

## THE IMPACT AND CORRELATION BETWEEN INFLATION, INTEREST RATES, AND ECONOMIC GROWTH IN INDONESIA: A FIVE-YEAR EXAMINATION (2019-2023)

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**Abstract:** This study aims to investigate the influence of inflation and interest rates on Indonesia's economic growth. Employing a quantitative approach with the OLS regression technique, the study uncovers a significant relationship between inflation and economic growth. While high inflation can stimulate aggregate demand, boost investment, and drive economic expansion, it can also lead to economic uncertainty, erode household purchasing power, and hinder economic progress. Similarly, the study reveals a substantial impact of interest rates on economic growth. Low interest rates can encourage investment, enhance consumption, and propel economic growth. However, they can also trigger inflation, depreciate the exchange rate, and heighten the risk of financial crises.

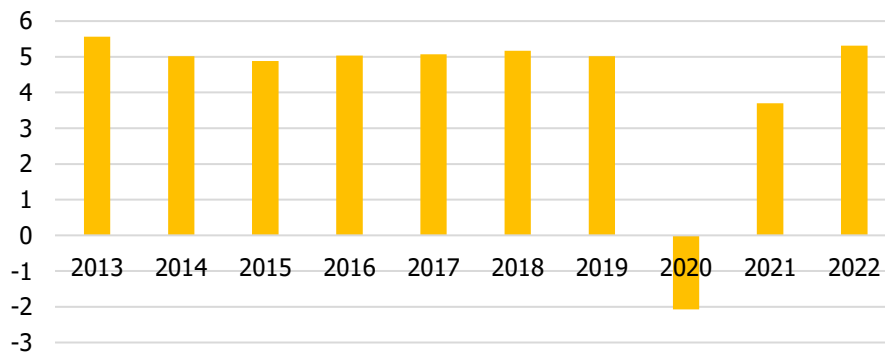
**Keywords:** Inflation, Interest Rates, Economic Growth, Indonesia, OLS Regression

**Abstrak:** Penelitian ini bertujuan untuk menyelidiki pengaruh inflasi dan suku bunga terhadap pertumbuhan ekonomi Indonesia. Dengan menggunakan pendekatan kuantitatif dengan teknik regresi OLS, studi ini menemukan hubungan yang signifikan antara inflasi dan pertumbuhan ekonomi. Meskipun inflasi yang tinggi dapat menstimulasi permintaan agregat, mendorong investasi, dan mendorong ekspansi ekonomi, inflasi juga dapat menimbulkan ketidakpastian ekonomi, mengikis daya beli rumah tangga, dan menghambat pertumbuhan ekonomi. Demikian pula, penelitian ini mengungkapkan dampak substansial dari suku bunga terhadap pertumbuhan ekonomi. Suku bunga yang rendah dapat mendorong investasi, meningkatkan konsumsi, dan mendorong pertumbuhan ekonomi. Namun, suku bunga rendah juga dapat memicu inflasi, mendepresiasi nilai tukar, dan meningkatkan risiko krisis keuangan.

**Kata Kunci:** Inflasi, Suku Bunga, Pertumbuhan Ekonomi, Indonesia, Regresi OLS

## 1. INTRODUCTION

A strong correlation exists between community welfare and economic growth. This demonstrates that the standard of living of a nation's citizens can serve as a metric for assessing the state of its economy. Developed nations typically exhibit a superior standard of community welfare, which is distinguished by the presence of proficient human capital in the administration of accessible natural resources. As stated by Indriyani (2016). Economic development denotes a state within an economic system distinguished by expanded capacities for production. To quantify the economic growth of a nation, one uses its Gross Domestic Product (GDP). The GDP of a nation serves as an indicator of the state of its economic sectors and a measure of the nation's effectiveness or ineffectiveness in economic management. The Gross Domestic Product (GDP) is a significant metric utilized to assess the economic performance of a nation. A rise in GDP signifies favorable economic expansion, whereas a decline in GDP suggests a deceleration or potentially a recession.



Sources: Central Statistics Agency (BPS)

**Figure 1. Indonesian GDP Growth**

Based on data from the Central Statistics Agency (BPS), Indonesia's economic growth in 2022 (year on year) reached 5.31%. This figure is higher than the economic growth in 2021 which only reached 3.70%. Indonesia's economic growth in 2022 is the highest achievement since 2013, which reached 5.56%. The high economic growth in 2022 was supported by an increase in the percentage of exports (16.28%) and imports (14.75%). Indonesia economy in 2022 was calculated based on Gross Domestic Product (GDP) at current prices which reached IDR 19,588.4 trillion. GDP per capita reached IDR 71.0 million or US\$ 4,783.9. Indonesia's GDP growth since 2016 has shown a fluctuating trend. In 2016, growth reached 5.03%. The increase occurred in 2017 which reached 5.07%, 2018 amounted to 5.17%, and 2019 experienced a decline so that economic growth was only 5.02%. The economic growth rate fell sharply to a result of -2.07% in 2020. This is due to the Covid-19 pandemic and social restrictions that have limited economic activity in Indonesia. Although still in pandemic conditions, Indonesia's economic growth has increased, reaching 3.70% in 2021. The effectiveness of a country in overcoming economic problems can be analyzed through a review of the country's macroeconomic and microeconomic indicators. Macroeconomics is a branch of science that studies broad economic

phenomena within the scope of a country. Inflation, one of the macroeconomic indicators, serves as a measure of economic stability that has implications for the country's economic growth rate Kalsum (2017). The overall growth rate in the cost of goods and services during a specific period is known as inflation. Excessive inflation can lower aggregate demand and weaken people's purchasing power, which reduces GDP. Although inflation is frequently linked to negative effects, it's crucial to realize that not all are harmful. When inflation is under 10%, it can stimulate economic growth by motivating business owners to raise output. This is so that business owners can profit more from growing pricing. It should be remembered, nevertheless, that high levels of economic activity can result in increased inflation. The prices of products and services increase with the pace of inflation. Over 10% inflation is typically classified as detrimental to the economy (Sukirno, 2012: 327).

According to Milton Friedman, inflation is a catalyst for excessive economic expansion. This results in a suppression of manufacturing operations and a rise in production expenses. Moreover, the increase in production expenses incentivizes the redirection of investment towards the non-productive sector, ultimately leading to a decrease in a nation's economic activity. Ardiansyah (2017) The interest rate is a significant determinant of economic growth in countries, including Indonesia. Inflation leads to a loss in people's purchasing power and a rise in the cost of living. In response to this, the central bank takes action by adopting monetary policy, namely by increasing interest rates. An anticipated rise in interest rates is likely to incentivize investors to allocate their funds to fixed-income securities. Astuty and Rizqia, in the year 2021, Interest rates are the charges imposed for the act of borrowing money. Elevated interest rates can escalate the cost of investment and consumption, leading to a decline in GDP. In addition to inflation, interest rates also have a significant impact on economic growth. Interest rates can be defined as the financial return generated from the act of saving money. High interest rates incentivize people to augment their savings due to the larger potential income that may be derived from saving. Conversely, when interest rates are low, there is a tendency for the inclination to save to diminish. The reason for this is that the income generated from saving is relatively insignificant, leading households to prioritize increasing spending rather than saving.

Sukirno (2012:74) states that when interest rates are low, individuals tend to raise their consumer expenditures. While this policy may stimulate immediate economic expansion, it also carries the potential for long-term inflationary consequences. Inflation and interest rates are widely recognized as key determinants of a country's economic growth. It is commonly considered that an escalation in population growth and improvements in people's standard of living positively impact the rate of economic growth. Conversely, elevated inflation might diminish rates of economic growth. This is because the possibility of significant inflation can diminish investors' attraction to specific industries. Consequently, the country experiences economic instability, a decline in public welfare, and a deficit in its balance of payments, all of which can hinder economic growth. The study was conducted by Ambarwati et al. in

2021. Therefore, this study aims to analyze the influence and relationship of inflation, interest rates on economic growth in Indonesia.

## 2. LITERATURE REVIEW

### **Inflation**

An analysis of the correlation between inflation and economic growth in Indonesia from 2000 to 2018. Authored by Suryani in the year 2019. This study utilizes panel data collected from 34 provinces in Indonesia spanning the years 2000 to 2018. The findings indicated a negative correlation between inflation and economic growth in Indonesia. High inflation can impede economic growth through various means, including: augmenting economic uncertainty, diminishing individuals' purchasing power, and elevating interest rates. Olanrewaju et al. (2020) conducted a study that utilized time series data from Nigeria spanning the years 1986 to 2018. The findings indicated a quadratic correlation between inflation and economic growth in Nigeria. To clarify, moderate inflation has the potential to stimulate economic growth, whereas excessive inflation, defined as over 10%, might impede economic growth. Bruno et al. (2016) found that there is an inverse correlation between inflation and economic growth in Latin American nations. Safitriyana, graduating in 2023. The findings indicated a detrimental correlation between inflation and interest rates with economic growth in Indonesia. Elevated inflation and elevated interest rates can impede economic expansion. According to Agbakoba et al. (2022), there is an inverse correlation between inflation and economic growth in sub-Saharan African countries. Hypothesis 1: Inflation has an impact on the economic growth of Indonesia.

### **Interest Rate**

Anwar (2016) examines the impact of interest rates on economic growth in Indonesia. This study utilizes panel data collected from 33 provinces in Indonesia spanning the years 1995 to 2014. The findings indicated a strong inverse correlation between time deposit interest rates and economic growth. An escalation in the time deposit interest rate will impede economic progress. Siregar (2018) found that there is a strong negative correlation between the SBI interest rate and economic growth, based on the results of his research. Consequently, a rise in SBI interest rates will impede economic expansion. Setiawan, in the year 2019. The findings indicate a detrimental, enduring correlation between SBI interest rates and economic growth. Consequently, a rise in SBI interest rates over an extended period will impede economic expansion. Arifin's work was published in 2020. The findings indicate that the interest rate of the State Bank of India (SBI) has a substantial adverse effect on the short-term economic growth. Nevertheless, the influence of the SBI interest rate on economic growth over an extended period is not substantial. Ramadhani, in the year 2021. This study utilizes panel data collected from 34 provinces in Indonesia over the period from 2010 to 2019. The findings indicated a substantial inverse correlation between the interest rate on time deposits and economic growth.

Hypothesis 2: Inflation has an impact on the economic growth of Indonesia.

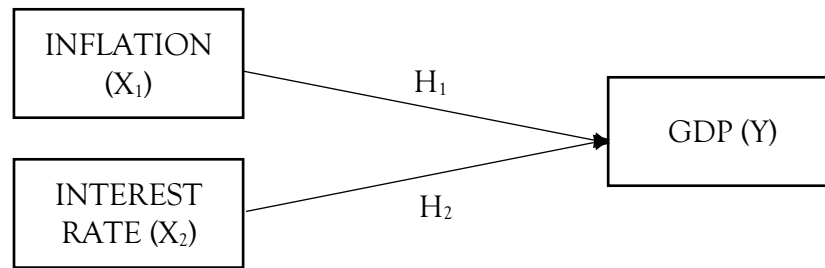


Figure 2. Research Model

### 3. RESEARCH METHODS

This study employed a quantitative methodology. Quantitative research is defined by Creswell (2012) as a type of research methodology that involves the collecting of numerical data, statistical analysis, and the objective interpretation of findings. Additionally, Creswell emphasizes that the goals of quantitative research are to describe correlations between variables, test hypotheses, and draw generalizations. Sugiyono (2019) defines quantitative research as a positivist-based research methodology that use scientific techniques to provide tangible, objective, quantifiable, logical, and systematic data. Multiple regression is a statistical tool employed in this study's analysis to ascertain the association between one dependent variable—GDP (Y)—and two or more independent variables (Inflation X1, Interest rates X2). The following is the multiple regression formula:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$$

Notes:

- Y is PDB
- $\alpha$  is constanta
- $\beta_1, \beta_2$ , regression coefficient for independent variabel X1, X2.
- X1, X2, inflation and Interest rate
- $\varepsilon$  is galat

Potential sampling was employed by the researchers to select time series data spanning the years 2019 to 2023. Thompson (2012) defines probability sampling as a sampling technique wherein every individual in the population has an equivalent opportunity of being chosen as a sample. Thus, the sample is guaranteed to be representative of the entire population.

### 4. RESULTS AND DISCUSSION

#### Normality Test

Sugiyono (2017) states that the normality test is employed to determine whether the research variables exhibit a normal distribution or not. The One-Sample Kolmogorov-Smirnov (K-S) Normality Test is a statistical technique employed to determine if a dataset is derived from a normal distribution. The study finds that the

variables of inflation, interest rates, and GDP follow a normal distribution, with a p-value greater than 0.05.

**Table 1. Normality Test**

		Unstandardized Residual
N		62
Normal Parameters <sup>a,b</sup>	Mean	.0000000
	Std. Deviation	254.18460437
Most Extreme Differences	Absolute	.207
	Positive	.134
	Negative	-.207
Asymp. Sig. (2-tailed) <sup>c</sup>		.207
a. Test distribution is Normal.		
b. Calculated from data.		

*Source: Data processed by researchers*

### Multicollinearity Test

According to Ghozali (2005), multicollinearity occurs when the regression model's independent variables have a strong correlation. Hair et al. (2010) define multicollinearity as a strong linear relationship between the independent variables in a regression model. If the VIF score is less than 10.00, it indicates no multicollinearity.

**Table 2. Multicollinearity Test**

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	SUKU_BUNGA	.989	1.011
	INFLASI	.989	1.011
a. Dependent Variable: PDB			

*Source: Data processed by researchers*

### Heteroscedasticity Test

Heteroscedasticity is a situation where the error variance in the regression model is not constant for all values of the independent variable. For inflation (X1) and interest rate (X2) variables, a significant value > 0.05 does not occur symptoms of heteroscedasticity.

**Table 3. Heteroscedasticity test**

Model		t	Sig.
1	(Constant)	.328	.744
	SUKU_BUNGA	.454	.651
	INFLASI	.314	.755
a. Dependent Variable: ABS_Res			

*Source: Data processed by researchers*

### Multiple Linear Regression Analysis

Multiple linear regression studies aim to measure the strength and relationship between several independent variables and the dependent variable, as explained by Ghozali (2018).

**Table 4. Multiple Linear Regression Analysis**

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	60.643	184.705	
	SUKU_BUNGA	16.603	36.543	.059
	INFLASI	.154	.492	.041

*Source: Data processed by researchers*

Based on table 4, the multiple regression equation can be described as follows:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + e$$

$$= 184.705 + 16.603 + 0.154 + e$$

1. The constant (a) has a positive value of 184.705 trillion. This demonstrates a one-way relationship between the independent variables (Inflation and Interest Rate) and the dependent variable (GDP). Assuming that both inflation and interest rates are at 0%, it is projected that the GDP will reach 60,643 trillion.
2. The regression coefficient of Inflation (X1) is 0.154, indicating a one-way link. This implies that if inflation increases by 1%, GDP will increase by 0.154 points, provided all other factors remain unchanged.
3. The regression coefficient of Interest Rate (X2) is 16.603, indicating a unidirectional link. This implies that a 1% rise in interest rates will result in a 16.603-point increase in GDP, provided all other factors remain same.

### Coefficient of Determination (R<sup>2</sup>)

This study employs the coefficient of determination (R<sup>2</sup>) as a metric to quantify the degree of correlation between the independent variable and the dependent variable. The analysis was performed utilising the SPSS programme. The analysis yielded the following findings:

**Table 5. Coefficient of Determination (R<sup>2</sup>)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics
					R Square Change
1	.068 <sup>a</sup>	.005	.229	25845691	.005
a. Predictors: (Constant), INFLASI, SUKU_BUNGA					
b. Dependent Variable: PDB					

*Source: Data processed by researchers*

The analysis of the coefficient of determination (Adjusted R Square) in Table 5 reveals a value of 0.299. The data suggests that the combination of the Inflation and Interest Rate variables accounts for 29.9% of the observed changes in GDP. The remaining 70.1% of the fluctuation in GDP is attributed to factors that were not considered in this study model.

### Simultaneous Test (F-test)

The F test can be used to assess the statistical significance of the collective impact of the independent variables on the dependent variable. The study employs a significance level of  $\alpha = 0.05$ . If the p-value is less than 0.05, it can be inferred that there is a statistically significant impact of the independent variable on the dependent variable.

**Table 6. Simultaneous Test (F-test)**

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	18.541.288	2	9.270.644	.139	.001 <sup>b</sup>
	Residual	3.941.198.599	59	66.799.976		
	Total	3.959.739.887	61			
a. Dependent Variable: PDB						
b. Predictors: (Constant), INFLASI, SUKU_BUNGA						

*Source: Data processed by researchers*

Table 6 provides evidence to support the rejection of H<sub>0</sub> and the acceptance of H<sub>1</sub>. The obtained significance value is 0.001, which is less than the threshold of 0.05. Therefore, it may be inferred that this multiple regression model is viable for application, and the independent variables, namely inflation and interest rates, exert a concurrent impact on the dependent variable, GDP.

### Partial Test (t-test)

The table displays the results of hypothesis testing using a T test. It indicates that the inflation variable has a significance value of 0.001, which is less than the threshold of 0.05. This demonstrates that the inflation variable exerts an impact on GDP. The interest rate variable has a significance value of 0.003, which is less than the threshold of 0.05. This suggests that interest rates have a statistically significant impact on GDP.



**Table 7. Partial Test (t-test)**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	60.643	184.705		.328	.004
SUKU_BUNGA	16.603	36.543	.059	.454	.001
INFLASI	.154	.492	.041	.314	.003

*Source: Data processed by researchers*

Hypothesis 1 (Inflation to GDP) yielded a statistically significant value of 0.001, which is below the threshold of 0.05. This demonstrates the acceptance of Hypothesis 1. The impact of inflation on GDP is both positive and substantial, as demonstrated by Blanchard & Quah's (2003) research, which revealed that elevated inflation levels can impede GDP development in developed nations. This is a result of the adverse impact of inflation on financial markets and household consumption. Research conducted by Benigno et al. (2015) supports the notion that high inflation has a substantial negative impact on GDP growth. According to Keynesian theory, inflation can positively influence GDP, particularly in economies with unused resources (like unemployed labor and idle capital). Moderate inflation encourages spending and investment rather than saving, as people and firms expect prices to rise over time. Inflation can reduce the real burden of debt, as borrowers repay loans with "cheaper" money. This debt relief encourages more borrowing and spending, fueling further economic expansion. While moderate inflation may support GDP growth, high or hyperinflation can destabilize economies. Excessive inflation erodes purchasing power, leads to uncertainty, and can discourage investment. Economists generally agree that inflation beyond a certain threshold (e.g., 3-4%) starts to hinder GDP growth by increasing uncertainty, reducing savings, and creating market inefficiencies. as demonstrated by Blanchard & Quah's (2003) research, which revealed that elevated inflation levels can impede GDP development in developed nations. This is a result of the adverse impact of inflation on financial markets and household consumption. Research conducted by Benigno et al. (2015) supports the notion that high inflation has a substantial negative impact on GDP growth.

Based on the statistically significant finding of  $0.003 < 0.05$ , Hypothesis 2 suggests that there is a relationship between the interest rate and GDP. These results indicate that Hypothesis 2 has been confirmed. Interest rates exert a substantial and beneficial impact on GDP. When interest rates are low, borrowing becomes cheaper. This encourages both consumers and businesses to take out loans for spending and investment purposes. Lower rates on personal loans, mortgages, and credit make it easier for individuals to purchase high-cost items like homes and cars, increasing demand across various sectors. This demand drives production, creating jobs, raising incomes, and, ultimately, boosting GDP. Businesses are also more likely to take advantage of low-interest rates to finance expansion, invest in new technologies, and increase production capacity. These investments contribute directly to GDP by

increasing the total value of goods and services produced. According to Keynesian economics in Monetary Theory and Aggregate Demand lowering interest rates is an effective monetary policy tool for stimulating aggregate demand in an economy, which can raise GDP, especially in times of economic stagnation or recession.

By lowering interest rates, central banks encourage spending over saving. As aggregate demand rises, businesses respond by increasing output, hiring more workers, and raising wages, all of which positively affect GDP. Lower interest rates can also positively impact asset prices, such as stocks and real estate, as investors shift their funds from low-yield savings to higher-return assets. This can lead to increased household wealth, which boosts consumer confidence and spending. Increased spending due to the wealth effect further stimulates production and GDP growth. Lower interest rates can lead to a depreciation of the national currency, making exports cheaper for foreign buyers. This can increase demand for domestically produced goods abroad, supporting growth in export-oriented sectors. Increased exports contribute directly to GDP, as they are part of the calculation of national output. Sustained low-interest rates make it more attractive for companies to invest in long-term projects and capital improvements, such as infrastructure, research and development, and technology upgrades. These investments improve productivity, which can enhance the economy's potential growth rate and GDP over time.

When interest rates increase, borrowing becomes more expensive for consumers. Mortgages, car loans, credit card interest, and personal loans all carry higher monthly payments, reducing disposable income for households. With less disposable income, consumers reduce spending on goods and services, which directly decreases demand in the economy. Since consumer spending is a major component of GDP, this reduction can lead to a slower growth rate or even a contraction in GDP. Higher interest rates make mortgages more expensive, which can lower demand for new homes and reduce activity in the real estate sector. The housing market influences many sectors (e.g., construction, manufacturing, and retail), so a slowdown in housing can have a broader negative impact on GDP. According to Agresti et al.'s (2019) research, an upward movement in short-term interest rates can have a negative impact on GDP growth, particularly in emerging nations. According to a study conducted by Kose et al. (2022), analysing the influence of worldwide interest rates on the gross domestic product (GDP) of 183 nations from 1970 to 2020 reveals that simultaneous rises in global interest rates can have a substantial negative impact on global GDP growth. Berginski et al. (2021) demonstrated that implementing a consistent interest rate policy can effectively bolster sustained economic growth as measured by the Gross Domestic Product (GDP). According to Farhi et al. (2022), the most effective interest rate for maximising GDP growth differs based on the economic realities of each country. Interest rates, when managed to balance economic conditions, can stimulate GDP growth by encouraging consumer spending, supporting business investment, and making exports more competitive. By understanding and adjusting interest rates, policymakers can promote an economic environment that supports sustained and beneficial GDP growth. Higher interest rates have a negative impact on GDP through

reduced consumer spending, lower business investment, decreased housing demand, and a stronger domestic currency. Each of these factors decreases aggregate demand, which in turn, lowers GDP growth. This impact underscores why central banks often lower interest rates during economic slowdowns to stimulate growth and why they increase rates when aiming to cool down an overheated economy.

## 5. CONCLUSION

This study established a notable correlation between inflation, interest rates, and GDP. The influence of inflation and interest rates on economic growth is manifested by their effect on GDP. The R<sup>2</sup> score of 0.229 implies that the dependent variable accounts for 22.9% of the variation in the independent variables. Furthermore, factors outside the model account for 77.1% of the variance in all independent variables. For future research, it is advisable to broaden the scope of independent variables examined, include additional elements that may have an impact on economic growth, such as unemployment and other relevant variables.

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