Research article

Threshold Effect of Monetary and Fiscal Policy on Inflation in Indonesia

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A B S T R A C T

Triple challenges are conditions where economic growth is low, interest rates are high, and inflation is elevated. These conditions precede a recession in economic growth, which potentially leads to a high inflation rate. This study identifies threshold values of monetary and fiscal policy as well as an effect on inflation in Indonesia. The threshold regression method was used with time series data spanning from 2013Q1 to 2023Q2. The finding showed that the monetary policy was lower than the threshold of 6.375%, indicated exchange and interest rates had a significant effect on inflation. Exceeding the threshold, there was no significant relationship between interest rates and inflation, but the exchange rate and inflation had a significant and negative correlation on inflation. The fiscal policy was lower than the threshold of IDR.18 trillion suggested for inflation, while the output gap and the budget deficit had a positive and significant effect on inflation. On the other hand, exceeding the threshold, inflation was significantly affected by the output gap and budget deficit. To control inflation and achieve economic stability, it is necessary to synergize monetary and fiscal policy carried out effectively and efficiently as well as integrated.

1. INTRODUCTION

Economic recession due to an increase in interest rate policy by the US central bank (Federal Funds Rate/FFR) was reportedly between 5.25-5.75 % in June 2023. The energy crisis has also impacted the escalation of inflation in various countries which challenges policymakers to design regulations targeted at maintaining economic stability (Gourinchas, 2022; and World Economic Forum, 2023). Several risks and challenges are associated with overcoming an economic recession, including miscalibration of monetary, fiscal, or financial policy due to global uncertainty (Fetai, 2013; and Gourinchas, 2022). Conditions of global economic uncertainty have forced central banks, especially in developing countries, to focus on restoring price stability and the pace of tightening has increased sharply. The focus of this policy is related to increasing price pressures which leads to a decrease in real income and disruption of macroeconomic stability (Bank Indonesia, 2020).

Tightening policy occurs when the central bank raises the FFR and Over-tightening pushes the global economy into a severe recession. In Addition, Under-tightening policy will further strengthen inflation, erode the credibility of the central bank and reduce inflation expectations (Dubey & Mishra, 2023; Gern et al., 2023; and Gourinchas, 2022). Therefore, financial policy must ensure that the market remains stable and the central bank needs to maintain stability with monetary policy in suppressing the rate of inflation. Furthermore, efforts from fiscal policy should not conflict with monetary authorities to reduce the rate of inflation and help the economy adapt to a more volatile

environment by investing in productive capacities such as human capital, digitalization, green energy, and supply chain diversification (Gourinchas, 2022; and Jørgensen & Ravn, 2022).

Indonesia, through the Bank of Indonesia, is strengthening policy mix response to maintain stability and revive economic growth from various shocks including the domino effect of the economic crisis, the COVID-19 pandemic, tightening of FFR, the Ukraine war, and other global economic uncertainties. Efforts to maintain the BI7DRR interest rate at 5.75% were in line with the stance of monetary policy to control inflation at a target of 3.0% ± 1% in 2023. Fiscal policy has a role in providing stimulus to the economy through channeling government spending and tax reform, thereby maintaining the deficit of fiscal affairs (Bank Indonesia, 2020; and International Monetary Fund, 2023).
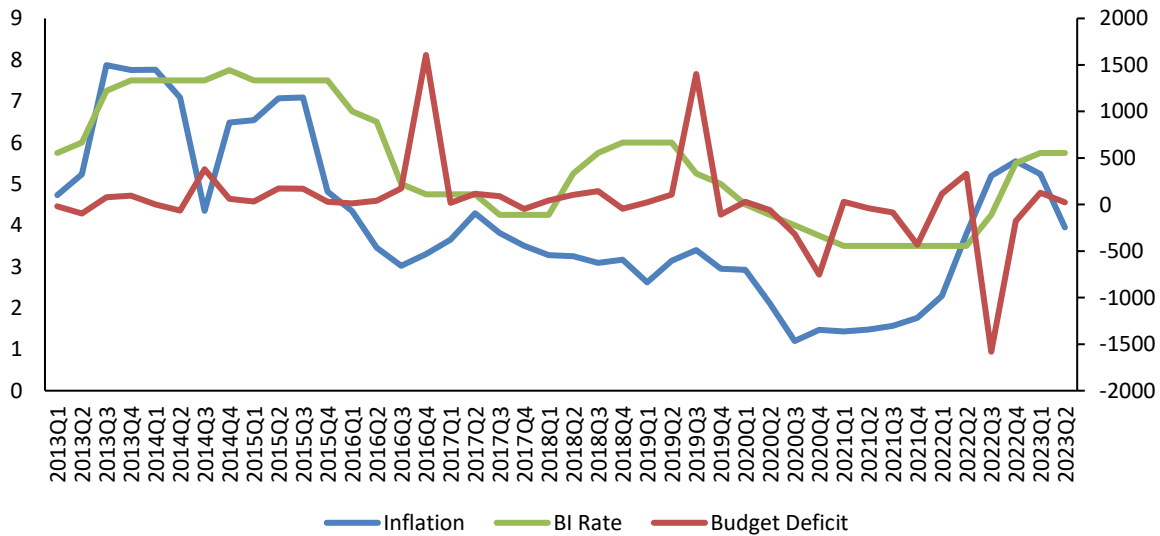

Figure 1. Fluctuations in Inflation, Interest Rates, and Budget Deficits in Indonesia
Source: International Monetary Fund, Bank Indonesia (Author calculation)

Figure 1 shows the potential threshold in interest rate policy and budget deficit influencing inflation in Indonesia. During Q2 2020 - Q3 2020, there was a decline in inflation despite the BI rate remaining stable, suggesting that at a certain interest rate level, monetary policy becomes less effective in influencing inflation. The same condition applies to the budget deficit as fiscal policy, where significant changes lead to fluctuations in inflation. The relationship between monetary and fiscal policy in stabilizing inflation is not always linear but may vary at specific threshold levels (Mehrara & Soufiani, 2015).

Interaction between policy must be understood to face the threat of high inflation, high interest rates, and weak economic growth, known as the Triple Challenge. This interaction is an effort to maintain price stability, exchange rate stability, financial system stability, and economic growth. Agung & Juhro (2016), using a small open-economy New Keynesian model with a case study of Indonesia explained that the adverse macroeconomic and financial impacts of external shocks could be mitigated by a mix of monetary and macroprudential policy. In addition, Kim & Mehrotra (2018) tested the influence of monetary and macroprudential policy in the Asia-Pacific region using a vector autoregression structural panel. The results showed that the two policies can help each other to achieve price and financial stability targets.

Another study by Jørgensen & Ravn (2022) showed the role of fiscal policy in controlling inflation with Standard New Keynesian models. Using the Structural Vector Autoregression (SVAR) model, Jørgensen & Ravn (2022) produced new insights into the role of fiscal policy at the Zero Lower Bound (ZLB). Based on the results, government spending shocks at the ZLB may lead to "neo-Fisherian" effect, even when a liquidity trap is triggered by a fundamental shock, provided that spending affects the supply side of the economy. Michau & Polytechnique (2019) with a new Keynesian model approach explains that the persistence of inflation has major consequences for

the optimal implementation of monetary and fiscal policy in liquidity trap conditions. Farmer & Zabczyk (2019) used The Fiscal Theory of the Price Level (FTPL) approach and calibrating the Representative Agent (RA) model and the Overlapping Generations (OLG) model to income profiles from US data, shows that FTPL breaks down. Furthermore, Farmer & Zabczyk (2019) explains that the price level and real interest rate cannot be determined, even when monetary and fiscal policies are both active. Their findings thus challenge the view of a combination of fiscal and monetary policy.

Klein & Linnemann (2020) used time-varying effects to examine fiscal policy on inflation, found that government spending had no effect before World War II and was significantly positive after World War II. Łyziak & Mackiewicz-Łyziak (2020) explained that the Fiscal Sustainability Indicator (FSI) influences inflation expectations. Urquhart (2022) considers the Fiscal Theory of the Price Level (FTPL) and fiscal policy actions are evaluated in autoregressive monetary structural vectors combined with fiscal variables. The results highlight the importance of differentiating monetary regimes when conducting analysis. In a monetary aggregate regime with active fiscal policy, higher public debt shocks generate inflationary pressures and conversely, with inflation targeting sample estimates, inflation follows the targeted path. Grui & Eugène-Rigot (2020) uncovered interest parity modification of the New Keynesian semi-structural model, which takes into account foreign exchange interventions and is relevant for inflation-targeting regimes with varying levels of exchange rate management. Furthermore, this research analyses the threshold values of monetary policy and fiscal policy in controlling Indonesia, by considering empirical studies of The New Keynesian Phillips curve (NKPC) and The Fiscal Theory of the Price Level (FTPL) in economic activity.

This study aimed to identify threshold values of monetary and fiscal policy on inflation in Indonesia. Therefore, threshold values in fiscal and monetary policy were analyzed to determine the impact on stabilizing inflation at each value. The New Keynesian Phillips Curve (NKPC) and Fiscal Theory of the Price Level (FTPL) were used for monetary and fiscal policy respectively. Additionally, the threshold regression method was used to measure values for the implementation of policy to control inflation. This study's systematics are divided into four sessions: the research technique is presented in the second session, the results and discussion are presented in the third session, and concluding remarks are made based on the research findings.

2. RESEARCH METHODS

2.1. Data

The type of secondary data used was a times series with a span of 2013 first quarter to 2023 second quarter. The variables examined include the difference between Indonesia's interest rate and the United States (US), budget deficit, rupiah exchange rate per USD, output gap, inflation expectations, and inflation. Data were sourced from the International Monetary Fund (IMF), Bank Indonesia, the Asian Development Bank, and the Ministry of Finance of the Republic of Indonesia.

2.2. Model Specification

The main model of inflation was built based on the NKPC concept from Lucas (1972); and Sargent (1971). NKPC theory in examining the rate of inflation movement (π_t) builds the concept of expected inflation (π_{t+1}). This equation can be written as follows:

$$\pi_t = \beta\pi_{t+1} \tag{1}$$

The development of NKPC theory from the Philip curve concept includes real economic growth activities through the output gap ($y - y^*$). The calculation uses the Hodrick-Prescott (HP) Filter method. The HP filter is used because it allows for the adjustment of the smoothing parameter (lambda) according to the data frequency and the purpose of analysis. Based on the concept (Blanchard & Gali 2016), this equation can be written as follows:

$$\pi_t = \beta\pi_{t+1} + \gamma(y - y^*) \tag{2}$$

Monetary policy with the assumption of Uncovered Interest Parity (UIP) explains that the difference between domestic interest (i) and US interest rates (ius) will have an impact on the domestic exchange rate (s). Based on the concept (Ames et al., 2017), this equation can be written as follows:

$$s_t = \mu(i - i^{us}) \tag{3}$$

UIP theory is a proxy for monetary policy in stabilizing inflation and exchange rate (s) is one of the determinants of inflation rate. Modifying the study of Falck et al. (2021); Łyziak & Mackiewicz-Łyziak (2020); Narayan et al. (2023); and Nghiem & Narayan (2021) makes monetary policy equation as follows:

$$\pi_t = \beta\pi_{t+1} + \gamma(y - y^*) + \delta s_t + \mu(i - i^{us}) \tag{4}$$

$$\pi_t = \beta_0 + \beta_1\pi_{t+1} + \beta_2(y - y^*)_t + \beta_3 s_t + \beta_4(i - i^{us})_t + \varepsilon_t \tag{5}$$

The budget deficit (p) has an impact on inflation through an increase in government spending which leads to demand pull inflation. Modifying the model specifications from Pekarski (2011) and entering equation (2), the new equation can be written as follows:

$$\pi_t = \beta\pi_{t+1} + \gamma(y - y^*) + \theta p \tag{6}$$

$$\pi_t = \beta_0 + \beta_1\pi_{t+1} + \beta_2(y - y^*)_t + \beta_3 p_t + \varepsilon_t \tag{7}$$

Equations (5) and (7) are models of monetary and fiscal policy influencing the rate of inflation in Indonesia. These equations were estimated using the threshold regression method. Threshold regression is a simple form of non-linear regression that shows piecewise linear specifications and regime switching when an observed variable crosses a known threshold value. The model specifications in equations (5) and (7) are substituted into the threshold regression model as follows:

Monetary policy equation:

$$\pi_t = \begin{matrix} \beta_{10} + \beta_{11}\pi_{t+1} + \beta_{12}(y - y^*)_t + \beta_{13}s_t + \beta_{14}(i - i^{us})_t + \varepsilon_t \\ \beta_{20} + \beta_{21}\pi_{t+1} + \beta_{22}(y - y^*)_t + \beta_{23}s_t + \beta_{24}(i - i^{us})_t + \varepsilon_t \end{matrix} \tag{8}$$
$$\text{if } (i - i^{us})_t \geq \gamma \text{ and } (i - i^{us})_t < \gamma$$

Simplified as follows:

$$\pi_t = \beta_0' + \beta_1'\pi_{t+1} + \beta_2'(y - y^*)_t + \beta_3's_t + \beta_4'(i - i^{us})_t + \varepsilon_t \tag{9}$$
$$\text{if } (i - i^{us})_t \geq \gamma \text{ dan } (i - i^{us})_t < \gamma$$

Fiscal policy equation

$$\pi_t = \begin{matrix} \beta_{10} + \beta_{11}\pi_{t+1} + \beta_{12}(y - y^*)_t + \beta_{13}p_t + \varepsilon_t \\ \beta_{20} + \beta_{21}\pi_{t+1} + \beta_{22}(y - y^*)_t + \beta_{23}p_t + \varepsilon_t \end{matrix} \tag{10}$$
$$\text{if } p_t \geq \gamma \text{ and } p_t < \gamma$$

Simplified as follows

$$\pi_t = \beta_0' + \beta_1'\pi_{t+1} + \beta_2'(y - y^*)_t + \beta_3'p_t + \varepsilon_t \tag{11}$$
$$\text{if } p_t \geq \gamma \text{ and } p_t < \gamma$$

Two conditions in this model depend on the threshold of the difference between the domestic and the US interest rate $(i - i^{us})_t$ as well as Budget Deficit p_t. First, the difference in interest rates

$(i - i^{us})_t$ and Budget Deficit p_t are greater than or equal to a certain threshold γ. Second, the difference in interest rates $(i - i^{us})_t$ and Budget Deficit p_t are smaller than the threshold γ. Equations 8 and 9 are the specifications of the monetary model as a threshold variable that influences inflation. Meanwhile, specifications of the fiscal policy model as a threshold variable that influences inflation are shown in equations 10-11.

3. RESULTS AND DISCUSSION

3.1. Results of Descriptive Statistical Analysis

Descriptive statistical analysis was used to explain the characteristics of the data used. The variables examined were budget deficit, BI rate, inflation, FFR, and output gap.

Table 1. Descriptive Analysis Results

Descriptive	BI Rate	Inflation	Budget Deficits	Exchange Rate	FFR	Output Gap
Mean	5.476190	4.071190	41.16667	13679.57	1.081905	0.003333
Median	5.375000	3.575000	30.00000	14003.01	0.380000	-0.085000
Maximum	7.750000	7.870000	1607.000	16367.01	5.250000	5.330000
Minimum	3.500000	1.200000	-1581.000	9719.000	0.130000	-5.430000
Std. Dev.	1.434345	1.894475	451.8641	1379.481	1.374466	2.201599
Skewness	0.177718	0.523130	0.399389	-0.966388	1.651570	0.042146
Kurtosis	1.730628	2.362345	10.10740	4.160491	5.066863	2.947827
Observations	42	42	42	42	42	42

Source: Author's calculations

The variables used show significant variation, especially in the budget deficit, exchange rate, and output gap, indicating that during the observation period, the economy experienced substantial fluctuations in interest rates, inflation, and fiscal policy. The skewness and kurtosis of most variables suggest the presence of some extreme values affecting the distribution, particularly in the budget deficit and FFR (Federal Funds Rate).

3.2. Unit Root Test

The purpose of a unit root test is to determine whether a time series has a unit root, meaning to evaluate whether the data is stationary or non-stationary. Stationarity in data is crucial because many statistical and econometric methods, such as linear regression, require stationary data to produce valid and unbiased results. The method used is the Augmented Dickey-Fuller test. If the p-value is less than the significant alpha level, the data is considered stationary. However, if the result is not significant, a first-difference or second-difference test must be conducted to achieve stationarity.

Table 2. Unit Root Test

	BI Rate	Inflation	Budget Deficits	Exchange Rate	FFR	Output Gap
Level	0,417	0,252	0,000*	0,001*	0,000*	0,009*
First Difference	0,003*	0,00*	0,000*	0,000*	0,046*	0,000*

Note: * Significant α = 5%, ** α = 10%

The results of the unit root test in Table 2 show that the BI Rate and Inflation are not stationary at this level. The p-values for BI Rate and Inflation are 0.417 and 0.252, respectively, which are greater than the significant alpha level, suggesting these variables are non-stationary. In contrast, other variables including the Budget Deficit**,** Exchange Rate**,** Federal Funds Rate (FFR)**,** and Output Gap are stationary at the level. All variables are significant and stationary at the first difference.

3.3. Results of Monetary and Fiscal Policy Threshold Estimates on Inflation Rates

Monetary and fiscal policy plays an important role in mitigating the rate of inflation in Indonesia. Moreover, changes in United States interest rates have an impact on determining interest rates in Indonesia. The difference between domestic and foreign interest rates influences exchange rate movements which then affect price stability. The government budget both in surplus and deficit also affects inflation. Fiscal policy through government budget management affects people purchasing power. Therefore, determining a good regime to stabilize inflation through monetary and fiscal policy requires threshold regression method.

Table 3. Threshold Regression Analysis Results

Variable	Monetary Policy		Fiscal Policy	
	$(i - i^{us}) < 6{,}375$	$(i - i^{us}) \geq 6{,}375$	d < 18	d ≥ 18
π_{t+1}	-0,023 (0,867)	-0,923* (0,006)	0,214* (0,000)	0,021 (0,925)
$(y - y^*)$	0,000 (0,482)	0,083 (0,138)	0,002* (0,002)	0,002** (0,072)
p	-	-	-0,000* (0,000)	-0,000** (0,088)
s	-3,7036* (0,000)	-9,154* (0,003)	-	-
$(i - i^{us})$	-0,289* (0,000)	0,594 (0,276)	-	-
R-square	0,549		0,276	
Adj. R-square	0,418		0,122	

Note: * Significant α = 5%, ** α = 10%, parentheses is probability

Table 3 shows the result of threshold regression analysis in determining monetary and fiscal policy in Indonesia. Based on the results, monetary policy is divided into two regimes, namely high with threshold value lower and higher than 6.375%. Fiscal policy is also divided into two regimes namely threshold value lower than IDR.18 trillion and higher than IDR. 18 trillion.

The influence of a regime with a threshold value lower than 6.375% on the interest rate variable shows a diversity of results. The inflation expectations variable with output gap has no effect on inflation with a probability value of 0.867 and 0.482 which is greater than the significant alpha value (=10%). Different results with the exchange rate and interest rate variables have an effect on the inflation rate. The exchange rate probability value of 0.000 is smaller than the significant alpha value (=5%) and a negative coefficient means that the exchange rate has a significant effect on inflation with an inverse relationship. The same result also occurs at the interest rate with a probability value of 0.000 which is smaller than the significant alpha (= 5%) and the coefficient is negative. Accordingly, when Indonesia's interest rate compared to the United States has a difference lower than 6.375%, it will reduce the inflation rate but appreciate the exchange rate.

Interest rate threshold values higher than 6.375% also have a significantly different impact than threshold values lower than 6.375%. The output gap and interest rate variables with probability values of 0.1388 and 0.276 were greater than significant alpha (=10%), suggesting an insignificant relationship with inflation. On the other hand, inflation expectations with a probability value of 0.006 were smaller than the significant alpha value (=10%). The negative coefficient also shows that there is a significant relationship in the opposite direction. The exchange rate probability value of 0.003 was smaller than the significant alpha value (=5%) and the negative coefficient implies there was a significant inverse relationship. When the difference in interest rates between Indonesia and the United States is higher than 6.375%, it does not have a direct effect on inflation but through the exchange rate. Setting interest rates up to a difference higher than 6.375% affects inflation expectations which will not be in accordance with actual inflation.

The exchange rate had a negative relationship with inflation, which explains that when the Rupiah exchange rate against USD depreciates, at the same time inflation decreases, and vice versa when the Rupiah exchange rate against USD experiences appreciation. then inflation at that time

increased. This condition occurred in the research period 2013Q4 to 2014Q3 in a regime of interest rate differences of more than 6.375%. On the other hand, in the interest rate differential regime at a level of less than 6.375%, the Rupiah exchange rate against the USD also shows a negative relationship, namely in the research period 2017Q1 to 2018Q4 and 2020Q3 to 2021Q4.
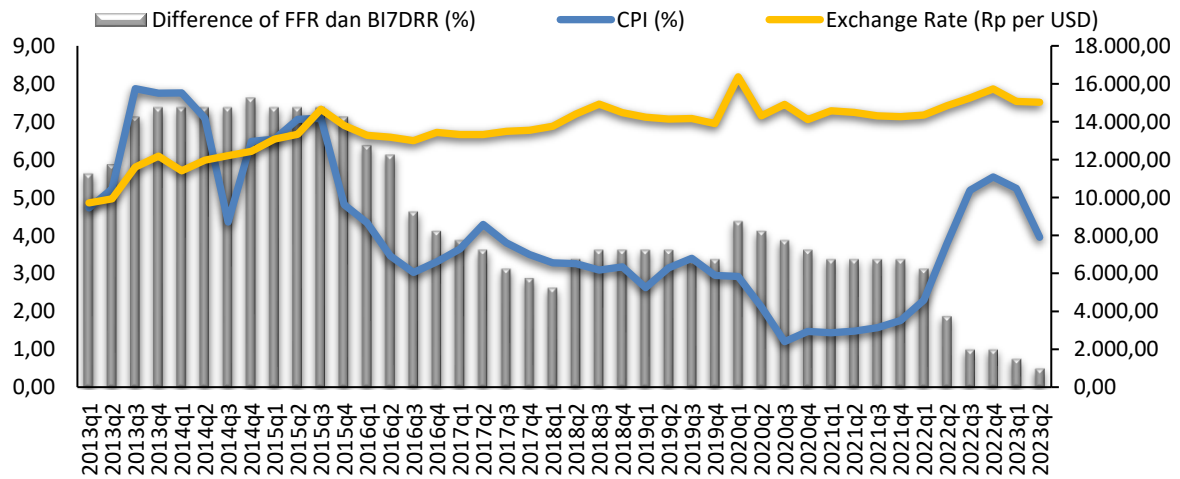

Figure 2. Difference between FFR and BI7DRR, CPI and Indonesian Exchange Rate
Source: International Monetary Fund, Bank Indonesia (Author calculation)

In a regime of interest rate differences of less than 6.375%, interest rates have a significant influence on inflation. The influence of interest rates can have a negative effect on inflation, which means there is a tightening of monetary policy through an increase in the central bank's benchmark interest rate with the aim of suppressing the inflation rate. As happened in 2017-2018, Bank Indonesia set the BI 7-Day Reserve Repo Rate (BI7DRR) at 4.25% in 2017 quarter 3 to 6.00% in 2018Q4 and succeeded in controlling inflation, namely from 3.81% to 3.17% in that period, where the difference between Indonesian and US interest rates was less than 6.375%.

Tightening interest rates were unable to suppress inflation, suggesting an insignificant effect. This may be due to external factors in the form of global uncertainty which affects the domestic business cycle. In 2022, the Fed raised the Fed Fund Rate (FFR) from 0.38% in 2022Q1 to 4.50% in 2020Q4 to maintain the country economic stability. Bank Indonesia also raised the BI 7-Day Reserve Repo Rate (BI7DRR) from 3.50% (2022Q1) to 5.50% (2022Q4). Consequently, inflation could not be controlled, increasing from 2.29% to 5.24% (Figure 2).

The implementation of the regime on fiscal policy in Indonesia influenced inflation. Threshold value lower than IDR.18 trillion affected inflation. This was showed by the probability value of a budget deficit policy (0.000) which was smaller than the significant alpha value (= 5%). The negative coefficient suggests that there is a significant inverse relationship. Budget at a surplus of IDR.18 trillion or a deficit will have an impact on increasing inflation caused by government spending being higher than income. On the other hand, economic growth with a probability value of 0.002 was smaller than the alpha value (=5%). The positive coefficient suggests that economic growth may impact high inflation. Similar results were also observed from inflation expectations where a probability value of 0.000 was smaller than the significant alpha value (=5%). The positive coefficient showed that inflation expectations corresponded to actual inflation. Thus, when the government budget reaches a surplus lower than IDR.18 trillion or experiencing a deficit will have an impact on high inflation with economic growth approaching potential. This is caused by government spending being higher than income, causing an increase in economic activity and people's purchasing power.

The threshold value in fiscal policy for a surplus higher than IDR.18 trillion influenced inflation. The probability value of 0.08 was smaller than the significant alpha value (=10%) with a negative coefficient direction. This shows that when the budget reaches a surplus, inflation will be reduced. A similar result was also observed in the relationship between the output gap and inflation. The probability value of 0.002 was smaller than the significant alpha value (=5%) and the positive

coefficient showed that economic growth had the potential to influence inflation. However, inflation expectations have no effect on actual inflation with a probability value of 0.925 which is greater than the significant alpha value (=10%).
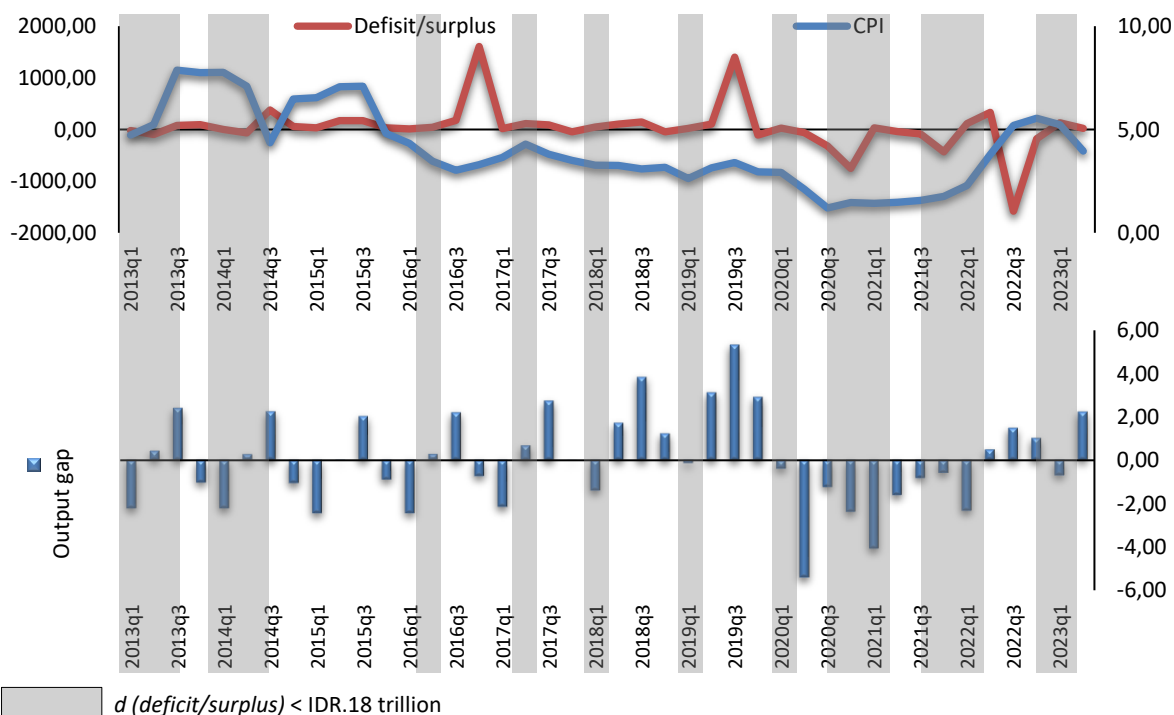

d (deficit/surplus) < IDR.18 trillion

Figure 3. Budget Deficit/Surplus (Rp billion), CPI (%), and Indonesia's Output Gap
Source: International Monetary Fund, Ministry of Finance Indonesia, Bank Indonesia

As shown in Figure 3, at the government budget threshold value higher than IDR.18 trillion or the highest level of surplus, as well as lower than IDR 18 trillion or the highest deficit, the budget deficit variable has a significant reverse or negative relationship in a certain period. When the government budget was lower than IDR 18 trillion for the 2021Q2 to Q4 period, the greater the deficit value (IDR -40 trillion to IDR -433 trillion) increased inflation rate (1.48 to 1.76%). Government budget threshold value higher than IDR.18 trillion in 2018Q2 and Q3 (a surplus of IDR 103 trillion and IDR 144 trillion) pushed inflation down from 3.24% to 3.09% (Figure 3). There are also many cases where the budget surplus increases and inflation also rises. Therefore, the government must remain prepared to face economic shocks, specifically in controlling inflation amidst global uncertainty.

Table 4. Results of Classical Assumption Test Analysis

Diagnostic test	Monetary Policy		Fiscal Policy	
	Stat.	Results	Stat.	Results
Autocorrelation (Breusch-Godfrey Serial Correlation LM Test)	0,751	No Autocorrelation	0,638	No Autocorrelation
Heteroscedasticity (Breusch-Pagan Test)	0,427	No Heteroscedasticity	0,176	No Heteroscedasticity
Normality (Jarque-Bera Test)	0,284	No Normality	0,497	No Normality
Multicollinearity Variance Inflation Factor	VIF < 10	No Multicollinearity	VIF < 10	No Multicollinearity

Source: Author's calculations

Table 4 shows the results of the residual diagnostic test. In monetary policy model, there were no issues with the classical assumptions. The same results were also found in the fiscal policy model; hence, the model can proceed to estimation.

3.4. Discussions

3.4.1. Implementation of Threshold in Monetary Policy

Our findings show that the interest rate difference between Indonesia and the United States lower than threshold value reduced inflation. The relationship between interest rates and inflation corresponds with the reports of Ding & Kim (2017); and Galindo & Steiner (2022). Changes in interest rates in the United States will influence the economies of developing countries, including Indonesia. Schmitt-grohé & Uribe (2022) explained that the economies of developing countries are cointegrated with shocks to United States monetary policy. Threshold value lower than is responded to by the exchange rate which causes a negative effect on inflation. The significant negative relationship between the exchange rate and inflation is in accordance with research by Duodu et al. (2022); and Ilmas et al. (2022). The policy of increasing BI7DRR in response to the increase in FFR in the second quarter of 2023 caused the exchange rate to appreciate with a net inflow. Meanwhile, interest rate is higher than the threshold value did not affect inflation. However, the difference in interest rates affected exchange rate and inflation expectations with a significant effect. Expectations that have a significant negative relationship with actual inflation at the interest rate higher than threshold value affected the formation of inflation targeting.

Stated that monetary regulators must view the exchange rate at any level as important for adjusting policy levels, because based on the results of their research the exchange rate has a significant effect on inflation. Additionally, Fetai et al. (2016) explains that exchange rate changes will have a strong impact on inflation in the Western Balkan countries, so policymakers in the region must seriously consider the relative costs and benefits associated with implementing a flexible exchange rate regime before making a decision. Monfared & Akın (2017) explains that because inflation is influenced by the exchange rate and inflation expectations, the Central Bank must be transparent in implementing foreign exchange policy, thereby avoiding undesirable things. The Central Bank must always provide detailed information regarding the exchange rate policies implemented and the market conditions. In addition, the Central Bank must continuously offer insight into the direction of the policies established as an effort to manage market expectations. As happened in the 2000-2009 period when inflation increased sharply, and the exchange rate depreciated and there were indications of a higher risk of uncontrolled inflation expectations (International Monetary Fund, 2023). When the difference between Indonesian and US interest rates is higher than 6.375%, it indicates that interest rates do not have a significant influence on inflation. In line with studies from Amhimmid et al. (2021) which explains that there is no significant influence between interest rates and inflation in Indonesia. Taylor is of the view that policy interest rate adjustments depend on output and inflation gaps. This theory argues that the policy rate should be increased whenever realized/estimated inflation is higher than the target to control inflation (Valogo et al., 2023).

The estimation results showed that monetary policy based on the UIP concept can influence inflation through the exchange rate. Differences in interest rates will affect the exchange rate through investment returns (Ames et al., 2017; Bhatta et al., 2022; Djeutem & Dunbar 2022). Furthermore, changes in the domestic exchange rate will affect inflation (Duodu et al., 2022; and Ilmas et al., 2022). When inflation is low, the Bank of Indonesia adopts an accommodative policy mix by providing monetary stimulus (reducing interest rates) and large amounts of monetary easing (Quantitative Easing or QE (Bank Indonesia, 2020). Monetary adjustments in the form of increasing interest rates are also implemented to reduce the purchasing power of consumption and high inflation. This was carried out by the FED (US), leading to increased global financial market uncertainty (Bank Indonesia, 2022). Monetary policy for the Bank of Indonesia will continue to be directed towards maintaining stability (pro-stability), particularly to achieve inflation targets and exchange rate stability.

3.4.2. Implementation of Threshold in Fiscal Policy

Fiscal Price Level Theory (FTPL) is a method used in determining fiscal policy in price stability, and for this study, the government budget deficit was used. Budget lower than threshold value has

a negative effect on inflation. Meanwhile, budget at the level of threshold or a deficit will increase inflation. The relationship between budget deficit and inflation is in accordance with the study conducted by Hove et al. (2017); and Klein & Linnemann (2020). The low difference in revenue and expenditure shows that government spending is greater than revenue. This can be caused by spending stimulating a rise in people purchasing power which will have an impact on increasing inflation.

When the government budget reaches a surplus at the level of IDR.18 trillion, a deficit will increase economic activity leading to inflation expectations. The relationship between output gap and inflation expectations is significant in inflation. Therefore, the formation of inflation targeting with forward-looking will be in accordance with actual inflation. Different results with the government budget threshold value higher than or reaching the highest level of surplus. When the government budget reaches a surplus, it shows that state income is higher than expenditure, so in this condition it will reduce people's purchasing power and reduce inflation. This condition will not last in the short term because the government will distribute the surplus to pay for government spending. Economic growth that is positively related to inflation has a high risk because inflation expectations have no effect on actual inflation.

Expansionary fiscal policy is necessary to exceed the fiscal deficit limit of 3% of GDP, which is essential for social protection, health, and education, as well as providing an economic recovery stimulus. This policy is particularly suitable for weakening economic conditions, as it involves increasing regional spending and reducing nominal taxes. The government has implemented such measures to boost the economy after the COVID-19 pandemic by providing economic stimulus and increasing demand in the economy. The state financial system must be adaptive and synergize with each other to recover the economy. This is because when expansionary policy is implemented, the threat of a widening budget deficit occurs, affecting economic stability in the long term.

4. CONCLUSIONS

In conclusion, monetary policy based on UIP theory influences inflation directly and indirectly. Based on the results, threshold value lower than 6.375% had a significant negative effect on inflation followed by the same results between the exchange rate and inflation. At threshold value higher than 6.375%, there was no significant relationship between interest rates and inflation, but the exchange rate and inflation had a significant negative relationship. At threshold value higher than 6.375%, inflation expectations were not in line with actual inflation. Fiscal policy based on government budget management had a significant effect on inflation at various threshold values. The budget surplus threshold value lower than IDR.18 trillion or a deficit had a significant negative relationship with inflation and this condition was followed by an output gap and inflation expectations which had a significant positive effect. On the other hand, the budget surplus threshold higher than IDR.18 trillion had a significant negative relationship followed by a significantly positive relationship between output gap and inflation.

Policy for setting bank interest rates in Indonesia must be at threshold lower than 6.575% compared to the FFR. This is essential to stabilize inflation and exchange rates as well as mitigate the spillover impact of global financial market uncertainty. Therefore, monetary policy mix focuses on pro-stability by continuing front-loaded, pre-emptive, and forward-looking interest rate policy to ensure the continued decline in inflation expectations in the range of 3.0 ± 1%. Fiscal policy through budget surplus will have a positive impact on raising government spending, leading to increased economic activity, and inflation. This is related to expansionary fiscal policy, targeted at economic recovery and sustainable development. In addition, when inflation is high, the role of fiscal policy can be contractionary, namely by increasing tax targets and reducing government spending, thereby reducing consumer purchasing power. This leads to a weakening of the economy which ultimately drives inflation down. Policy synergy is a key factor for sustainable economic recovery, specifically in conditions of global uncertainty. Therefore, policy mix must be effective, and efficient, with policy carried out comprehensively in an integrated and inclusive manner.

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