Author preprocessing

Figure 2 The Movement of Inflation, BI Rate, Economic Growth and Budget Deficit



Source: Author preprocessing

Table 3 Long Period of VECM

	REV(-1)	KURS(-1)	M2(-1)	GDP(-1)	DEF(-1)	INF(-1)	RATE(-1)	C
EX(-1)	-3.98479	7.912324	-1.68764	-20.4134	73.55597	4.277625	-37.4795	-5.06708
S.E	-0.06868	-0.5293	-0.31919	-0.65302	-1.66514	-1.82499	-3.59416	
T Test	[-58.0221]	[14.9488]	[-5.28731]	[-31.2600]	[44.1741]	[2.34392]		

Source: Author preprocessing

to inadequate production to supply the demand. Moreover, geopolitical factor significantly contributes to the rise in energy and distribution costs. A similar pattern was observed in economic growth (GDP). The impact from COVID-19 pandemic were felt during and after the crisis. To recover from economics problems such as the rise of inflation and slowing economic growth, some regulators or Central Bank around the world took action by increasing the Interest Rate.

Seven procedures were conducted in VAR/VECM. First is checking the stationery data using Root Test, second is Stability testing of VAR, third and fourth are Lag Optimum testing followed by Co-Integration testing, fifth is creating VAR/VECM equation, sixth is analysis of Impulse Response, and the last is analysis of Variance Decomposition of each variable. The first procedure using Root Test resulted in the stationery in level 2, and the result of Co-Integration testing was 3 Co-Integration at a significant 5%. The equation for the long period of VECM is shown in Table 3.

The adjusted R square from the equation was 72%, meaning the impact contribution of revenue, exchange rate, money supply, economic growth, inflation, and BI Rate was 72% to the budget deficit in Table 4. As shown in Table 5, by using the Granger Causality method, the significance level of impact of each variable on the budget deficit was indicated by Probability (Prob). If the value of Prob was below 0.05, then the budget deficit impacted the variable.

Table 5 indicates that the money supply did not significantly impact the budget deficit, whereas revenue, economic growth, inflation, and the BI Rate had significant effects on the budget deficit.

Granger Causality is the significant impact of budget deficit as the independent variables on other variables. The budget deficit is significantly below

Table 4 Granger Causality
(Dependent Variable: Budget Deficit)

Excluded	Chi-sq	df	Prob.
D(EX)	3.604945	2	0.1649
D(REV)	34.92049	2	0
D(KURS)	7.859103	2	0.0197
D(M2)	8.538192	2	0.014
D(GDP)	17.38796	2	0.0002
D(INF)	1.296853	2	0.5229
D(RATE)	14.74828	2	0.0006

Source: Author preprocessing

Table 5 Granger Causality
(Independent Variable: Budget Deficit)

Excluded	Chi-sq	df	Prob.
D(EX)	3.781892	2	0.151
D(REV)	17.62078	2	0.000
D(KURS)	5.968943	2	0.051
D(M2)	5.48022	2	0.065
D(GDP)	10.05607	2	0.007
D(INF)	8.707769	2	0.013
D(RATE)	11.51606	2	0.003

Source: Author preprocessing

Table 6 Variance Decomposition of Budget Deficit

Period	EX	REV	KURS	M2	GDP	DEF	INF	RATE
1	0.811862	21.46835	20.87135	0.25307	29.39107	27.2043	0	0
2	0.671761	16.65559	16.62698	5.225376	21.20092	35.89689	0.112918	3.609561
3	0.411094	23.53667	11.12174	4.322312	17.57783	23.26471	17.55938	2.206274
4	1.328751	19.93555	16.69085	3.691492	16.34994	22.24728	16.71341	3.042726
5	1.147769	22.58124	16.48386	3.196944	15.38941	20.64488	17.90483	2.651062
6	1.198536	27.62811	14.49998	6.208521	13.56429	18.29146	16.20561	2.403499
7	1.170408	31.34299	12.57987	5.639458	12.05248	15.9117	19.13727	2.165828
8	1.885212	32.29058	13.75872	5.160927	12.00178	13.70273	18.42186	2.778185
9	1.796775	32.74373	14.07551	5.306394	10.79678	13.74059	18.74522	2.795
10	1.947393	35.75642	12.79048	4.841493	9.712814	13.2584	18.87633	2.816669

Source: Author preprocessing

0.05 for revenue, money supply, economic growth, and BI Rate. The budget deficit significantly impacts those variables but does not significantly impact the exchange rate and inflation. Integration results in Tables 4 and 5 indicate a significant mutual on revenue, exchange rate, economic growth, and BI rate, and vice versa.

The result of variance decomposition analysis is shown in Table 6. In the first month, the budget deficit was most significantly affected by economic growth/GDP (29.39%), budget deficit itself/DEF (27.20%), revenue/REV (21.46%), and exchange rate/KURS (20.87%).

However, In the 10th month, with revenue (35.75%) becoming the most influential factor, followed by inflation (18.87%), exchange rate (12.79%), and economic growth (9.71%). The variables that impacted the budget deficit are revenue, economic development, and exchange rate, with a particularly significant contribution shown by inflation since the second month.

Discussion

Monetary policy can affect the budget deficit in several ways. The interest rate policy impacts the cost of servicing the public debt, causes a higher cost of production, and impacts inflation. Tight monetary policy measures may lead to slower output and national income growth, potentially reducing tax revenues and a rise in the recorded government budget deficit. Additionally, expansionary fiscal policy, often influenced by monetary policy, can lead to higher budget deficits, while contractionary policy can reduce deficits.

This study indicates that the budget deficit is significantly affected by government revenue, economic growth, inflation, money supply, and BI Rate, and *vice versa*. Controlling those variables will directly impact the budget deficit. The Central Bank has the authority to control the money supply and inflation by adjusting the BI rate. However, if the Central Bank's primary focus is to control inflation and money supply, it might not support budget deficit policies. Since the Central Bank also have responsibilities to stabilize the nation's monetary

and financial systems. The Central Bank in Indonesia and some other countries should also support fiscal policy as a standby buyer of government bonds to finance the budget deficit. According to Demopoulos et al. (1987), the movement to monetary targeting reduces the linkage between monetary policy and government deficits. The debate described that government deficits had been accused of contributing to excessive money growth, inflation, high interest rates, and the crowding out of private demand. A study by Afonso et al. (2019) shows that inflation is more relevant for monetary policy, while fiscal policy responds to changes in government debt levels.

Implementing an expansionary fiscal policy increases budget deficits, whereas a contractionary policy decreases deficits. Elevated budget deficits can potentially exacerbate inflationary pressures in the economy, thereby contributing to the devaluation of the domestic currency. This study finds a significant causality relationship between economic growth and the budget deficit, where economic growth impacts the budget deficit and vice versa. Budget deficits can benefit economic growth, especially during recessions, as government spending can stimulate the economy and create jobs. On the other hand, a study from Nayab (2015) revealed a different result. In Pakistan, economic growth triggers investment, which, in turn, leads to a deficit.

Nevertheless, it is observed that a budget deficit does not instigate economic growth. The outcomes of this research align with the Keynesian perspective on budget deficits. Additionally, the findings indicate a positive influence of the budget deficit on overall growth.

In some countries, the Central Bank has taken some strategies to control the conditions post-COVID-19 and unstable geopolitics, which disrupted the energy supply, triggered high inflation and low economic growth, and increased the Central Bank Rate. The Federal Reserve Rate (FED) movement has become an indicator of the impact on capital inflow to other countries for many Central Banks.

The high Central Bank Rate should be counterbalanced with economic stimulus since it might increase production costs, tighten money liquidity, and eventually undermine economic growth.

Due to the high inflation and high budget deficit in the era of COVID-19 and during the recovery process afterwards, many governments issued bonds and sukuk (Islamic bonds, structured to comply with Sharia law) to settle the mismatch of revenue and government spending. However, the private sector and retail have not absorbed all government bond. Therefore, the Central Bank's function as the standby buyer is still needed. This function should not jeopardize the function of the Central Bank as the last resort of the financial institution in the nation and as a policy maker of money.

CONCLUSION

Keynesian theory suggests government intervention through fiscal and monetary policy to maintain economic stability, ensuring a healthy and sustainable State Budget. It is important to note that the impact of monetary policy on the budget deficit can be influenced by various factors, including the overall economic conditions, inflationary pressures, and the effectiveness of monetary policy measures in stimulating or stabilizing the economy.

This research shows that the budget deficit response decreases if there is a shock in government revenue and the amount of broad money. The budget deficit response increases if there is a shock in the exchange rate, government expenses, economic growth, BI rate, and budget deficit. A drastic budget deficit cannot respond to shocking inflation. Based on the variance decomposition, it could be concluded that fiscal policy, consisting of controlling revenue and expenses, gives 37.6% contribution, monetary policy which consists of the number of broad money and BI Rate gives 7.6% contribution, and macroeconomic factor, consisting of the exchange rate, inflation, and economic growth gives contribution of 41.6%. In comparison, the effect of the budget deficit has a contribution of 13.2%.

In summary, fiscal policy and monetary policy can both impact budget deficits. Expansionary fiscal policy, characterized by increased government spending or reduced taxes, can lead to higher budget deficits. Conversely, contractionary fiscal policy, involving decreased government spending or increased taxes, can help reduce deficits. On the other hand, through interest rate decisions, central bank holdings, and profit remittances, monetary policy can indirectly influence the cost of servicing the public debt and affect the budget.

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