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The influence of fiscal policy and monetary policy on the Indonesian Economy

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Abstract. This study aims to analyze the impact of taxes, the BI Rate, and inflation on GDP in Indonesia. Based on the regression analysis, it was found that taxes have a positive impact on GDP with a coefficient of 0.429, indicating that every 1 percent increase in taxes can increase GDP by 0.429 percent. This finding is consistent with Keynesian theory, which suggests that taxes can be used as a fiscal policy instrument to influence the economy. Meanwhile, the BI Rate has a negative impact on GDP with a coefficient of -0.011, indicating that every 1 percent increase in the interest rate can decrease GDP by 0.011 percent. This supports the monetary theory that higher interest rates tend to reduce investment and consumption, ultimately leading to a decrease in GDP. Inflation, on the other hand, does not show a significant impact on GDP in this study, with a significance value of 0.340, which is greater than 0.05. This finding contradicts classical economic theory, which regards inflation as a factor that hinders economic growth. This study provides an overview that appropriate fiscal and monetary policies can influence economic growth, while the impact of inflation on GDP is more complex and depends on other factors.
Keywords. Taxes, BI Rate, Inflation, GDP, Indonesian Economy
JEL. B25; G20; J71; N32; P16.

1. Introduction

Fiscal policy is a vital tool for regulating macroeconomic activities, alongside monetary policy. These two policies are often used together to ensure economic stability and foster growth. In times of economic stagnation, expansive fiscal policy—such as increased government spending or tax cuts—can help boost aggregate demand, leading to higher income levels and lower unemployment rates. This, in turn, can drive the economy toward a level of income that ensures full employment. Conversely, in situations where the economy is overheated due to excessive aggregate demand, contractionary fiscal policies, such as reducing government spending or increasing taxes, can help balance the economy by controlling inflation and demand.

At its core, fiscal policy refers to the government's actions to influence economic activity, using tools such as taxes (T), government transfers (Tr), and government spending (G). As noted by economists like Mankiw (2003) and Turnovsky (1981), fiscal policy is a powerful mechanism for managing and directing an economy. Romer (2001) emphasizes that fiscal policy is executed through the State Budget (APBN), which directly influences a nation's

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economy. Broadly, fiscal policy is focused on managing the national revenue and expenditure in a way that supports economic objectives.

In addition to stabilizing the economy, fiscal policy plays a crucial role in driving economic growth by managing public finances to support various sectors of the economy, such as production, consumption, investment, and job creation. Keynes highlighted two major approaches to fiscal policy: the income approach, which focuses on taxes, and the expenditure approach, which focuses on government spending.

Meanwhile, monetary policy plays an essential role in achieving both internal and external balance in the macroeconomy. Its objectives include maintaining price stability, fostering employment, and ensuring balance in international payments. Monetary policy can be employed to address economic disruptions and restore stability. Sustainable economic growth is often used as an indicator to measure the success of a country's economic development.

Taxes, a key component of fiscal policy, provide the state with the revenue needed to finance public services and welfare. Taxes also serve as an economic stabilizer, helping regulate economic cycles. These tax revenues fund both routine government spending and developmental projects. According to theories from economists like Rostow and Musgrave, government expenditure evolves with different stages of economic development, from infrastructure and basic services in the early stages to a more balanced involvement of private and public sectors as economies grow.

Monetary policy includes the regulation of interest rates, which plays a key role in managing the money supply within an economy. The goal is to foster economic growth. A higher interest rate leads to a reduction in the money supply, while a lower interest rate results in an increase in the money supply. In this context, the BI Rate is the key interest rate used by the central bank. By adjusting the BI Rate, the central bank can influence the economy through monetary expansion or contraction. Additionally, Bank Indonesia, as the country's monetary authority, uses monetary policy to manage interest rates and money supply to meet broader economic goals, such as controlling inflation and ensuring exchange rate stability. This policy can also be adapted to address shifts in the economy, like rising inflation or reduced demand, both of which affect economic growth. For instance, reducing interest rates can encourage more investment and spending, while increasing them can help curb inflation.

These two policy areas—monetary and fiscal—are closely linked and can influence one another. For instance, higher tax revenue may lead to inflation, which in turn affects monetary policy decisions. On the flip side, high interest rates can reduce consumer spending and investment, impacting tax revenues and government expenditures.

Table 1. *Gross Domestic Product (GDP), Tax Revenue, Government Expenditure, Inflation, and Interest Rates in Indonesia from 2019-2023*

Year	GDP(in IDR)	Tax Revenue (in IDR)	Rate (%)	Inflation (%)
2019	109491554	154614190	5	2.72
2020	107229993	128513632	3.75	1.68
2021	111200779	154784110	3.5	1.87
2022	117103978	205452250	3.5	5.51
2023	1230139360	211834800	6	2.61

Thus, effective coordination between fiscal and monetary policies is essential for maintaining a stable and sustainable economy. Table I provides data on Indonesia's GDP, tax revenue, inflation, and interest rates from 2019 to 2023.

The table above presents data on several key economic indicators of Indonesia from 2019 to 2023, including Gross Domestic Product (GDP), tax revenue, the BI rate (Bank Indonesia interest rate), and inflation rate. Below is an explanation of each of these variables:

GDP (Gross Domestic Product) reflects the total value of goods and services produced in a country over a specific period. In the table, we observe a steady growth in Indonesia's GDP from 2019 to 2023. In 2019, Indonesia's GDP was recorded at 109.49 trillion IDR, and it increased each year, reaching 1,230.14 trillion IDR in 2023. This indicates a significant growth in the economy during this period.

Tax Revenue represents the total income the government collects from taxes paid by individuals, companies, and other entities. Tax revenue in Indonesia shows fluctuations. In 2019, tax revenue amounted to 154.61 trillion IDR, then decreased in 2020 to 128.51 trillion IDR, likely due to the economic impact of the COVID-19 pandemic. However, tax revenue rebounded in the following years, reaching 211.83 trillion IDR by 2023.

BI Rate (Bank Indonesia Interest Rate) is the reference interest rate set by Bank Indonesia, which influences banking activities and economic conditions. This rate is affected by various economic factors, such as inflation and economic growth. In 2019, the BI rate was 5%, then decreased to 3.75% in 2020 to support the sluggish economy due to the pandemic. The rate remained stable at 3.5% in 2021 and 2022, and increased to 6% in 2023, reflecting Bank Indonesia's efforts to address rising inflation.

Inflation refers to the general increase in the prices of goods and services in an economy over a period. Controlled inflation indicates economic stability. In 2019, Indonesia experienced an inflation rate of 2.72%, which was relatively low. However, inflation decreased to 1.68% in 2020, reflecting the impact of the pandemic on lower aggregate demand. Inflation then increased to 5.51% in 2022, likely due to supply chain disruptions and high production costs. In 2023, inflation slightly decreased to 2.61%, although it was still relatively high compared to previous years.

Overall, this table illustrates the dynamics of Indonesia's economy during the period from 2019 to 2023, with fluctuations that reflect the influence of both internal and external factors, including the significant impact of the COVID-19 pandemic on these economic indicators.

2. Literature review

2.1. Economic growth theory

Economic growth is commonly understood as the rise in the total value of goods and services produced by a country over a specified period, frequently measured by Gross Domestic Product (GDP). According to economic growth theory, various factors can influence this growth, including fiscal and monetary policies. It serves as a primary indicator to evaluate a country's development. In classical economic growth theory, pioneered by Adam Smith and David Ricardo, the key determinants of economic growth include capital accumulation, labor force expansion, and the adoption of more efficient technologies. Later, Robert Solow's neoclassical growth theory incorporated

the role of technology in enhancing productivity and efficiency, which are essential for sustainable long-term growth (Mauro, 1995).

Both classical and neoclassical models emphasize the significance of capital and labor accumulation, alongside technological advancements, in driving growth. However, in modern economics, Keynesian theory underscores the impact of fiscal policy—including government spending and taxation—on stimulating aggregate demand and accelerating economic growth, particularly during recessions or crises (Blanchard, 2017). Moreover, central banks' management of monetary policy can affect interest rates and inflation, which in turn influence consumption, investment, and GDP growth.

In the context of macroeconomics, fiscal and monetary policies have garnered increasing attention as crucial drivers of economic growth. For instance, Keynesian theory advocates for active government intervention through increased public spending to stimulate demand during economic downturns, which can enhance production and GDP (Blanchard, 2017). Additionally, Paul Romer's endogenous growth model highlights the importance of innovation and greater investment in research and development (R&D) as critical factors in driving sustained economic growth (Romer, 1990).

2.2. Tax and their impact on GDP

Taxes play a vital role in a country's economic system, serving as a primary source of state revenue that finances various public expenditures such as infrastructure, healthcare, education, and defense. Beyond their function as a revenue stream, taxes also act as a tool of economic policy, influencing various aspects of social and economic life.

Taxes are a critical element of fiscal policy, affecting the purchasing power of both the public and businesses. They help regulate income distribution and have an impact on consumption and investment. Taxes are fundamental to financing development programs and overall economic activities within a country. Additionally, they significantly influence a country's economy, particularly in relation to Gross Domestic Product (GDP). GDP, a key indicator of economic performance, measures the total value of goods and services produced within a given period. According to Keynesian theory, higher taxes can reduce public purchasing power, limiting consumption and, consequently, lowering aggregate demand and GDP. On the other hand, a reduction in taxes can boost consumption and investment by leaving more disposable income with households and businesses, thus stimulating GDP growth.

The effect of taxes on GDP is a critical area of study, as taxes—whether direct or indirect—affect economic performance through their influence on consumption, investment, and the fiscal policies adopted by governments. Tax policies, depending on their design, can either stimulate or impede economic growth. For example, increasing taxes can diminish purchasing power and investment, while tax cuts may encourage consumption and investment, ultimately leading to GDP growth. Therefore, understanding the relationship between taxes and GDP is essential for crafting fiscal policies that promote economic growth while minimizing negative impacts.

Several empirical studies have explored the relationship between tax policies and GDP. Auerbach & Gorodnichenko, (2013) find that tax cuts are particularly effective in stimulating growth during recessions. In Indonesia,

Suryanto (2014) observes that tax cuts for businesses promote investment and growth in the productive sector, contributing positively to GDP. Pappa (2009) highlights that income tax cuts can significantly stimulate household consumption and boost economic growth, particularly during recessions. Mertens & Ravn (2014) also find that changes in income taxes significantly impact aggregate demand and GDP, especially in developed countries. In his book The Macroeconomics of Taxation, (Mankiw, 2016) emphasizes the substantial impact of taxes on a country's GDP, both through demand-side effects (by reducing consumption and investment) and supply-side effects (by affecting work and investment incentives). Mankiw argues that tax hikes can reduce economic activity by curbing consumption and investment, while tax cuts can stimulate economic growth in the short term by encouraging both. Barro (1991) examines the link between tax policy and economic growth across countries and finds that higher taxes, particularly income taxes, tend to correlate with slower economic growth. However, he notes that the efficiency of the tax system is crucial for supporting growth, and productive government spending can offset the negative effects of high taxes.

Alesina & Ardagna (2010) investigate large-scale fiscal policies in OECD countries, concluding that tax cuts generally have a positive long-term impact on GDP, while spending cuts are more likely to depress growth in the short run. Romer (1990) integrates theoretical and empirical models to show that taxes influence GDP through both consumption and investment channels and by affecting income distribution, which impacts consumption patterns. In a study focused on India, (Gylfason & Herbertsson, 2001) find that while higher corporate taxes can reduce GDP in the short run due to diminished investment incentives, in the long term, increased tax revenues allow for infrastructure development and public spending, which supports economic growth. Thus, the effect of taxes on GDP is complex, depending on tax type and revenue management. Levine & Renelt (1992) highlight that income taxes have a negative impact on economic growth rates, as higher taxes reduce incentives to work, invest, and innovate. Similarly, find that business tax cuts in the United States in the 1990s stimulated investment and productivity, leading to GDP growth. Finally, argue that fiscal policies, particularly tax structures, must be designed efficiently to foster sustainable economic growth. They caution that overly high or complex taxes can reduce incentives to produce and invest, negatively affecting GDP:

H1: Taxes have a positive impact on GDP

2.3. Interest rates and their impact on GDP

Interest rates are crucial tools of monetary policy that affect both investment and consumption decisions. When interest rates decrease, the cost of borrowing for individuals and businesses tends to drop, which usually leads to an increase in consumption and investment. Over time, policies that lower interest rates can encourage higher production, foster economic growth, and boost GDP.

Research by Bernanke & Gertler (1995) found that a reduction in interest rates significantly impacts investment and consumption, contributing to GDP growth. Similarly, a study by Widarjono & Udi (2009) showed that low interest rate policies in Indonesia have a positive effect on aggregate demand, stimulating GDP growth. However, maintaining interest rates too low for an

extended period can lead to high inflation, which erodes purchasing power and reduces the appeal of investment. Thus, careful management of interest rates is essential to maintain stable economic growth. The link between interest rates and Gross Domestic Product (GDP) has been explored in several empirical studies. One notable study by Mulyani (2016), titled Pengaruh Suku Bunga terhadap Tingkat Pertumbuhan Ekonomi di Indonesia dalam Periode 2000-2015 (The Impact of Interest Rates on Economic Growth in Indonesia from 2000 to 2015), utilized a multiple linear regression model to analyze the effects of interest rates on Indonesia's GDP. The study found that interest rates have a significant negative impact on GDP, particularly in the investment sector. The research indicated that changes in the Bank of Indonesia's benchmark interest rate (BI Rate) have a short-term effect on economic growth. Kutan & Yeldan (2009) conducted a study titled The Impact of Interest Rates on Economic Growth: A Panel Data Analysis for Developed Countries, which concluded that high interest rates tend to impede economic growth, especially in the short term. Their findings also suggested that lowering interest rates could stimulate investment and consumption, although the extent of this effect varies depending on the country's economic openness. Countries with lower inflation rates and more stable financial markets tend to experience a stronger relationship between interest rate reductions and GDP growth. In a study by Hasan & Khalid (2012), the relationship between interest rates and GDP was examined in several developing countries, including Indonesia, India, and Brazil. Their research indicated that lower interest rates generally promote economic growth in the medium term. However, the long-term effects are more influenced by fiscal policies and political stability. The study also highlighted that the impact of interest rates on GDP is particularly pronounced in developing countries with underdeveloped financial systems. Furthermore, countries with high reliance on foreign debt experience a more significant effect from changes in interest rates.

Munteanu (2014) conducted a study titled Interest Rates and Economic Growth in the European Union: Evidence from the Eurozone, which analyzed macroeconomic data from 1999 to 2013. The research revealed that lower interest rates in the Eurozone positively affected investment and consumption, thereby boosting GDP. The study emphasized that low-interest-rate policies increase credit availability and facilitate government spending, both of which contribute to economic growth. However, it also noted that the effectiveness of monetary policy depends not just on interest rates but also on the structural policies of individual member countries. Nahar & Rehman (2011) examined the impact of interest rates on GDP in Indonesia and Malaysia over the 2005-2010 period, using the VAR (Vector Autoregression) model. The study found that interest rates have a negative effect on GDP in both countries, but with a more pronounced impact in Indonesia. In Indonesia, higher interest rates reduced domestic investment and consumer purchasing power, contributing to lower GDP. In contrast, Malaysia experienced a smaller effect, likely due to more proactive fiscal policies that mitigated the negative consequences of higher interest rates. Bernanke & Gertler (1995) investigated the relationship between interest rates set by the Federal Reserve and economic growth in the United States, using time series data from 1960 to 1995. Their research concluded that interest rates significantly influence the U.S. economic cycle, both in the short and long term. Low interest rates stimulate increased investment and consumption, while high interest rates

tend to dampen these activities, thus affecting GDP. The study highlighted that changes in U.S. interest rate policy have a notable impact on the banking sector and capital markets.

H2: Interest Rate has a positive impact on GDP

2.4. Inflation and its impact on GDP

Inflation is an economic condition where there is a general rise in the prices of goods and services within an economy over a period of time. This increase in prices can reduce consumers' purchasing power, disrupt economic stability, and influence the monetary policies adopted by governments and central banks. When inflation becomes excessively high or uncontrollable, it can lead to negative outcomes such as lower consumer spending power and heightened economic uncertainty.

One of the primary indicators used to assess a country's economic performance is Gross Domestic Product (GDP). GDP represents the total value of goods and services produced in a country during a specific period. Inflation can affect GDP both directly and indirectly. Rapid price hikes often lead to a decrease in household consumption and investment, which can ultimately hinder economic growth and slow down GDP expansion.

Controlled inflation is generally seen as a sign of a healthy economy, as it indicates price stability. However, when inflation becomes too high, it can disrupt economic activity, reduce consumer purchasing power, and create economic uncertainty. These effects can slow down economic growth and potentially lower GDP. To maintain economic stability, monetary policies designed to control inflation—such as adjusting interest rates and managing the money supply—are critical. High inflation can also create uncertainty for investors, diminishing their willingness to invest in the economy (Friedman, 1968). Research by Mishkin (2007) highlights that high inflation negatively impacts economic growth, while controlling inflation through effective monetary policies can foster economic stability and support GDP growth. Understanding how inflation affects GDP, both in the short and long term, is essential. The impact of inflation on GDP is influenced not only by the inflation rate itself but also by other factors such as monetary policy, fiscal policy, and global economic conditions. Given these complexities, researching the relationship between inflation and GDP is crucial for developing economic policies that sustain stability and promote long-term growth. Moreover, the connection between government revenue—especially tax revenue—and economic growth has also been explored in numerous empirical studies, adding another layer of insight into how inflation interacts with broader economic dynamics.

The relationship between inflation and GDP has been the subject of various empirical studies. Suryanto (2014) analyzed the impact of inflation on economic growth in several developing countries, including Indonesia. Using a panel data regression model for the period 2000-2012, the research showed that moderate inflation had a positive effect on economic growth, while high inflation could undermine consumer purchasing power and reduce investment, ultimately leading to a decline in GDP. Veiga & Afonso (2015) studied the relationship between inflation and GDP in Latin American countries over the period 1980-2010. Using a VAR (Vector Autoregression) model, the research found that high inflation had a long-term negative impact

on economic growth in most developing countries, while low inflation had either a positive or insignificant effect. Examined the relationship between inflation and GDP in developed countries, particularly after the economic crisis. Their research showed that excessive inflation could lower the rate of economic growth, although moderate inflation is still necessary to maintain economic stability. Asteria & Arifin (2017) researched the influence of inflation on GDP in Indonesia and Thailand from 2000-2016. Using a dynamic regression model, the study analyzed both the short- and long-term relationships between inflation and GDP in the two countries. The results indicated that inflation had a negative impact on GDP, but the effect varied between the two countries. Phillips (2001) examined the relationship between inflation, unemployment, and GDP in OECD countries from 1980-1999. The model identified a negative relationship between high inflation and economic growth, which was reflected in an increase in unemployment rates. Fischer (1993) studied the relationship between inflation and economic growth in developing countries in Africa. Using macroeconomic data over two decades, the research found that high inflation had a very negative effect on economic growth in these countries, given their reliance on sectors sensitive to inflation, such as agriculture and industry. Somé et al. (2018) explored the relationship between inflation and GDP in Turkey using a time series approach. The research found that high inflation was negatively related to GDP, while low or stable inflation could support economic growth. Aghion, Auerbach & Gorodnichenko (2013) analyzed the effect of inflation on innovation and found that high inflation had a significant negative impact on economic growth in various countries. Gylfason & Herbertsson (2001) also analyzed the effect of inflation on economic growth and found that high inflation had a significant negative impact on economic growth in various countries.

H3: Inflation has a positive impact on GDP

3. Methodology

The aim of this research method is to identify and analyze the influence of fiscal policy (Tax), monetary policy (BI Rate), and inflation rate on Indonesia's economic growth, as measured by GDP. This study employs a quantitative approach with multiple regression analysis to describe the relationship between these variables.

3.1. Population and sample

Population: The Indonesian economy, which includes macroeconomic data related to GDP, Tax, BI Rate, and Inflation over a specific period.

Sample: Secondary data covering annual information on Indonesia's GDP, Tax, BI Rate, and Inflation for a particular period, such as from 2000 to 2023. This sample is obtained from reliable sources such as the Central Statistics Agency (BPS), Bank Indonesia, and the Ministry of Finance.

3.2. Types and sources of data

This study uses quantitative research with a causal-comparative approach. Causal research aims to determine whether there is a significant impact of the independent variables (Tax, BI Rate, and Inflation) on the dependent variable (GDP). The data sources used in this study are secondary data, which can be obtained from: Central Statistics Agency (BPS) for Indonesian GDP data, Bank

Indonesia (BI) for BI interest rate data (BI Rate), Ministry of Finance for tax revenue data, BPS for Indonesian inflation data.

3.3. Research model

The model used is multiple linear regression with the formula:

$$Y=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\varepsilon$$

Where:
Y = GDP
X_1 = Tax
X_2 = BI Rate
X_3 = Inflation
β_0 = Intercept
β_1, β_2, β_3 = Coefficients that show the influence of each independent variable on GDP
ε = Error term

3.4. Classical assumption test

Normality Test: To ensure that the data for multiple regression meets the normality assumption, a normality test is performed using either the Kolmogorov-Smirnov test or the Shapiro-Wilk test. If the data is found not to be normally distributed, data transformation may be necessary.

Multicollinearity Test: A multicollinearity test is conducted to examine whether there is a high correlation between the independent variables (Tax, BI Rate, and Inflation). This test can be performed by analyzing the Variance Inflation Factor (VIF). If the VIF exceeds 10, multicollinearity is present, and adjustments to the model will be required.

Heteroscedasticity Test: To test for heteroscedasticity (non-constant error variance), the Breusch-Pagan or White Test can be used. If heteroscedasticity is found, then analysis using robust regression can be considered.

Autocorrelation Test: To detect heteroscedasticity (non-constant error variance), the Breusch-Pagan or White Test is used. If heteroscedasticity is found, the analysis may consider using robust regression methods.

Coefficient Significance Test: The Durbin-Watson test is employed to detect autocorrelation in the residuals. Durbin-Watson values close to 2 indicate no autocorrelation.

Coefficient of Determination (R^2): The coefficient of determination test is used to assess how well the regression model explains variations in GDP. A high R^2 value suggests that the model effectively explains the variations in GDP.

3.5. Definition of variables

GDP (Y): Gross Domestic Product, which measures the total value of goods and services produced within a country's economy.

Tax (X_1): The total tax revenue collected by the government, which influences consumption and investment in the economy.

BI Rate (X_2): The benchmark interest rate set by Bank Indonesia, which impacts borrowing costs as well as consumption and investment decisions.

Inflation (X_3): The rate of inflation, which reflects changes in the prices of goods and services over time and affects people's purchasing power.

4. Analysis results

4.1. Multiple linear regression results

In this study, multiple linear regression analysis was employed to determine the influence of Tax (X1), BI Rate (X2), and Inflation (X3) on GDP (Y). The results of the multiple linear regression test are as follows:

Table 1. *Multiple linear regression test results*

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	440,784	9.139		48,230	.000
	Tax	.429	.015	.960	28,578	.000
	BI Rate	-.011	.003	-.157	-3,508	.002
	Inflation	.002	.002	.044	.977	.340

a. Dependent Variable: GDP

Based on the results above, the regression equation obtained is:

$$Y = 440.784 + 0.429X1 - 0.011X2 + 0.002X3$$

Explanation of the Regression Equation:

Constant of 440.784: This indicates that if the values of Tax (X1), BI Rate (X2), and Inflation (X3) are all zero, the predicted value of GDP (Y) would be 440,784. This represents the baseline GDP when other variables have no effect.

Tax Coefficient of 0.429: For every 1 percent increase in Tax (X1), GDP is predicted to increase by 0.429 percent, assuming all other variables remain constant.

BI Rate Coefficient of -0.011: For every 1 percent increase in the BI Rate (X2), GDP is expected to decrease by 0.011 percent.

Inflation Coefficient of 0.002: For every 1 percent increase in Inflation (X3), GDP is expected to rise by 0.002 percent.

The results suggest that Tax (X1) and BI Rate (X2) have significant effects on GDP, as indicated by their p-values (0.000 and 0.002, respectively, both less than 0.05). However, Inflation (X3) does not show a significant effect on GDP, as its p-value (0.340) is greater than 0.05, suggesting that changes in inflation do not have a statistically significant impact on GDP in this model.

4.2. Classical assumption test

4.2.1.Data normality test

The purpose of the normality test is to ensure that the data used in the regression model is normally distributed. For Normal *P-Plot*, normality can be detected by looking at the distribution of data or points on the diagonal axis of the graph.

Based on the P-Plot analysis, the data points are distributed around the diagonal line, which indicates that the data distribution is normal. Therefore, the regression model meets the assumptions.

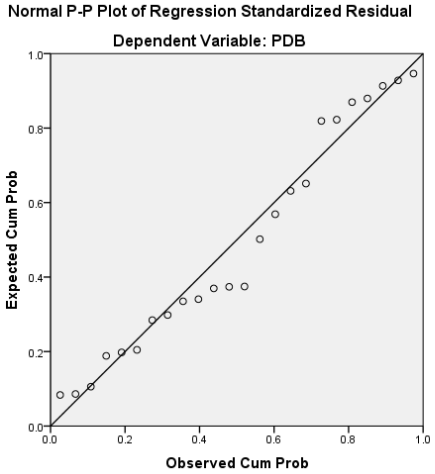

Figure 1. *Normality test results*

4.2.2. Multicollinearity test

This test is used to test whether there is a very high correlation between independent variables in the model. A tolerance value greater than 0.1 and a VIF less than 10 indicate the absence of multicollinearity problems.

Table 2. *Multicollinearity test results*

Coefficients [a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Tax	.969	1,032
	BI Rate	.543	1,840
	Inflation	.547	1,828

a. Dependent Variable: GDP

Because the tolerance value is greater than 0.1 and the VIF is less than 10, it can be concluded that there is no multicollinearity in the model.

4.2.3. Heteroscedasticity

The heteroscedasticity test is conducted to ensure that the residual variance in the regression model remains constant. Based on the results of the scatterplot analysis, the residual points are randomly distributed around the number 0 on the Y axis, indicating that there is no heteroscedasticity. The following are the results of the heteroscedasticity test presented below:

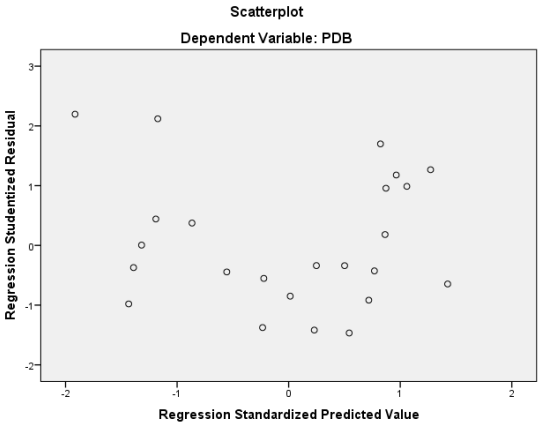

Figure 2. *Heteroscedasticity test results*

Based on the results of the heteroscedasticity test, it shows that there is no clear pattern, and the points are spread above and that the number 0 is on the Y axis, so there is no heteroscedasticity.

4.2.4. Autocorrelation test

The purpose of the autocorrelation test is to determine whether there is a correlation between the residual error in period t and the previous period. Based on the Durbin-Watson (DW) value of 1.039, which is between -2 and +2, it can be concluded that there is no autocorrelation in the model.

Table 3. *Autocorrelation test results*

Model Summary [b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.989 [a]	.978	.975	2.54016	1,039

a. Predictors: (Constant), Inflation, Tax, BI Rate
b. Dependent Variable: GDP

The autocorrelation test results on the summary model show the durbin watson count value of 1.039 while the durbin watson table with a sig level of 5% shows a dL value of 1.1010 and a dU value of 1.6565 . Based on the criteria that have been determined above, it can be said that there is no autocorrelation, either positive or negative.

4.3. Coefficient of Determination R ²

The coefficient of determination (R^2) measures how much the variation of the independent variable can explain the variation of the dependent variable. The R^2 value of 0.978 indicates that 97.8% of the variation in GDP can be explained by the variables Tax, BI Rate, and Inflation. The following table of determination coefficients is presented below:

Table 4. *Results of determination coefficient test*

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.989 [a]	.978	.975	2.54016

a. Predictors: (Constant), Inflation, Tax, BI Rate

Based on the results of the coefficient of determination test, the R-Square value is 0.978. This shows that the contribution of the independent variables included in the regression equation to the Y variable is 97.8 percent, while the rest is influenced by other variables that are not included in this equation.

4.4. Hypothesis test results

4.4.1. F Test (Simultaneous Test)

The F test is used to test the influence of independent variables simultaneously on the dependent variable. Based on the significance value obtained of 0.000 < 0.05, it can be concluded that the Tax, BI Rate, and Inflation variables have a simultaneous influence on GDP.

Based on the results of the simultaneous test, the significance value is 0.000 <0.05 . This shows that the independent variable (X) has a simultaneous effect on the dependent variable (Y).

Table 5. *Simultaneous test results*

ANOVA [a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5771.577	3	1923.859	298,162	.000 [b]
	Residual	129,048	20	6,452		
	Total	5900.625	23			

a. Dependent Variable: GDP
b. Predictors: (Constant), Inflation, Tax, BI Rate

4.4.2. Partial test results (t-Test)

Based on the results of the t-test, the effects of the independent variables on the dependent variable (GDP) are as follows:

1. Tax (X1) has a significant positive effect on GDP, with a Sig. value of 0.000, which is less than 0.05, indicating that Tax is a significant predictor of GDP.
2. BI Rate (X2) has a significant negative effect on GDP, with a Sig. value of 0.002, which is also less than 0.05, suggesting that changes in the BI Rate have a significant inverse relationship with GDP.
3. Inflation (X3) does not have a significant effect on GDP, with a Sig. value of 0.340, which is greater than 0.05. This implies that inflation does not significantly impact GDP in this model.

5. Discussions

5.1. The impact of taxes on GDP

Based on the results of the regression analysis, taxes have a positive impact on GDP, with a coefficient of 0.429. This means that a 1 percent increase in taxes will result in a 0.429 percent increase in GDP. This finding aligns with Keynesian economic theory, which suggests that taxes can be an effective fiscal policy tool for influencing the economy. According to Keynes, raising taxes can be used to control inflation and regulate economic activity under specific circumstances. However, when taxes are managed prudently, they can increase national income, ultimately fostering long-term GDP growth (Mankiw, 2016). A previous study by (Sukirno, 2011) highlighted that an appropriate tax policy could boost national income, which could then be utilized to fund development projects that stimulate economic growth. In the case of Indonesia, a well-structured tax policy could contribute to GDP growth. Fatmawati (2017), in her study titled *The Impact of Tax Policy on Economic Growth in Indonesia*, found that taxes significantly influence economic growth in Indonesia, particularly in the long term. Similarly, Simanjuntak and Siregar (2020) concluded that increasing taxes in developing countries has a positive effect on GDP, provided that the additional tax revenue is invested in development programs aimed at improving societal productivity.

5.2. The impact of BI rate on GDP

The regression results indicate that the BI Rate has a negative impact on GDP, with a coefficient of -0.011. This means that a 1 percent increase in the BI Rate will decrease GDP by 0.011 percent. This can be explained using monetary theory, which suggests that an increase in interest rates (such as the BI Rate) tends to reduce aggregate demand within the economy. According to the IS-LM model, when interest rates rise, borrowing costs become higher, which in

turn reduces investment and household consumption, ultimately leading to a decrease in GDP (Mankiw et al., 2009). A study by Kuncoro (2014) also showed that high interest rates can dampen economic activity, particularly in terms of consumption and investment, both of which are crucial components of GDP. From a Monetarist perspective, as proposed by Milton Friedman, higher interest rates—such as the BI Rate—tend to reduce the money supply in the economy. This happens because higher borrowing costs discourage both investment and consumption. On the other hand, lower interest rates can stimulate economic activity by encouraging investment and consumption, potentially driving GDP growth. Kuncoro (2014) further found that higher interest rates (like the BI Rate) could lead to a decline in economic activity due to increased borrowing costs, which reduce investment and consumption, thereby diminishing GDP. In addition, Siregar (2019) in his study on the impact of BI Rate policy on Indonesia's economic growth revealed that excessively high interest rates negatively affect the economy in the short term. However, when applied prudently, they can have a more stable impact in controlling inflation. Hakim & Dewi (2021) argued that high interest rate policies suppress domestic demand and investment, ultimately having a detrimental effect on GDP.

5.3. The impact of inflation on GDP

The regression results show that inflation does not have a significant impact on GDP, with a significance value of 0.340, which is greater than 0.05. This indicates that, within the context of this study, inflation does not directly affect GDP. This finding contradicts classical economic theory, which generally views inflation as a factor that reduces the purchasing power of the public and impedes economic growth (Friedman, 1968). However, the results of this study can be explained by the Phillips Curve theory, which suggests a short-term trade-off between inflation and unemployment. In the long run, inflation may not significantly impact economic growth if appropriate monetary and fiscal policies are applied to ensure price stability. A study by Ghozali (2016) also showed that while inflation affects purchasing power, its impact on GDP can be more complex, depending on other factors such as government policies and global economic conditions. According to the Phillips Curve, there is a trade-off between inflation and unemployment in the short run, but in the long run, high inflation can lead to economic instability and reduce the purchasing power of the public, which may potentially decrease GDP. Additionally, monetarist theory argues that uncontrolled inflation can create economic imbalances and negatively impact investment (Friedman, 1968). Friedman (1968) further stated that high inflation can cause economic distortions, reduce purchasing power, and hinder economic growth, although in the short term, inflation's effects may be more complex. In his research on the impact of inflation on GDP in Indonesia, (Ghozali, 2016) found that inflation has a weak negative relationship with economic growth in the long term. However, in the short term, its impact can be more dynamic, depending on government policies to control prices. Darmawati & Sari (2015) in their study found that moderate inflation can stimulate economic growth, but excessively high inflation tends to harm the economy. They concluded that effective inflation control could enhance economic stability and promote GDP growth.

6. Conclusions

Based on the analysis results, it can be concluded that taxes have a positive impact on GDP. This suggests that every increase in taxes can boost GDP. This finding aligns with Keynesian theory, which posits that taxes can be used as a fiscal policy tool to influence the economy. If managed effectively, an increase in taxes can contribute to national income growth and stimulate long-term economic development.

In contrast, the regression results reveal that the BI Rate has a negative impact on GDP. An increase in interest rates tends to reduce investment and household consumption, which can ultimately lower GDP. This is consistent with monetary theory, which indicates that high interest rates can suppress aggregate demand and slow down economic activity.

On the other hand, inflation does not show a significant impact on GDP in this study, contradicting classical economic theory. While inflation can reduce purchasing power, its effect on GDP can vary depending on the monetary and fiscal policies in place. In the long term, controlled inflation may not significantly impact economic growth.

Limitations: This study has several limitations. One limitation is the relatively short time period used for analysis, which may not fully capture the long-term economic dynamics. Additionally, the model does not account for external factors such as global economic conditions, international policies, or unforeseen events like a global economic crisis, all of which could influence GDP. Future research that includes a broader set of influencing factors and extends the analysis over a longer time frame could provide a more comprehensive understanding of the relationships between the variables.

Recommendations: The government should manage tax policies carefully to foster economic growth. Effective use of tax revenues for development programs that enhance societal productivity can have a positive impact on GDP. Interest rate policies must be implemented cautiously, as high interest rates can dampen investment and consumption. The government and Bank Indonesia should consider both the short- and long-term economic impacts when determining the BI Rate. Inflation should be maintained at moderate levels. Although inflation's impact on GDP was not significant in this study, uncontrolled inflation can lead to economic instability, potentially undermining long-term economic growth.

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