**Short Communication**

# Analysis of the Influence of Money Supply, Interest Rates, and Inflation on Indonesia's Economic Growth for the Period 2006-2023

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**This article contributes to:**

**Abstract.** The purpose of this study is to examine the correlation between inflation, interest rates, money supply, and economic development in Indonesia from 2006 to 2023. Data collection techniques used include documentation and literature studies collected from various sources (such as files). Researchers also use the BPS and BI websites to collect data. Multiple linear regression analysis and explanatory quantitative analysis using Eviews 12 are used in this study. Based on the results of the analysis of the influence of the amount of money in circulation, interest rates, and inflation on economic growth in Indonesia, the following conclusions were obtained: (a) the amount of money in circulation has a negative and insignificant effect on economic growth, with a significance value of 0.388 (> 0.05) and a coefficient of --0.378. (b) Interest rates have a negative and insignificant effect on economic growth, with a significance value of 0.9827 (> 0.05) and a coefficient of -0.019. (c) Inflation shows a positive and significant influence on economic growth, with a significance value of 0.0361 (< 0.05) and a coefficient of 0.898. However, the amount of money in circulation has a negative and insignificant effect, interest rates have a negative and insignificant impact, while inflation has a positive and significant impact.

**Keywords:** Economic Growth, Money Supply, Interest Rate, Inflation.

## 1. Introduction

According to Xiaoman et al. [1], economic growth develops through five phases: hunting, livestock, farming, trade, and industry marking the transformation towards capitalism [2]. Schumpeter emphasized the role of entrepreneurial innovation as the main driver of economic growth [3]. Economic growth itself is a process of continuous change towards better economic conditions, measured by GDP [4]. Factors that influence include human resources, natural resources, technology, inflation, interest rates, and social culture. Several studies have stated that the money supply affects economic growth. When it increases, consumer purchasing power and business investment also increase, which drives demand and production [5]. Low interest rates also support investment and growth [6]. Conversely, high inflation can slow growth because it reduces investment interest, increases costs, and reduces the attractiveness of foreign direct investment [7].

Monetary policy plays a role in regulating the amount of money supply and interest rates for macroeconomic stability and real output growth [8]. In Keynes' view, expansionary monetary policy is needed during a recession to lower interest rates, increase money supply, and encourage consumption and investment [9]. Based on data

Mulyasari et al. [10], Indonesia's economic growth in the period 2006–2023 experienced fluctuations. From 2006 to 2019, growth was relatively stable between 4.63%–6.49%, with peaks in 2007 (6.35%) and 2011 (6.49%). COVID-19 caused an economic contraction in 2020 of -2.97%, before recovering to 3.7% (2021), 5.31% (2022), and 5.05% in 2023. The money supply continues to increase from IDR1,382.49 trillion in 2006 to IDR 8,824.74 trillion in 2023. This increase reflects economic expansion and monetary policy implemented by Bank Indonesia. The biggest spike occurred in 2020, where the money supply increased from IDR 6,136.78 trillion (2019) to IDR 6,905.93 trillion due to monetary easing policies during the pandemic.

The BI Rate interest rate has been adjusted along with the monetary policy approved by BI. In 2006, the BI Rate was at 9.75% and continued to decline to reach 3.5% in 2021. However, due to increasingly firm monetary policies to control inflation, the BI Rate rose to 5.5% in 2022 and 6% in 2023 [11]. The highest inflation was recorded in 2008 (11.06%) due to the global financial crisis, and the lowest in 2020 (1.68%) due to weak domestic demand. After rising to 5.51% in 2022 due to rising energy and food prices, inflation fell to 2.61% in 2023 [12]. The money supply has a major influence on economic growth, according to several empirical studies. Changes in real GDP can affect the available money supply, creating an important causal relationship [13]. Effective money supply management can drive GDP per capita growth and economic stability [14]. Interest rates also affect economic growth and inflation. An increase in interest rates tends to depress economic growth. There is a causal relationship between historical price levels, interest rates, and real GDP that trigger economic fluctuations [15]. Inflation affects people's purchasing power and economic stability Ha et al. [16], where moderate inflation can boost growth, but high inflation tends to reduce purchasing power and trigger instability [17]. Further studies on the impact of money supply, interest rates, and inflation on economic development would be very interesting, given the importance of understanding how these three variables affect GDP growth.

## 2. Method

This study uses a quantitative approach to examine the impact of independent variables on dependent variables. This study focuses on Indonesia, covering an 18-year period from 2006 to 2023. Studies of relevant documents and data from several sources, including BPS and BI, were used to collect data. Documents, including publications from BPS and BI, and literature reviews, including academic books, reports, and articles, are the data collection methods. Time series data for 18 years are used in this study. The variables in this study include the dependent variable of Indonesia's economic growth and three independent variables of money supply, interest rates, and inflation in Indonesia. The studies used in this study include multiple linear regression, classical assumption testing, and statistical tests such as the T-test and F-test.

## 3. Results and Discussion

### 3.1 Classical assumption test results

The results of the multicollinearity test can be seen in Table 1.

**Table 1. Multicollinearity Test Results**

| Variable | Coefficient Variance | Uncentered VIF | Centered VIF |
|---|---|---|---|
| $Log_{jub}$ | O.181270 | 1886.299 | 2.571829 |
| $Log_{BIRATE}$ | 0.777112 | 114.9143 | 2.997015 |
| $Log_{IHK}$ | 0.150128 | 15.49682 | 1.925944 |
| C | 57.81501 | 2602.279 | NA |

The multicollinearity test describes that the variables of money supply, interest rates, and inflation have a correlation value of less than 10, as determined by the VIF value, so that based on the results of the multicollinearity test, it can be said that the variables used are free from multicollinearity problems. Furthermore, the results of the Heteroscedasticity Test can be seen in Table 2.

**Table 2. Heteroscedasticity Test Results**

| F-statistic | 0.401007 | Prob. F(3.14) | 0.7545 |
|---|---|---|---|
| Obs*R-squared | 1.424349 | Prob. Chi-Square (3) | 0.6998 |
| Scaled Explained SS | 0.596635 | Prob. Chi-Square (3) | 0.8972 |

The findings of the heteroscedasticity test above using Breusch-Pagan-Godfrey, can be seen that the probability score is 0.6998 or 69.98% superior to 0.05 (0.6998>0.05), the conclusion is that there are no symptoms of heteroscedasticity in the model used. Then the results of the autocorrelation test can be seen in Table 3.

**Table 3. Autocorrelation Test Results**

| Variable | Coefficient | Std Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LOGJUB | -0.378851 | 0.425758 | -0.889828 | 0.3886 |
| LOGBIRATE | -0.019513 | 0.881539 | -0.022135 | 0.9827 |
| LOGIHK | 0.898360 | 0.387464 | 2.318563 | 0.0361 |
| C | 9.722182 | 7.603618 | 1.278626 | 0.2218 |

The probability value is 0.0890, which is 8.90% higher than 0.05, based on the findings of the autocorrelation test conducted using the Breusch-Godfrey method. Thus, the model used does not contain autocorrelation. Meanwhile, the results of the normality test can be seen in Figure 1.
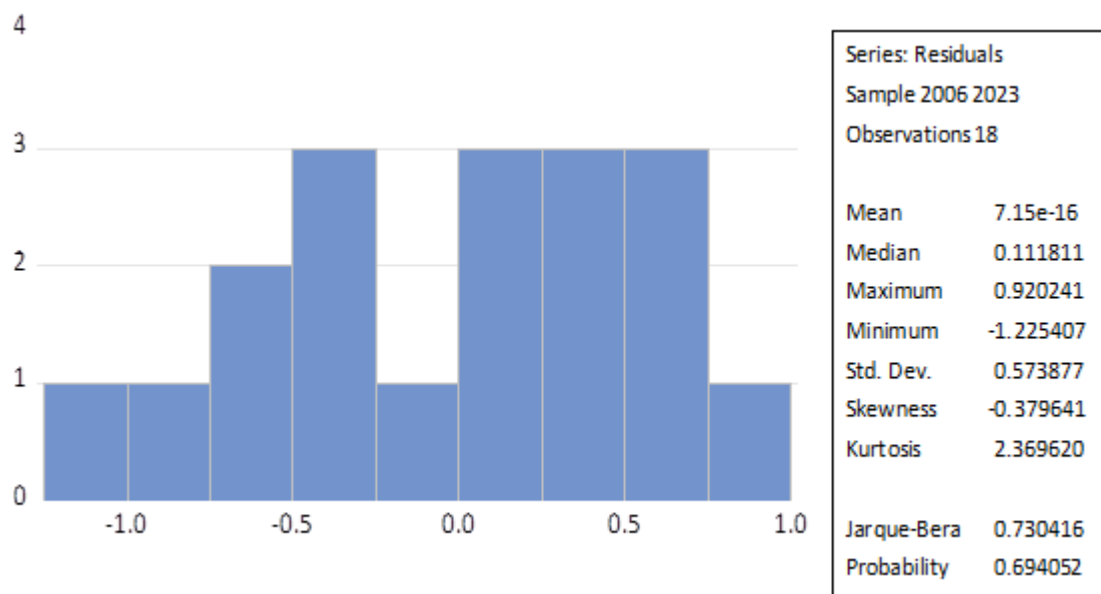


**Figure 1. Normality Test Results**

| Series: Residuals | |
|---|---|
| Sample 2006 2023 | |
| Observations 18 | |
| | |
| Mean | 7.15e-16 |
| Median | 0.111811 |
| Maximum | 0.920241 |
| Minimum | -1.225407 |
| Std. Dev. | 0.573877 |
| Skewness | -0.379641 |
| Kurtosis | 2.369620 |
| | |
| Jarque-Bera | 0.730416 |
| Probability | 0.694052 |

The Jarque-Bera probability value is 0.69, or 69% higher than 0.05, based on the findings of the previous normality test (0.69 > 0.05). Therefore, it can be stated that the model data follows a normal distribution.

### 3.2 Hypothesis Test Results

The results of the t-test describe the variable of the amount of money in circulation has a score of 0.3886>0.05 and the calculated t value of -0.889 describes the variable has no significant impact on the amount of money in circulation and is negative for economic development. Based on the findings obtained t table df = n-k (df = 1.761), thus because the calculated t value of -0.477 is smaller than the t table value of 1.761 (calculated t <t

table) thus accepting Ho and rejecting Ha, meaning that the money supply does not have a crucial impact and is not positive for economic development.

$$LogGDP = 9.722 - 0.378Log_{JUB} - 0.019Log_{BIRATE} + 0.898Log_{IHK} + e \qquad (1)$$

Based on the results of the t-test, birate does not have a significant impact on economic development; the calculated t value is -0.022, and its value is 0.9827, which is greater than the significance level of 0.05. Based on these findings, interest rates do not have a significant impact on economic development (null hypothesis is accepted) and the alternative hypothesis is rejected (t-count < t-table), because the t-table value of 1.761 is greater than the calculated t value of -0.022. With a t value of 2.318 and a probability value of 0.0361 > 0.05, the circulating inflation variable clearly has a positive and significant impact on economic development, based on the findings of the t test. Inflation significantly and positively impacts economic development, according to the data, because the calculated t score of 1.540 is greater than the t table value of 1.761 (calculated t value > t table value). This means that Ha is accepted and Ho is rejected.

**Figure 4. F and Coefficient Determination Test**

| R-squared | 0.559096 | Mean dependent var | 5.203889 |
|---|---|---|---|
| Adjusted R-squared | 0.464616 | S.D. depemdemt var | 0.864265 |
| S.E. Of regression | 0.632382 | Akaike info criterion | 2.114484 |
| Sum squared resid | 5.598700 | Scharz criterion | 2.312345 |
| Log likelihood | -15.03036 | Hannan-Quinn creter | 2.141766 |
| F-statistic | 5.917647 | Durbin-Watson srat | 1.530897 |
| Prob (F-statistic) | | 0.007970 | |

Economic development (Y) is influenced by independent variables of money supply (X1), interest rates (X2), and inflation (X3) simultaneously, as the probability value (f statistic) is 0.00 < 0.05 or 5.917 > 3.340, based on data analysis. The R-squared result of 0.559 (55.9%) describes independent variables such as money supply, interest rates, and inflation explaining 55.9% of the variation in economic development. Meanwhile, the remaining 44.1% is explained by several other factors not analyzed in the model.

## 3.3 Discussion

### 3.3.1 The influence of the Amount of Money in Circulation on Economic Growth

With a significance level of 0.388 (greater than the threshold of 0.05) and a coefficient value of -0.378, this study shows that money supply and GDP growth have no statistical correlation. Increasing the money supply and maintaining sufficient liquidity are two main pillars that support economic development. On the other hand, the economy can experience pressure if the money supply grows at an excessive rate. Price stability can be disrupted by changes in the money supply. Inflation occurs when the increase in the money supply and output are not in line. The value of the rupiah decreases when the money supply is too high compared to transaction demand, because this can trigger currency speculation. Conversely, if production increases faster than the growth in the amount of money, deflation can occur which has an impact on reducing the income of business actors and has a negative impact on economic growth.

The results of this study support the findings of Simmons et al. [18], which illustrates that an increase or decrease in the amount of money in circulation significantly slows down economic growth [19]. Likewise, Hobbs et al. [20] found that there was no correlation between money supply and economic development. Money supply (M2) has a negative but small effect on Indonesia's economic development, according to another study by Sæbø et al. [21]. This effect is seen well in both low and high periods and

Hidayat's research Sijabat [22] which states that the amount of money in circulation has a negative effect on economic growth.

### 3.3.2  The effect of Interest Rates on Economic Growth

According to the findings of this study, interest rates have a negative but insignificant effect on economic development with a coefficient value of -0.019, because the significance value is 0.9827, which is higher than the significance level of 0.05. Investment determines interest rates; increased investment drives economic expansion during periods of low interest rates. On the other hand, high interest rates discourage investment and slow economic growth. Hasan et al. [23] found that interest rates hinder economic progress, and the researcher's analysis supports his conclusion. The study by Oanh et al. [24] confirmed the negative correlation between interest rates and GDP. Based on a study by Suhendra et al. [25], interest rates have a small but detrimental impact on economic development in Indonesia.

### 3.3.3  The Effect of Inflation on Economic Growth

The study shows that inflation has a positive and statistically significant impact on GDP growth ($p = 0.0361$, less than 0.05, and a coefficient of 0.898), thereby contributing to overall economic expansion. The AD and AS curves, which are part of the Keynesian model, illustrate the correlation between inflation and economic development. In short, there are various factors that can affect the rate of inflation and output, such as changes in expectations, labor market conditions, prices of production factors, and the monetary and fiscal policies implemented. The short-term AD and AS curves illustrate a positive correlation between inflation and economic growth, where an increase in inflation is often accompanied by an increase in the level of economic output.

Not all inflation has a negative impact on the economy, especially if it is below 10 percent. In recent years, inflation in Indonesia has been moderate because it remains below that limit. In fact, small amounts of inflation can be a driver of economic growth. This is because inflation encourages business actors to increase production in order to gain greater profits from price increases. The increase in output then has an impact on the creation of new jobs. However, if the inflation rate exceeds 10 percent, it can actually have a negative impact on the economy. This study is in line with the theory implemented by Ahmad et al. [26] which describes inflation as having a positive and crucial impact on economic growth. Likewise with the research conducted by Tawiah et al. [27] which states that economic growth is positively influenced and crucial for economic development.

## 4.  Conclusion

Based on the results of the analysis of the influence of the amount of money in circulation, interest rates, and inflation on economic growth in Indonesia, the following conclusions were obtained: (a) the amount of money in circulation has a negative and insignificant effect on economic growth, with a significance value of 0.388 (> 0.05) and a coefficient of --0.378. (b) Interest rates have a negative and insignificant effect on economic growth, with a significance value of 0.9827 (> 0.05) and a coefficient of -0.019. (c) Inflation shows a positive and significant influence on economic growth, with a significance value of 0.0361 (< 0.05) and a coefficient of 0.898. Other factors that influence economic development, such as investment, unemployment rate, exchange rate, government spending, and household consumption expenditure, should be included.

## 5. Acknowledgments

I would like to extend my sincere gratitude and appreciation to Universitas Mataram for it invaluable contributions and support throughout this research endeavour. Her dedication, insights, and expertise have been instrumental in shaping the outcomes of this study. I am deeply thankful for her guidance, encouragement, and unwavering commitment to excellence, which have significantly enriched the quality and depth of this research.

## 6. Declaration

**Author contributions and responsibilities -** The authors made major contributions to the conception and design of the study. The authors took responsibility for data analysis, interpretation and discussion of results. The authors read and approved the final manuscript.

**Funding** - This research did not receive external funding.
**Availability of data and materials -** All data is available from the author.
**Competing interests -** The authors declare no competing interests.
**Did you use generative AI to write this manuscript? -** I do not use AI assistance in my manuscript.
**Declaration of generative AI and AI-assisted technologies in the writing process -** During the preparation of this work the author did not use AI to write, edit, or other things related to the manuscript.

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