

The Influence of Money Supply, Inflation, Interest Rates, And Combined Stock Price Index on Gross Domestic Product

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Abstract

Gross Domestic Product is used to describe all economic activities that occur in a region. Gross domestic product (GDP) is a variable used to view economic growth conditions. Economic growth is one of the key factors affecting GDP. If the figure in GDP increases, then there will be a perception that the country is at a good level of economic growth. Based on research, inflation has an influence on GDP because GDP is determined by prices, if inflation increases, the prices of goods and services will increase and real GDP will experience a price decrease. In this study, the variables of money supply, inflation, interest rates, and the Composite Stock Price Index (IHSG) were selected which would be tested against GDP. The data in this observation amount to 32 data with quarter time series data q1-q2 in 2015-2022. Output analysis using Eviews 10, using the OLS multiple linear regression method. The results of this study prove that the variables in the money supply (JUB), inflation, Jakarta Composite Index have a significant influence on GDP, and interest rates have nothing to do with GDP.

Keywords: GDP, Economic, Growth, inflation, Interest rate

Introduction

An improvement in an economy can influence the economic development of a country within a certain period of time, which shows growth in the production of goods and services. Economic activities produce added value in the form of Gross Domestic Product (GDP) through the use of synergies between production components (Zakiyyah et al., 2023). This production uses a measurement of the added value obtained by the economic sector in a particular region which is referred to as Gross Domestic Product (GDP). In the economies of developed countries and also developing countries, in creating goods and services, not only domestic companies, but also residents of other countries are involved. This is partly due to Indonesia's better trade performance, as shown by the trade balance which tends to increase (Yuniarti, 2007).

The use of Gross Domestic Product to see the development of economic growth is carried out in every country, including Indonesia. GDP in a country can also be used as a measure of changes in prices by involving the calculation of a deflator on GDP or what can be called implicit index changes. There are several factors that can influence Gross Domestic Product (GDP), namely the variables of money supply, inflation, IHSG and interest rates. This research was conducted to analyze variables that influence GDP. One of the main factors determining variables in GDP is the amount of money in circulation.

Based on the results of research conducted by Margareth Clansina et al, they stated that in their research the money supply (JUB) and inflation have an effect on gross domestic product, this is due to the role of the function of money. According to Nory Sely, his research also explains how the money supply and public expenditure influence Indonesia's

GDP, that this is influential and also relevant. In research by Hesniati et al, they found in their research that interest rates had no effect on GDP and the money supply had a positive effect. Goods and services obtained from several units where there are territorial boundaries in a country, which is the total value added in a certain period is called GDP. The influence of the money supply on Gross Domestic Product is closely related to each other. According to Bank Indonesia in 2019, in the monetary system for the domestic private sector, money in circulation is one component. Components in the money supply include demand deposits, currency and quasi currency for the domestic sector, as well as securities issued in the monetary system. Hussain & Zafar (2018), changes in the money supply will cause instability in monetary values. Policies regarding the money supply can have an influence on the inflation rate. A continuous increase in the price of goods and services is called inflation which has a negative impact on Indonesia's overall GDP. In three components, price increases, general in nature, and also consistent in nature can be said to be inflation. The impact on individual and societal prosperity comes from the negative effects on economic activity and is also accompanied by consistently high price increases. Inflation causes the purchasing power of real income to decrease, especially for people with small and fixed incomes. If the inflation rate is higher than the growth in income levels. This will have a negative impact on economic development.

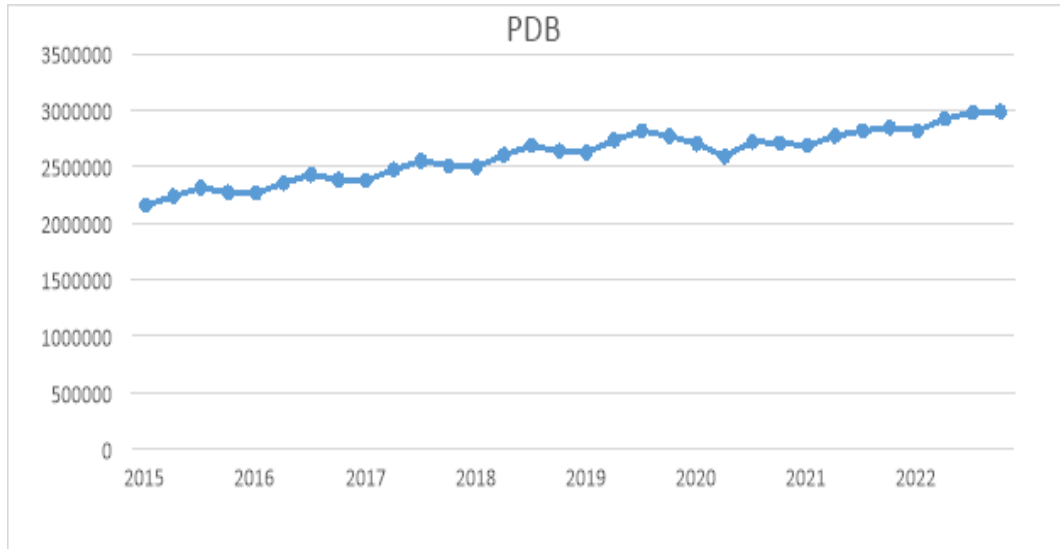
Inflation can disrupt economic balance by distorting economists' forecasts. High inflation figures cause the estimated prices of goods and services to increase. For consumers, it is estimated that economic balance will mean that purchases of goods and services will increase more. This aims to reduce consumption expenditure, from the quote (Rahardja dan Manurung 2008:178) This can be concluded about the effect of inflation on GDP. If the inflation rate is high, it will reduce the value of real GDP in a country.

Interest rates can also be expressed as a percentage or percentage. The factor component of bank costs and income is interest on deposits and loans. The savings interest that banks require to customers is due to the customer's service for having deposited money in the bank. If savings interest is high, loan interest will automatically increase and vice versa, this is because both interest rates influence each other. The supply and demand for money can influence the rise and fall of interest rates. Factors that influence interest rates are economic growth, inflation and government budget deficits. The demand and supply of money can influence the rise and fall of interest rates if borrower demand is greater than the amount of money offered by borrowers. An increase in interest rates will cause people to be interested in saving more money in banks, this will reduce the circulation of cash in the market.

The relationship between IHSG and GDP is very influential or significant, shares that have been listed on the Indonesian stock exchange can measure price exchanges. In looking at GDP growth, one of the influencing factors is the composite stock price index. The summation of the composite stock price index requires a measurement where the average must be balanced with the number of shares on the exchange. The Composite Stock Price Index also has an impact on interest rates, where if the JCI declines or weakens it will have an impact or impact on the benchmark interest rate and can also cause market anxiety about investment banks. The function of the IHSG is to see economic development in a country, for example capital flows, economic growth and tax revenues in a country. IHSG (Composite Stock Price Index) plays a major role in economic growth in Indonesia. The impact of the IHSG on the economy in Indonesia is that the economy will move and increase and also the higher the investment in a country, the greater the influence of capital flows will be. Countries must eliminate corruption and maintain a good investment climate so that people have confidence in productive economic growth (Nasir et al., 2021). In Masoud's (2016) research, this research proves and explains that the IHSG has a very positive influence on the national economy, where increasing investment will also increase economic growth. From an investment perspective, structural reforms such as policy reforms, financial systems and

infrastructure development must be carried out to encourage foreign investors to invest in Indonesia (Kurniawan & A'yun, 2022).

Gambar 1. Produk Domestik Bruto (PDB)



Source: Badan Pusat Statistik dan World Bank

Figure 1 shows that the development of Gross Domestic Product in Indonesia has experienced an increase, where this increase experienced an increase in numbers from 2015 to 2022. The development of Gross Domestic Product was highest in 2022, which can be explained cumulatively and in the fourth quarter of that year, reaching 2988636.5. In that year, it can be seen that the development in the data is higher if the data is compared with previous years, because there is an influence from the pre-Covid average of 5%. In 2015-2019 there was an increase in product numbers

However, in 2020, Gross Domestic Product decreased by 2709721.7 or 2.07%. Bank Indonesia in the fourth quarter of 2022, Bank Indonesia has made the decision to raise the interest rate at Bank Indonesia by increasing it three times higher to 5.50% to anticipate inflation expectations, which will maintain economic recovery and exchange rate stability. Continuous inflation will have an impact on individuals, entrepreneurs (private parties), and the government (Nasir et al., 2022).

There are many theories and previous research that examines this matter, where Gross Domestic Product (GDP) influences several other factors. The influencing factors originate from external or foreign or internal sources. The internal factors in question are domestic factors (Indonesia), where these factors are related to several things that are related to other determining factors related to GDP itself. The aim of this research is to indicate whether these factors have an influence on GDP in Indonesia during the period 2015 to 2022.

Literature Review

Money Supply Theory

Monetary authorities (central banks) do things to change the amount of money in circulation and credit, which in turn has an impact on people's economic activities. This is known as monetary policy. Money is anything that can be used or received to pay for goods,

services, or debts. Money usually functions as a unit of value, a medium of exchange, and a means of hoarding and storing wealth. Research shows that the money supply has a positive and significant effect on GDP. This means that increasing the amount of money circulating in the economy can support economic growth, which is reflected in an increase in GDP. For example, in research conducted by Mentari and Pangidoan, it was found that the t-value for the GDP variable on the money supply was greater than the t-table, indicating a significant influence of GDP on the money supply in Indonesia.

Inflation Theory

Inflation is a condition where the general price level of goods and services increases within a certain period. This phenomenon is one of the most frequently discussed economic issues, because it has a significant impact on people's lives. Structural inflation theory emphasizes imbalances in a country's economic structure as the cause of inflation. For example, if production capacity is unable to meet increasing demand, inflationary pressure will occur. Inflation has various impacts, both positive and negative. Positive impacts that rarely occur are generally only short-term, such as being able to encourage economic growth at a certain level. However, the negative impacts of inflation are much more significant and long-term, such as a decrease in people's purchasing power, economic instability, distortion of resource allocation, and increased inequality. Apart from that, fiscal policies such as reducing government spending or increasing taxes can also be instruments to control inflation. Structural policies aimed at improving economic efficiency and increasing productivity are also important to overcome inflation in the long term.

Interest Rate Theory

Interest rates are a very crucial monetary instrument in influencing a country's economy, especially in the context of Gross Domestic Product (GDP) growth. Economic theory explains that there is a close relationship between interest rates and various economic variables, including GDP. Keynesian theory also provides an interesting perspective on the effect of interest rates on GDP. According to this theory, low interest rates can encourage investment because they reduce borrowing costs. Increasing investment will create a multiplier effect which can increase output and national income. Business cycle theory links interest rate fluctuations to the business cycle. When the economy is experiencing a recession, central banks usually lower interest rates to stimulate growth. Conversely, when the economy overheats, the central bank will raise interest rates to control inflation. The effect of interest rates on GDP is complex and influenced by many factors. Therefore, in analyzing the data, it is necessary to consider the specific economic context and control for other variables that may be relevant.

Composite Stock Price Index Theory

The Composite Stock Price Index (IHSG) is an important indicator that reflects the overall stock market performance in a country. IHSG represents the combined value of all shares traded on the stock exchange. JCI movements are influenced by various factors, both internal and external, such as company performance, government policy, macroeconomic conditions and market sentiment. Therefore, the IHSG can be used as an initial indicator to predict the direction of GDP growth. Much research has been carried out on the relationship

between IHSG and GDP. Research results generally show a positive correlation between the two. In research on GDP, IHSG can be used as an additional variable to strengthen the analysis. By analyzing the JCI movement together with other macroeconomic variables, researchers can obtain a more comprehensive picture of a country's economic conditions.

Research Method

This research analyzes the dependent variable as Gross Domestic Product (GDP) and interest rates, inflation, Money Supply, Composite Stock Price Index, as independent variables, data using a time-series of 8 years using Q1-Q4 per year. Data is taken from the Central Statistics Agency (BPS), Bank Indonesia (BI), and the World Bank. The equation for the multiple linear regression method can be written as below :

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon_t$$

Where Y is Gross Domestic Product (GDP); X1 is the Interest Rate; X2 is Inflation; X3 is the Money Supply; X4 is the Composite Stock Price Index; β_0 is a constant; $\beta_1, \beta_2, \beta_3, \beta_4$ is the coefficient value of the independent variable; ε_t is the error term.

Result and Discussion

Variable	Mean	Std Dev	Min	Max
Y	14.768	0.088	14.584	14.910
X1	1.588	0.252	1.252	2.014
X2	4.820	0.131	4.652	5.009
X3	14.228	0.270	13.772	14.774
X4	8.658	0.136	8.348	8.863

Variable Y is the dependent variable, namely Gross Domestic Product (GDP), which has a mean value of 14,768 and (> 0.088) which means that the Gross Domestic Product (GDP) variable has high data variability, this can be proven by the min value of the Domestic Product variable Gross (GDP) was 14,584 and the highest was 14,910. X1 is a interest rate variable that has a mean value of 1,588 and (> 0.252) which means that the interest rate variable has a lower variable, this can be proven that the min variable value is 1,252 and the max variable value is 2,014. X2 is an inflation variable that has a mean value of 4,820 and (> 0.131) which means that the inflation variable has a higher variable, this can be proven that the min variable value is 4,652 and the max variable value is 5,009. X3 is a variable amount of money supply that has a mean value of 14,228 and (> 0.270) which means that the variable amount of money supply has a higher variable, this can be proven that the min variable value is 13,772 and the max variable value is 14,774. X4 is a composite stock price index variable that has a mean value of 8,658 and (> 0.136) which means that the composite stock price index variable has a higher variable, this can be proven that the min variable value is 8,348 and the max variable value is 8,863.

Variabel	Coefficient
X1	-0.008557

	(-0.386618)
X2	0.002376 (6.224526)**
X3	0.419895 (13.35044)**
X4	-0.122808 (-2.481134)**
<hr/> Diagnostic Tools <hr/>	
Adj R-Squared	0.945937
F-statistic	136.6015

MULTIPLE LINEAR REGRESSION ANALYSIS

Hypothesis testing

Variabel	Coefficient	Std. Error	t-Statistic	Prob
LOG (JUB_X3)	0.419895	0.031452	13.35044	0.0000
INFLASI_X2	0.002376	0.000382	6.224526	0.0000
LOG (IHSG_X4)	-0.122808	0.049497	-2.481134	0.0196
LOG (SUKU_BUNGA_X1)	-0.008557	0.022133	-0.386618	0.7021
C	9.573376	0.347516	27.54805	0.0000
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R-squared	0.952913	Mean dependent var	14.76800	
Adjusted squared	0.945937	S.D. dependent var	0.088130	
S.E. of regression	0.020491	Akaike info criterion	-4.795015	
Sum squared resid	0.011337	Schwarz criterion	-4.565994	
Log likelihood	81.72024	Hannan-Quinn criter.	-4.719101	

Regression Equations $Y = 9.573376 + (-0.008557) X1 + (0.002376) X2 + (0.419895) X3 + (-0.122808) X4$

Statistical F Test

Based on the results of using Eviews which have been tested and processed and obtained an F-stat probability of 0.000000 which means the probability value. F-stat is smaller than 0.05, which means the dependent variable is influenced by the independent variable.

Coefficient of Determination (R2)

According to the results which can be explained through the coefficient of determination (R2), it is concluded that the R-squared value is 0.952913 or 95%, indicating that there is a relationship between GDP and interest rates, inflation, money supply, and the composite stock price index has a positive correlation. So, there are 5% variables outside the model that are able to explain the influence on the dependent variable. Adjusted R-Squared is 0.945937 or 95% which can be explained that the level of GDP can be explained by interest rates, inflation, money supply, and the composite stock price index with the remaining 5% caused by other factors outside the model.

CLASSIC ASSUMPTIONS

Heteroscedasticity Test

Heteroskedasticity Test: White

F-statistic	1.152972	Prob. F	0.3853
Obs*R-squared	15.58559	Prob. Chi-Square (14)	0.3393
Scaled explained SS	5.153959	Prob. Chi-square (14)	0.9836

In table 4, it is found that the p-value is obtained through the prob value. Chi-square (14) on Obs*R-Squared is 0.3393. Therefore, the P value is $0.3393 > 0.05$ which means that heteroscedasticity does not occur.

Multicollinearity Test

Based on the data processing listed in the data above, it has been carried out which can be seen that the Interest Rate (X1), Inflation (X2), Money Supply (X3), and Composite Stock Price Index (X4) have values that are (<10), It can be concluded that there is no multicollinearity problem in the model.

Autocorrelation (P-Value: 1.948242)

From the P-Value results of ($1.948242 > 0.05$), the data states that the data is not autocorrelated. If the research data is based on existing conditions, it can be concluded that there is no autocorrelation in all the research data.

Normality Test

Based on the results of Eviews data processing, it can be seen that the prob. amounting to 0.407328, which has a significant effect because the result exceeds 0.05. So, it can be concluded that the data is normally distributed and the thesis regarding normality has been fulfilled.

ECONOMIC ANALYSIS

The Effect of Gross Domestic Product on Interest Rates

The results using OLS regression show that the variable (X1 Interest Rate) with the value prob. which has been stated at 0.7021 (>0.05) which has no influence on GDP, and the coefficient value or t-Stat. of the interest rate is -0.008557. It can be concluded that a weakening or decline in gross domestic product will result in a decline in economic growth. A country's economic growth can be measured through Gross Domestic Product, which is the value of all goods and services produced within a country in a certain period (Kohardinata & Widianingsih, 2023). Meanwhile, the Bank Indonesia interest rate is a monetary policy tool used by the central bank to influence economic activity (Martanto et al., 2021). Several previous studies have examined the relationship between GDP and interest rates in Indonesia. The research results show that GDP has a positive and significant influence on interest rates in the long term, but does not have a significant influence in the short term (Anggraeni & Dwiputri, 2022) (Martanto et al., 2021). Meanwhile, in a regression analysis using the Ordinary Least Square (OLS) model, it was found that GDP and government spending had an effect on investment, while interest rates did not show a significant effect on investment in the short term (Zulfa & Millati, 2023). However, if gross domestic product increases, economic growth will increase.

The Effect of Gross Domestic Product on Inflation

Results using OLS regression, it is known that the variable (X2 Inflation) with a value of prob. which has been stated at 0.0000 (<0.05) which has an influence on gross domestic product and the coefficient value or t-Stat. from inflation of 0.002376. It can be said that inflation and gross domestic product are positively related, if inflation increases it will cause mild inflation which will encourage economic growth because inflation is able to provide a positive impulse. Keynes's theory also states that low inflation has a positive impact on economic growth (Kusumastuti et al., 2022) (Pakri, 2023). So it can be concluded that the inflation rate has a positive influence on GDP only in certain situations. In line with research (Sherly Puspa Dewi et al., 2021) which states that controlled inflation will increase product competitiveness in the international market. This can have a positive impact on the economy. Apart from that, a contradiction occurs where inflation has a positive effect on economic growth in the long term but has no significant effect in the short term (Martanto et al., 2021) This is due to the economy's need to adjust so it takes longer to deal with rising prices. However, high inflation will have a negative impact on the economy, such as decreasing workforce due to increased production costs experienced by entrepreneurs, thereby reducing production (Sutama et al., 2021). The results of this research show that inflation partially has a negative and significant effect on labor absorption.

The Effect of Gross Domestic Product on the Money Supply

The results using OLS regression show that the variable (X3 JUB) with a value of prob. which has been stated at 0.0000 (<0.05) which has an influence on gross domestic product and the coefficient value or t-Stat. from inflation of 0.419895. It can be interpreted that JUB and gross domestic product have a positive relationship, which can provide an explanation if there is a high amount of money in circulation which will provide an increase in economic growth. Study (Mentari & Pangidoan, 2020) shows that the amount of money in circulation is positively correlated with the value of GDP. This is due to more active economic activity that encourages investment and transactions, which in turn increases the need for money. This is in line with the research conducted (Saragih, 2022) which states that positive economic growth indicates an improvement in the economy. However, in some cases an increase in the money supply is not always followed by an increase in economic growth as revealed in research (Kusumastuti et al., 2022), which stated that rising inflation could have a negative impact on Indonesia's economic growth both before and during the COVID-19 pandemic. In a country, economic growth is an important indicator in measuring the success of existing economic development. Economic growth is defined as an increase in the ability of an economy to produce goods and services (Ganar et al., 2021).

The Effect of Gross Domestic Product on the Composite Stock Price Index

The results using OLS regression show that the variable (X4 Composite Stock Price Index) with a value of prob. which has been stated at 0.0196 (>0.05) which has no influence on gross domestic product and the coefficient value or t-Stat. from inflation of -0.122808. It can be said that the link between the composite stock price index and gross domestic product will also increase the company's share price. In the influence of GDP on the IHSG on the

Wealth Effect Theory. This theory argues that GDP growth can increase society's wealth, which in turn encourages consumer spending. When people feel richer as a result of economic growth, they tend to spend more money on goods and services, which can increase company revenues. This increase in company revenue can contribute to an increase in share prices. However, it is important to note that not all studies find a strong relationship between GDP and IHSG. Several studies have investigated the impact of various macroeconomic variables on stock market performance in developing countries, including Indonesia (Elhussein & Warag, 2020) (Fianto et al., 2020) (Sia et al., 2023). For example, a study conducted by Wongbangpo and Sharma found long-term and short-term relationships between stock prices and macroeconomic variables in several developing countries in Asia, including Indonesia (Elhussein & Warag, 2020).

Conclusion

With the results of the analysis above, it can be concluded that there is a positive relationship or there is a strong relationship between the variables related to Gross Domestic Product, namely Interest Rates, Inflation, Money Supply, and the Composite Stock Price Index. The author's obstacles in writing this research, the author experienced difficulty in finding valid data and looking for several journal references related to this research. The purpose of writing is to find out and analyze variables that influence Gross Domestic Product, whether these variables have an influence or not. It can be seen based on data on Gross Domestic Product (GDP) during the period (2015-2022). Based on the results of descriptive statistical research in table 1, GDP has high data variability, which can be seen from the min value of the GDP variable of 14,584 and the highest of 14,910, and the interest rate variable has lower variability. Other variables, such as inflation variables, money supply, and the composite stock price index have high variability. Research in table 2 can explain the influence on GDP. The effect of GDP on inflation, money supply, the composite stock price index has a significant effect on GDP, but the interest rate variable has no effect. Therefore, in research interest rates must be increased further so that they can further influence GDP in the country. Interest rates can overcome this by maintaining macroeconomic stability and financial system balance, and if you take into account the dynamics of the global and domestic economy, then encourage the pace of economic recovery.

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