

MACROECONOMIC UNCERTAINTY AND GREEN STOCK MARKET ON ECONOMIC GROWTH IN INDONESIA

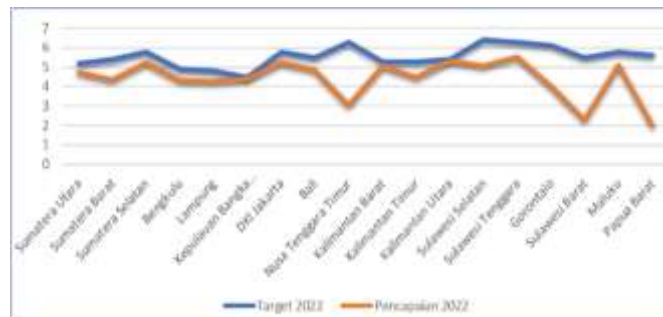
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ARTICLE INFO	ABSTRACT
<p>Keywords: Macro Economy, Green Stock Market, Economic Growth.</p>	<p>This study was conducted to be able to analyze factors that can affect economic growth in Indonesia. The dependent variable used in this study is economic growth and the dependent variables are BI policy rates, FED policy rates, world oil, exchange rates and green stock markets. The research was conducted in Indonesia with the data taken is the period from 2010 to 2022. The data source used is secondary data by taking data from the Indonesian Central Bureau of Statistics, and Bank Indonesia. Data analysis uses the help of e-views software by conducting multiple regression analysis tests. The results of this study apparently prove that the variables of BI policy rates, FED policy rates and exchange rates affect economic growth in Indonesia, while world oil, and the green stock market have no effect on economic growth in Indonesia.</p>
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1. INTRODUCTION

Economic growth is the most important macroeconomic performance indicator. It is also an indication of the successful development of a nation. There are many factors that influence economic growth, including macroeconomic stability and the financial markets of a country. Economic stability is a state of the economy that runs in accordance with expectations, controlled, and sustainable.



Source : BPS

Figure 1. Economic Growth of 18 Provinces

Internationally, the Indonesian government has set a target for the country's inclusion in the group of high-income countries by 2045. The seriousness of the central government is then shown by setting economic growth targets starting from the national level to each province in Indonesia. Nationally, Indonesia has managed to achieve a growth of 5.31% from the target of 5.2% for 2022. However, Figure 1 shows that there are still 18 or 53% of 34 provinces in Indonesia that did not succeed in achieving the economic growth target in 2022.

Macroeconomic stability is needed to realize the government's dream. This means that the government must be more sensitive and make efforts so that macroeconomic uncertainties such as interest rates, exchange rates, and oil prices move in a direction that supports economic growth. This study aims to determine how much influence macroeconomic uncertainty and the green stock market have on economic growth in Indonesia. So that it is expected to help the government take more effective economic policies and can direct Indonesia towards sustainable and sustainable economic growth. The data analysis model chosen by the author is an analysis of the factors that affect economic growth. These factors include interest rates, exchange rates, oil prices and the stock market.

Economic growth is an important indicator of people's well-being, as it can affect employment opportunities, income, and living standards. Understanding the factors that influence economic growth is crucial for policymakers and market participants [1]. Research on the effect of interest rates, exchange rates, world oil prices, and stock prices on economic growth is a relevant topic in macroeconomics. Interest rates and exchange rates can affect a country's competitiveness and foreign capital inflows, while world oil prices can affect a country's purchasing power and inflation. Stock prices, on the other hand, can give an indication about the performance of the financial and business sectors in a country.

Research on the effect of interest rates, exchange rates, world oil prices, and stock prices on economic growth can provide useful insights for market participants and policymakers in making better and more sustainable investment decisions and economic policies. Research on the effect of the green stock market on economic growth is still relatively new and has never been done in Indonesia. Therefore, the novelty in this study is the existence of green stock market variables, which are expected to provide insight into the impact that will be given to economic growth in Indonesia. In addition, the interest rate variable will be divided into two variables, namely the BI and FED policy rates, which are expected to see the impact of domestic and foreign interest rates. This variable is also a novelty in this study.

Literature Review

Interest Rate

According to Keynesian theory, interest rates affect economic growth through their effect on investment [2]. If interest rates are low, investment will increase, so economic growth will also increase. Conversely, if interest rates are high, investment will decline and economic growth will slow down. The IS equation is as follows: $Y=C(Y-T)+I(r)+G$ which shows that interest rates (r) are a function of income/economic growth (Y). Research on the effect of interest rates on economic growth with the results of interest rates has a negative impact on economic growth as has been done by researchers [3] [4] [5] and [6]. However, in research conducted by [7] that interest rates have no effect on economic growth.

World Oil Price

Supply theory states that fluctuations in world oil prices can affect the supply of goods and services [8]. If oil prices rise, then production and distribution costs also rise so that companies will increase selling prices and this can reduce the supply of goods and services. The following supply function: $Q_s = f(P_m, P_k, C)$ shows that the oil price (P_m) is a function of the total supply of goods and services (Q_s) which will then drive income/economic growth. Previous research on the effect of oil prices on economic growth conducted by [9] and [10] concluded that oil prices have a negative effect. In addition, researchers [11] and [12] concluded that the effect of oil prices is positive. The researcher [13] concluded that oil prices have no effect on economic growth.

Exchange Rate

The Purchasing Power of Money theory was proposed by Irving Fisher in the early 20th century. This theory explains the relationship between the price level, interest rate, and the amount of money in an economy [14]. The purchasing-labor theory states that changes in the exchange rate can affect the inflation rate and ultimately impact economic growth. If a country's exchange rate weakens, then imported goods become more expensive and can raise domestic prices. If the price of domestic goods rises, then labor wages will also increase and result in an increase in production costs. The increase in production costs will result in a decrease in the competitiveness of domestic products, which can hamper economic growth. Previous research conducted by [15] and [4] that the exchange rate has a positive impact on economic growth. However, research conducted by [16] and [12] found that the exchange rate has a negative effect. While in research [17] and [11] that the exchange rate has no effect on economic growth.

Green Stock Market For Economic Growth

Multiple Causality Theory This theory states that the relationship between the stock market and economic growth is mutually influential. This means that economic growth can affect the stock market and vice versa. In this case, strong economic growth can push up stock prices and trigger greater investment activity, which can then accelerate economic growth [18]. Previous research related to the influence of the stock market on economic growth, namely research [19] [20] and [21] found that the effect is positive. Meanwhile, researcher [22] found that the stock market had no effect on economic growth.

Conceptual Framework

Based on the description above, it can be built research framework as follows:

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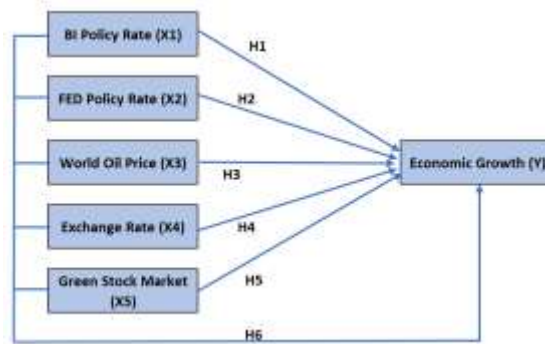


Figure 2. Theoretical Framework

Research Hypothesis

Based on the problem formulation and conceptual framework above, the research hypothesis put forward by the researcher is as follows:

- H1 : BI Policy Interest Rate affects Economic Growth.
- H2 : FED Policy Interest Rate affects Economic Growth.
- H3 : World Oil Price affects Economic Growth.
- H4 : Exchange Rate affects Economic Growth.
- H5 : Green Stock Market affects Economic Growth.
- H6 : Simultaneously all independent variables affect Economic Growth.

2. METHOD

Type and Data Source

This type of research is quantitative research because it uses data in the form of numbers measured on a numerical scale and obtained from Bank Indonesia and BPS reports and which are the objects of research. Quantitative research methods are research methods based on the philosophy of positivism, used to research on certain populations or samples, data collection using research instruments, quantitative or statistical data analysis, with the aim of testing predetermined hypotheses." In this study the authors examined the age of the company, profitability, and leverage on tax avoidance in the manufacturing pharmaceutical company sub-sector listed on the Indonesia Stock Exchange. Researchers use quantitative data. Quantitative data is a type of data in research that can be measured, calculated, and can be described using numbers [23].

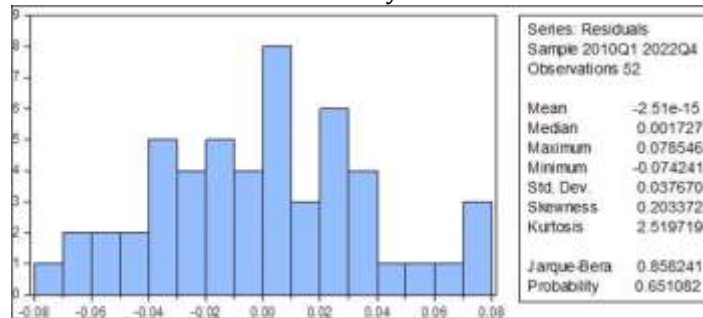
The data source used is secondary data in conducting the analysis. Secondary data is primary data that has been further processed and presented either by the primary data collector or by other parties, for example in the form of tables or diagrams. The research was conducted in Indonesia with the data taken is the period from 2010 to 2022. The data source used is secondary data by taking data from the Indonesian Central Bureau of Statistics, and Bank Indonesia. The data used is time series data. The model in this study is to use multiple linear regression models. The research sample is macroeconomic data and Indonesia's economic growth. The macro economy in question consists of interest rates, exchange rates, oil prices, and economic growth rates.

3. RESULT AND DISCUSSION

Normality Test Results

The normality test aims to test whether in the regression model, confounding or residual variables have a normal distribution. To test whether the data is normally distributed or not, it can be seen by using a graph plot.

Table 1. Normality Test Results



Source: Eviews 10 Data Processing (2023)

From the results of the normality test with Jarque-Bera, it can be seen that the probability value is $0.651082 > 0.05$, so it can be stated that the data is normally distributed and further testing can be done.

Multicollinearity Test

The multicollinearity test aims to test whether the regression model finds a correlation between independent variables. A good regression model should not have a correlation between independent variables. Multicollinearity can be done by looking at the tolerance value and variance inflation factor (VIF) from the analysis results using eviews. If the Tolerance value ≤ 0.10 or the VIF value ≥ 10 , the regression model is free from multicollinearity.

Table 2. Multicollinearity Test Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.384773	12717.61	NA
X1	2.62E-05	28.81872	1.509863
X2	6.43E-05	3.350123	1.913156
X3	0.000486	286.394	1.866223
X4	0.007275	21249.66	8.336691
X5	0.003853	4102.587	8.71687

Source: Eviews 10 Data Processing

From the multicollinearity test results that can be seen in Table 2 above, it can be seen that all data in the study are free from multicollinearity symptoms. This can be proven from the VIF value is smaller than 10.0 and the tolerance value is greater than 0.10.

4 Autocorrelation Test

The autocorrelation test aims to test whether in a linear regression model there is a correlation between confounding errors in period t and confounding errors in period $t-1$.

Table 3. Autocorrelation Test Results

Mean dependent var	14.65323
S.D. dependent var	0.170025
Akaike info criterion	-3.508556
Schwarz criterion	-3.283413
Hannan-Quinn criter.	-3.422242
Durbin-Watson stat	1.213343

Source: Eviews 10 Data Processing (2023)

From the results of the autocorrelation test conducted in this study and the results can be seen in Table 3, it is known that the data in the study are free from autocorrelation problems. This can be proven from the DW test results with a value of 1.213343, the value is located between (-2) to $+2$.

Heteroscedasticity Test

The heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from the residuals of one observation to another. If the variance of the residuals of one observation to another observation is constant, it is called Homoscedasticity and if it is different it is called Heteroscedasticity. A good regression model is one with homoscedasticity or no heteroscedasticity.

Tabel 4. Heteroscedasticity Test Result
 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.403109	Prob. F(5,46)	0.2409
Obs*R-squared	6.881159	Prob. Chi-Square(5)	0.2296
Scaled explained SS	4.091701	Prob. Chi-Square(5)	0.5363

Source: Eviews 10 Data Processing (2023)

From the results of the heteroscedasticity test with Breusch-Pagan-Godfrey above, the Probability F value is $0.2409 > 0.05$, so the data in the study are free from heteroscedasticity symptoms.

Multiple Linear Analysis Test Results

Multiple linear regression model is an equation that describes the relationship between two or more independent/predictor variables (X_1, X_2, \dots, X_n) and one independent/response variable (Y). The purpose of multiple linear regression analysis is to predict the value of the independent/response variable (Y) if the values of the independent/predictor variables (X_1, X_2, \dots, X_n) are known. In addition, it is also to determine the direction of the relationship between the independent variables and the independent variables [24].

Table 5. Multiple Linear Analysis Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.382338	0.620301	13.51334	0
X1	-0.02627	0.005114	-5.136365	0
X2	0.018226	0.00802	2.272489	0.0278
X3	0.036025	0.022044	1.63427	0.109
X4	0.591484	0.085291	6.934874	0
X5	0.122141	0.062073	1.9677	0.0551
R-squared	0.950913	Mean dependent var		14.65323
Adjusted R-squared	0.945577	S.D. dependent var		0.170025
S.E. of regression	0.039664	Akaike info criterion		-3.508556
Sum squared resid	0.07237	Schwarz criterion		-3.283413
Log likelihood	97.22246	Hannan-Quinn criter.		-3.422242
F-statistic	178.2222	Durbin-Watson stat		1.213343
Prob(F-statistic)	0			

Based on the results of multiple linear analysis tests in this study, the regression equation is obtained as follows:

$$Y = 8.382 - 0.026_BI + 0.0182_FED + 0.036_WOP + 0.591_ER + 0.122_GSM + e$$

Where:

- Y = Economic growth (Indonesia)
- BI = BI policy rate
- FED = FED policy rate
- WOP = World oil price
- ER = Exchange rate
- GSM = Green stock market

From the results of multiple linear analysis tests, information can be obtained that:

- a. The significance value for BI (X1) on economic growth (Y) in this study is $0.00 < 0.05$ with a t-statistic of -5.14 so it can be concluded that there is an influence between BI policy rates on economic growth (Y) with a negative direction.
- b. The significance value for FED (X2) on economic growth (Y) in this study is $0.0278 < 0.05$ with a t-statistic of 2.27 so it can be concluded that there is an influence between the FED policy rate on economic growth (Y) in a positive direction.
- c. The significance value for the WOP variable (X3) on economic growth (Y) in this study is $0.109 > 0.05$ so it can be concluded that there is no influence between world oil prices on economic growth (Y).
- d. The significance value for the exchange rate (X4) on economic growth (Y) in this study is $0 < 0.05$ with a t-statistic of 6.93 so it can be concluded that there is an influence between the exchange rate on economic growth (Y) with a positive direction.
- e. The significance value for GSM (X5) on economic growth (Y) in this study is $0.055 > 0.05$ so it can be concluded that there is no influence between the green stock market on economic growth (Y).

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F-Test Results

To test the feasibility of the regression model, the F statistic is used. According to [25], the regression model is declared feasible if the significant value is ≤ 0.05 , otherwise the significant value is ≥ 0.05 , the regression model is declared infeasible. The results of the F test which can be seen in Table 5 above show that the probability f-statistic value is smaller than 0.05. This certainly indicates that simultaneously the independent variables in the study affect the dependent variable.

Determination Coefficient Test Results

From the results of testing the coefficient of determination in this study and the results can be seen in Table 5, it can be seen that the Adjusted R Square value in this study is 0.945577 or 94.56%. This means that 94.56% of the dependent variable is influenced by the independent variable, while the remaining 5.44% is explained by other factors not included in this study.

4. CONCLUSION

From the research conducted, it can be concluded that: The first hypothesis of the study is accepted, this can be seen from the significance value for the BI policy interest rate (X1) on economic growth (Y) in this study which is $0.00 < 0.05$ with a t-statistic of -5.14 so it can be concluded that H1 is accepted with a negative direction. This indicates that there is an influence between the BI policy interest rate on economic growth (Y). The second hypothesis in this study is accepted, this can be seen from the significance value for the FED policy interest rate variable (X2) on economic growth (Y) in this study which is $0.0278 < 0.05$ with a t-statistic of 2.27 so that it can be concluded that H2 is accepted in a positive direction. This certainly indicates that there is an influence between the FED policy interest rate on economic growth (Y). The third hypothesis is rejected in this study, this can be seen from the significance value for world oil prices (X3) on economic growth (Y) in this study which is $0.109 > 0.05$ so that it can be concluded that H3 is rejected. This certainly indicates that there is no influence between world oil prices on economic growth (Y). The fourth hypothesis in this study is accepted, this can be seen from the significance value for the exchange rate variable (X4) on economic growth (Y) in this study which is $0.00 < 0.05$ with a t-statistic of 6.93 so that it can be concluded that H4 is accepted in a positive direction. This indicates that there is an influence between the exchange rate on economic growth (Y). The fifth hypothesis is rejected in this study, this can be seen from the significance value for the green stock market (X5) on economic growth (Y) in this study which is $0.055 > 0.05$, so it can be concluded that H5 is rejected. This certainly indicates that there is no influence between the green stock market (X5) on economic growth (Y). The sixth hypothesis in this study is accepted. This can be seen from the simultaneous influence between the independent variables on the dependent variable, which is $0.00 < 0.05$ so it can be concluded that H6 is accepted. From this study it can be seen that there is an influence between the independent variable and the dependent variable. This research was conducted using independent variables, namely the benchmark interest rate, exchange rate, world oil price and green stock market. This is certainly a limitation of this research which in the future can be a suggestion to add other research variables that affect economic growth. The sample in the study was taken from economic growth in Indonesia, further research can add samples of different countries in the next study.

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