Determination of The BI 7-Day Repo Rate, Inflation, and S&P 500 on the Energy Sector Stock Index (IDX Energy) in 2021-2023

Sugeng Tri Wahono[1], Chandra Murti Dewi Widowati Hermajiwandini[2]

{sugengtriwahono26123@gmail.com[1], chandramurti@ecampus.ut.ac.id[2]}

Universitas Terbuka, Jalan Cabe Raya, Pondok Cabe, Pamulang, Tangerang Selatan

Abstract. Fluctuations in stock market indices are common on the stock exchange and are influenced by various factors such as internal company dynamics and macroeconomic conditions. This study analyzes the impact of the BI 7–Day Repo Rate, Inflation, and S&P 500 on the Energy Sector Stock Index (IDX Energy) from 2021 to 2023 using time series data. The analysis utilizes a linear regression model to assess the variables. The results show that the independent variables have t-count result that is higher than the t-table. The significance of the independent variables has a significant impact (significance < 0,05). Additionally, the calculated F value is higher than the F table, with a significance of 0,00, signifying that from January 2021 to December 2023, the BI 7–Day Repo Rate, Inflation, and S&P 500 variables either partially or simultaneously have a positive and significant impact on the Energy Sector Stock Index.

Keywords: BI 7–Day Repo Rate, Inflation, S&P 500, Energy Sector Stock Index.

1 Introduction

The buying and selling system are a basic scheme that has been practiced by humans since several centuries BC. The more varied human needs are, the more systems are used. On this basis, humans continue to innovate to form a new system that is easier to use and wider in scope. Transactions that were originally only for the fulfillment of primary needs, increased with secondary and even tertiary desires. This change can be seen where in addition to primary needs, it increases with the desire for capital investment or investment. Investment is a postponement of consumption at this time which will be put into profitable capital within a certain period [2]. Investment is important for investors to increase wealth by managing their wealth effectively into investment instruments at this time and will be felt in the future. Investment continues to grow from what was originally done directly between the owner of capital to the owner of the business, increasing with investment through a stock portfolio. This can be seen from the changes in the stock trading system in the world and even in Indonesia. Buying and selling shares from what was originally done by meeting directly between sellers and buyers of shares on the IDX (Indonesia Stock Exchange) with all the limitations such as a narrow range of buyers, inefficient, and changes in stock prices are not current (real time). But nowadays, the system has been abandoned and changed with an online trading system or e-trading. These changes have a major impact on the existing stock trading system so that the range of activities is wider

ISBEST 2024, September 19, South Tangerang, Indonesia

DOI 10.4108/eai.19-9-2024.2354213

and larger. In addition, with changes in systems and technology, information disclosure from buyers, brokers, and sellers can benefit all parties involved so that the stock trading process can be monitored transparently and can be reached in any place without facing each other.

The ease of this transaction motivates ordinary people to start exploring the world of buying and selling shares on the stock exchange as investors. The Indonesian Central Securities Depository or KSEI in 2021 published statistical data on the drastic increase in the number of investors on the IDX from 3.880.753 investors in 2020, which increased by 92,99% in 2021 to 7.489.377 investors [18]. This increase is a sign that more and more individuals are interested in investing in the stock exchange. This increase in the number of investors is connected to the increase in investment in Indonesia which is expected to grow the economy. With the increase in the number of investors on the stock exchange, the more diverse the information needs related to stock price mobility, information on listed companies, economic conditions, and which industrial sectors can share greater profits in the future. The Indonesia Stock Exchange plays a role in providing information related to the stock exchange including data on stock price mobility and stock exchange conditions that can be used by investors as material for recommendations on transactions to be made. One of the stock price mobility data that is often used as a guide for investors in Indonesia is the Composite Stock Price Index (Jakarta Composite Index – JCI) data which consists of all supporting stock indices classified by sector or industry. One of the sectors is the Energy Sector Stock Index (IDX Energy) which is composed of several types of oil, gas, and coal company stocks (such as PT Adaro Minerals Indonesia Tbk., PT GTS Internasional Tbk., and PT Elnusa Tbk.) and alternative energy company stocks (such as PT Sky Energy Indonesia Tbk. and PT Semacom Integrated Tbk.) that reflects the mobility of stock market data in the energy sector.

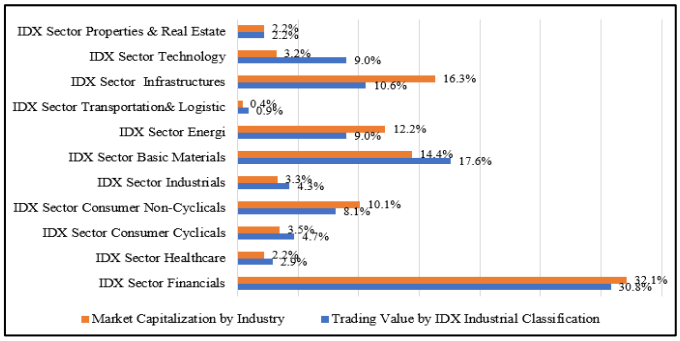

Chart 1. Trading Value by Industry Classification and Market Capitalization by Industry as of December 2023

The December 2023 edition of the IDX monthly statistics shows the mobility of all stock indices supporting the JCI where in December 2023, the Trading Value by Industry Classification shows the energy sector ranked fourth highest along with the technology sector with a percentage of nine percent. While ranking by Market Capitalization by Industry, the energy sector also ranked fourth with a percentage of 12,2 percent in December 2023. Both data show that the energy sector is a sector to be reckoned with on the stock exchange in Indonesia.
Decisions in buying and selling stock transactions cannot be separated from the mobility of the stock index itself where fluctuations in the stock index are a natural thing to happen.

Transactions in the stock exchange occur at any time. This is due to the meeting between selling investors and buying investors who create selling prices and buying prices for the same type of shares and continue to repeat. It is undeniable that fluctuations also occur in the stock index in the energy sector. IDX annual statistics from January 2021 to December 2023 reveal the mobility of IDX Energy. This mobility tended to increase from 2021 to 2023, but there was a significant degradation of the index in May 2023 (1709,55) and June 2023 (1737,97), which finally rose again in July 2023 (1924,10). Fluctuations in the common stock index are caused by several macroeconomic factors such as the Rupiah Exchange Rate, Inflation, and the BI Interest Rate where many determinative studies have discussed this. However, these macroeconomic factors are still internal factors originating from within the country. While in the stock exchange some external factors are also involved in influencing the mobility of stock indices in Indonesia such as the influence of stock price indices from other countries such as the Straits Time Index, S&P 500, and DOW 50 Index. This is because the shares circulating on the stock exchange are not only shares originating from companies in Indonesia but also shares from companies in other countries. These conditions require investors to analyze the mobility of domestic or foreign stocks. An example of a stock index that is often used to conduct analysis is the S&P 500, which consists of 500 stock indices from the most representative and largest companies with the function of describing stock market performance in the United States. There have been many studies on stocks in Indonesia. However, studies that focus on the energy sector stock index are still minimal and there are no additional external factors that can affect changes in the energy sector stock index in Indonesia. These two things are the background of the study with the title Determination of the BI 7–Day Repo Rate, Inflation, and S&P 500 on the Energy Sector Stock Index (IDX Energy) Years 2021 – 2023.

2 Literature Review

2.1 Theoretical Foundation

Energy Sector Stock Index

Shares are a form of ownership of a company. Companies can issue one or both types of shares at the same time between common shares or preferred shares [2]. Shares are classified as ordinary shares when the company only issues one class of shares. Apart from ordinary shares, there are also preferred shares, which are a mixture of bonds and ordinary shares of the issuing company. Preferred shares pay out a stable yield of dividends. The difference with ordinary shares is that shareholders have all the rights such as fixed dividend rights and priority redemption rights in the event of liquidation, but these shareholders do not have veto rights like ordinary shares. Unlike ordinary goods, nominal shares in circulation have another name, namely the stock index. According to the IDX on its official website, a stock index is a statistical barometer of all price fluctuations from a set of stock data sorted in such a way that special criteria and methods are regularly reviewed. The establishment of a stock index has benefits such as providing an interpretation of the general view of the stock exchange, being a passive product of investment, benchmarking active portfolios, mediating when measuring and modeling investment returns or returns, and mediating related asset classes on asset coordinates.The energy sector as one of the sectors in the industrial group classification contains stocks of companies that operate by extracting non-renewable natural resources whose revenues are directly affected by the world price of energy products such as coal mining companies, oil

and natural gas drilling companies, as well as service companies supporting the sector. In addition to this, companies that run their business by selling goods or services in the form of alternative energy such as companies that sell solar energy. Currently, energy sector stocks listed on the IDX are still dominated by non-renewable natural resource extractor companies.

BI 7–Day Repo Rate

Based on Bank Indonesia's official website, BI 7–DRR is a new benchmark interest rate used by BI as an effort to strengthen monetary operations instruments. Like the new benchmark interest rate, this instrument has a stronger affiliation to interest rates in the money market, is transactional in nature, and urges the sharpening of short-term credit markets, especially the application of repo tools [12]. Strengthened monetary operations instruments are commonplace for central banks and are claimed to be international "best practices" in the implementation of monetary operations. As the central bank, Bank Indonesia continues to make improvements to the monetary operation instruments to increase their effectiveness in achieving the agreed inflation target. As a new policy instrument, the BI 7–DRR has the power to rapidly influence the money market including stocks.

Inflation

Inflation is a process of rising prices of values and services communally and poorly linked to the market system that can be due to a variety of factors such as increased public consumption, excessive amounts of liquidity in the market that cause consumption to be estimated, and the effect of a blockage in the distribution of goods. In addition, inflation is also the process of continuous weakening of the exchange rate [3]. Inflation describes a process of occurrence rather than global highs and lows. This means that high prices do not always indicate inflation. The escalation of the money supply circulating in society is often seen as a trigger for price increases that illustrate inflation. Inflation is also an issue that is often faced by the economy of a country. The extent of its consequences on the economy will vary from country to country. The inflation rate is commonly used as a barometer that tells how severe the economic problems of a country are. In a fast-growing economy, inflation is between two and four percent, while when there is economic unrest, hyperinflation will occur [3]. It is common to estimate price fluctuations in the economy using the Consumer Price Index.

According to Mishkin, there are two causes of inflation, namely demand-pull inflation and cost-push inflation [3]. Demand-pull inflation is caused by a surplus of liquidity that is skewed towards state policy in monetary policy. This inflation occurs due to excessive total demand and is usually caused by surplus liquidity in the market which results in increased demand and has an impact on price level fluctuations. Meanwhile, cost-push inflation results from underproduction as well as distribution difficulties despite the absence of significant demand escalation. The disruption in the distribution flow can lead to price escalation in line with the supply-demand law or due to the creation of a new economic value situation as a result of the actual distribution pattern or proportion. On the other hand, slow inflation is considered a stimulus for economic growth when the increase in prices is not followed by a rapid increase in labor wages which has an impact on increasing company profits. The increase in corporate profits will have an impact on the increase in corporate investment and will ultimately spur economic development.

S&P 500

In addition to the JCI as an index that measures the ability of all stock prices listed on the IDX and commonly used in Indonesia, there is also the S&P 500 used in the United States which is composed of the 500 most representative and largest company stock indices with the function of describing the performance of the stock market in the United States [15]. Similar to the JCI, the S&P 500 covers several industry sectors such as finance, technology, healthcare, and energy. The S&P 500 is a highly accurate index compared to other indices in the United States. Companies listed in the S&P 500 are selected by a committee with qualifications such as liquidity, sector representation, and market capitalization of the company. The high degree of diversification due to the fact that the listed companies consist of various sectors, the S&P 500 gives investors a high probability of exposure to the economy in the United States. Although the S&P 500 is used in the United States, investment managers and investors from other countries use this index to compare the performance of investment portfolios as a basis for making investment decisions.

2.2 Research Framework

This study uses the following framework:

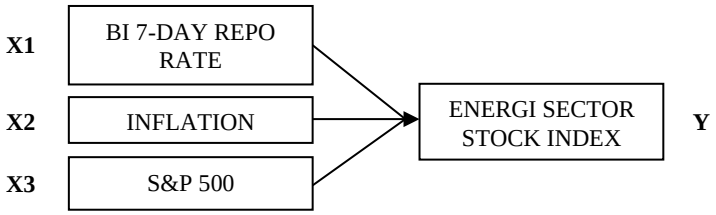

Figure 1. Research Framework

2.3 Hypothesis

Based on the theoretical basis and the results of previous studies relevant to this study, researchers in this study provide hypotheses or initial presumptions, namely:

2.3.1 Impact of BI 7-DRR on Energy Sector Stock Indices

As a new policy instrument, the BI 7-DRR has the power to quickly influence the money market including stocks. Determination of BI 7–DRR that is too high will have an impact on the increase in deposit interest rates or loan interest rates [6]. Increased interest rates on deposits and loans will affect companies that have liabilities. The profit earned will decrease due to the increase in liability expenses so that the company's net profit will decrease. The reduced profits of the company have an impact on the decline in the company's stock price index. Based on this study, BI 7–DRR has a significant impact on the Energy Sector Stock Index.
H1: It is suspected that BI 7–DRR has an impact on the Energy Sector Stock Index

2.3.2 Impact of Inflation on Energy Sector Stock Indices

Rising prices caused by slow inflation but not followed by a rapid increase in labor wages will result in an increase in corporate profits. The increase in company profits will have an impact on the increase in company investment and will ultimately spur economic development. In

accordance with studies conducted by Novianto and Paramita (2023) and Sari (2022), Inflation has a significant impact on the Energy Sector Stock Index [7] [9].
H2: It is suspected that Inflation has an impact on the Energy Sector Stock Index

2.3.3 Impact of S&P 500 on Energy Sector Stock Indices

As a requirement for inclusion in the index, the market representation issued by the S&P 500 is often used by fund managers and investors as a consideration in making investment decisions. Although this index is a US-based index, the impact of this index is not limited to the US. The companies listed on this index are the largest and most representative companies in the United States and possibly the world. Significant fluctuations can produce waves in global financial markets and even have an impact on stock indices in Indonesia. This is because investors and financial institutions in various countries have portfolios in companies listed in this index.

The absence of a study on the impact of the S&P 500 on the energy sector stock index in Indonesia casts doubt on the analytical results of this study. However, with the statement that significant fluctuations in the S&P 500 can generate waves in financial markets globally. This is a strong factor that fluctuations in the S&P 500 have a significant impact on the Energy Sector Stock Index in Indonesia. Investors and investment managers will definitely consider internal macroeconomic factors and external factors such as foreign indices (S&P 500) regarding stock indices in Indonesia before making investment decisions.
H3: It is suspected that S&P 500 has an impact on the Energy Sector Stock Index

3. Research Methods

3.1 Types and Sources of Data

This study uses time series data from January 2021 to December 2023. In addition, this study uses secondary data types with a time span from January 2021 to December 2023, including BI 7–DRR and Inflation data obtained from Bank Indonesia data, S&P 500 data obtained from Investing.com data, and Energy Sector Stock Index (IDX Energy) data obtained from Indonesia Stock Exchange (IDX) data.

3.2 Data Analysis Technique

This study uses quantitative analysis techniques and its application with multiple linear regression models. The data used is time series data from January 2020 to December 2023 on each variable used in this study. Regression estimation will be carried out when econometric modeling has been obtained which must then be reconsidered to see how well the regression results are obtained. Reconsideration of the regression results is done by measuring the degree of goodness of fit of the regression modeling using R^2 or the coefficient of determination to explain how the independent variable defines the dependent variable, testing the significance of the impact of all independent variables together on the dependent variable using the F test, and testing the significance of the impact of all independent variables fragmentarily or partially on the dependent variable using the t test.

3.3 Data Analysis Method

To assess the determination between the independent variables and the dependent variable, this study uses multiple linear regression analysis and is analyzed with the data processing tool IBM SPSS Statistics 25. This study uses the following econometric equation model:

$$IEn = \alpha + \beta_1 RR + \beta_2 I + \beta_3 SP + e \; . \quad (1)$$

Description:

IEn = Energy Sector Stock Index
α = Constant
$\beta_{1,2,3}$ = Regression Coefficient
RR = BI 7-Day Repo Rate
I = Inflation
SP = S&P 500
e = Variabel Error

The equation model is the basis that RR, I, and SP as independent variables affect IEn as the dependent variable.

3.3.1 Classical Assumption Test

This study uses multiple linear regression analysis where three independent variables are used with one dependent variable. This model requires multiple regression coefficients and standard errors obtained through the OLS or Ordinary Least Square method [5]. This method must have three conditions to be a good estimator such as unbiased, consistent, and efficient. So that it will create an estimator that is the Best Linear Unbiased Estimator or BLUE. The OLS method in this study has three classic tests performed, namely:

a. Heteroscedasticity Test. Heteroscedasticity is a condition of uncertainty of the variance of the disturbance variable or errors. Disturbance variable will differ between objects due to the inequality of the objects studied [5]. The existence of heteroscedasticity will cause the inefficiency of the regression model which will ultimately interfere with the estimation of regression coefficients. Heteroscedasticity often appears in studies with cross-section data.
b. Multicollinearity Test. Multicollinearity is when the independent variables have a linear relationship with each other. Multicollinearity problems can be seen when the correlation coefficient is above 0,85. In addition, time series data tends to experience multicollinearity problems because the data often goes up or down together.
c. Normality Test. Normality is a test used to prove whether the disturbance variables are allocated normally or not. When the disturbance variables are not normally distributed, hypothesis testing cannot be carried out [5]. Normality tests can be run through the Kolmogorov-Smirnov test or the Jarque-Bera test.

3.3.2 Hypothesis Test

Hypothesis testing is carried out to prove what the impact of the independent variable is on the dependent variable in this study. This test is carried out in several ways, namely:

a. Coefficient of Determination**.** Coefficient of determination (R^2) is a tool to calculate whether the data used in the study are compatible with the resulting regression line [5]. In other words, R^2 uses the regression line to assess the percentage of total Y variation with the independent variables used in the study. The greater the value of R^2 means the better it is in explaining the dependent variable and vice versa. The coefficient of determination

has a range of zero to one, if the number is close to one, it means that the better the regression line is because it can describe the actual data.

b. *t*–Test. This test is carried out to prove how the impact of each independent variable partially affects the dependent variable (significance test). Independent variable has an impact on the dependent variable if the *t* table value is smaller than the *t* count with a significance of less than 0,05. In other words, the independent variable has a positive and significant impact on the dependent variable partially (Ha is accepted and H0 is rejected) [5].

c. *F*–Test. The F test is used to prove how the feasibility of the independent variables jointly affects the dependent variable (overall fit). This test can be known through analysis of variance or ANOVA (Widarjono, 2018). Independent variables jointly have an impact on the dependent variable if the calculated *F* value is greater than the *F* table with a significance of less than 0,05 [5]. In other words, the independent variables have a positive and significant impact on the dependent variable simultaneously.

4 Discussion

4.1 Description of Research Variables

The data in this study has a specimen of 36 data in each variable with a time series from January 2021 to December 2023. And consists of two types of variables, namely independent variables (BI 7–DRR, Inflation, and S&P 500) and dependent variables (Energy Sector Stock Index - IDX Energy). The data was obtained from Bank Indonesia (BI 7–DRR and Inflation), Investing.com (S&P 500), and IDX (Energy Sector Stock Index - IDX Energy). The summary statistics of the above specimens are:

Table 1. Descriptive Statistics Table

	BI 7-DRR	Inflation	S&P 500	IDX Energy
Minimum	3,50	1,33	3585,60	712,98
Maximum	6,00	5,95	4769,80	2279,55
Mean	4,44	3,15	4226,37	1540,82
Standard Deviation	1,09	1,53	300,74	551,95

The BI 7–DRR variable has a minimum value and a maximum value of 3,50 and 6,00, respectively. With a mean value of 4,44 greater than the standard deviation of 1,09. Mean value is greater than the standard deviation (4,44 > 1,09), it can be interpreted that the data distortion formed from this variable is low or the degree of distribution of the value of this variable. The Inflation variable, the minimum value and maximum value are 1,33 and 5,95 respectively. The mean of 3,15 is greater than the standard deviation value of 1,53. The mean value is greater than the standard deviation (3,15 > 1,53), it can be interpreted that the data distortion formed is fairly low or the degree of distribution of the values of this variable. The S&P 500 variable has a minimum value and a maximum value of 3585,60 and 4769,80, respectively. The mean of 4226,37 is greater than the standard deviation of 300,74. The mean value is greater than the standard deviation value (4226,37 > 300,74), which means that the data distortion formed from this variable is low or the degree of distribution of the values of this variable is even.

Energy Sector Stock Index

The energy sector as one of the sectors in the industrial group classification contains shares of companies that run their business by extracting non-renewable natural resources as well as extracting renewable natural resources. Currently, energy sector stocks listed on the IDX are still dominated by non-renewable natural resource extractor companies.

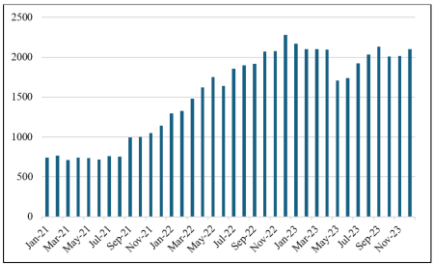

Chart 3. Energy Sector Stock Index (IDX Energy) January 2021 - December 2023

The energy sector is a prominent sector in the list of stocks by industry. This is evident from the December 2023 edition of the IDX's monthly statistics, showing the mobility of all stock indices supporting the JCI where in December 2023, the Trading Value by Industry Classification shows the energy sector ranked fourth highest along with the technology sector with a percentage of nine percent. While ranking by Market Capitalization by Industry, the energy sector also ranked fourth with a percentage of 12,2 percent in December 2023. In addition, from the statistical data published by the IDX from January 2021 to December 2023, this sector index tends to escalate. From January 2021 to December 2023, this sector experienced significant

degradation, which only occurred in May 2022 (1750,72) to June 2022 (1638,18) with a percentage degradation of 6,43%, December 2022 (2279,55) to January 2023 (2171,30) with a percentage degradation of 4,75%, April 2023 (2094,86) to May 2023 (1709,55) with a percentage degradation of 18,39%, and September 2023 (2131,67) to October 2023 (2007,98) with a percentage degradation of 5,80%.

BI 7–Day Repo Rate

BI 7–DRR is like a new benchmark interest rate, this instrument has a stronger affiliation to interest rates in the money market, is transactional, and urges the sharpening of the short-term credit market, especially the application of the repo tool. In addition, the BI 7–DRR has the power to rapidly influence the money market including stocks. Strengthened monetary operation instruments are commonplace for central banks and are claimed to be international "best practice" in the implementation of monetary operations. As a central bank, Bank Indonesia continues to make improvements to monetary operation instruments to increase their effectiveness in achieving the agreed inflation target. As a new policy instrument, the BI 7–DRR has the power to rapidly influence the money market including stocks.

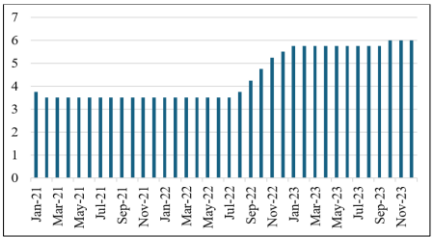

Chart 4. BI 7–Day Repo Rate January 2021 - December 2023

Based on official data released by Bank Indonesia from January 2021 to December 2023, the BI 7–DRR rate degraded in January 2021 (3,75%) to February 2021 (3,50%) with a percentage of 6,67%. From February 2021 to July 2022, the BI 7-DRR rate stabilized at 3,50%. However, from July 2022 to January 2023, the BI 7–DRR rate continued to escalate by 0,50% or 6,67% per month with the last rate in January 2023 at 5,75%. From January 2023 to September 2023, the BI 7–DRR rate stabilized at 5,75% and rose again in October 2023 at 6,00% until December 2023.

Inflation

Inflation is also an issue that is often faced by the economy of a country. The inflation rate is commonly used as a barometer that tells how severe the economic problems felt by a country. In a rapidly growing economy, inflation is between two and four percent, while when there is economic unrest, hyperinflation will occur [3].

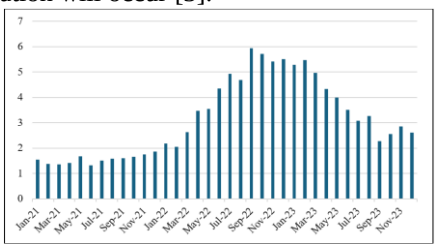

Chart 5. Inflation January 2021 - December 2023

Based on official data released by Bank Indonesia from January 2021 to December 2023, the inflation rate from January 2021 to December 2021 has fluctuated but is still below two percent. However, a significant escalation occurred in February 2022 (2,06%) to March 2022 (2,64%) with an escalation percentage of 21,97%, again experiencing escalation in March 2022 (2,64%) to April 2022 (2,64%) with a percentage escalation of 23.92%, May 2022 (3,55%) to June 2022 (4,35%) with a percentage escalation of 18,39%, August 2022 (4,69%) to September 2022 (5,95%) with a percentage escalation of 21,18%. Since September 2022 with the highest figure of 5,95%, it continues to fluctuate with the lowest point in September 2023 with a figure of 2,29% or with a percentage degradation from September 2022 to September 2023 of 61,68%. And from September 2023 it fluctuated until December 2023 with the last figure of 2,61%.

S&P 500

The S&P 500 is used in the United States and is composed of the 500 most representative and largest company stock indices with the function of describing the performance of the stock market in the United States. Similar to the JCI, the S&P 500 covers several industry sectors such as finance, technology, healthcare, and energy. The S&P 500 is a highly accurate index compared to other indices in the United States Companies with stock indices listed in the S&P 500 are selected through a committee with qualifications such as liquidity, sector representation, and market capitalization of the company. With a high degree of diversification because the listed companies consist of various sectors, the S&P 500 gives investors a high degree of exposure to the economy of the United States.

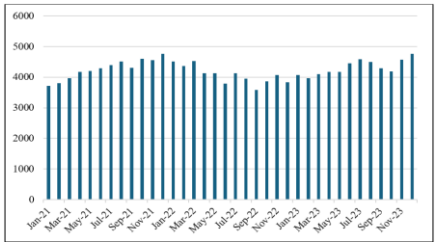

Chart 6. S&P 500 January 2021 - December 2023

The S&P 500 from January 2021 to September 2022 continued to fluctuate with the highest index in December 2021 (4766,20) and the lowest index in September 2022 (3585,60). From September 2022 to July 2023, it escalated with the highest figure in July 2023 (4589,00) and degraded until October 2023 (4193,80) with a percentage degradation of 8,61%. However, from October 2023 to December 2023, it continued to degrade, namely October 2023 (4193,80), November 2023 (4567,80), and December 2023 (4769,80).

4.2 Classical Assumptions

This study uses multiple linear regression analysis through the Ordinary Least Square OLS method with three requirements to be a good estimator such as unbiased, consistent, and efficient. There are three classic assumption tests on the OLS method in this study, namely:

4.2.1 Heteroscedasticity Test

Heteroscedasticity is a condition of uncertainty of the variance of the disturbance variable or errors. The disturbance variable will differ between objects due to the inequality of the objects studied. According to Widarjono (2018), a study does not have a heteroscedasticity problem if the significance of the independent variable is greater than 0,05. Based on the table of analysis results, the significance number X1 is 0,409; X2 is 0,556; and X3 is 0,993 which means greater than 0,05, so in this study no heteroscedasticity problem is formed.

Table 2. Heteroscedasticity Test

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	103.772	338.022		.307	.761
	BI 7-DRR	18.050	21.592	.180	.836	.409
	INFLASI	-10.437	17.547	-.146	-.595	.556
	S&P 500	.001	.079	.002	.009	.993

a. Dependent Variable: Abs_Res

4.2.2 Multicollinearity Test

Multicollinearity is between independent variables having a linear relationship with each other. According to Widarjono (2018), to check whether a study is indicated to have multicollinearity is if the tolerance result is smaller than 0,1 and the VIF (Variance Inflation Factor) number is more than 10. Based on the table of analysis results, the tolerance number X1 is 0,657; X2 is 0,501; and X3 is 0,649 which has a value greater than 0,1. In addition, the VIF value of X1 is 1,523; X2 is 1,996; and X3 is 1,541 which means it is smaller than 10. Based on these results, it can be concluded that this study does not form a multicollinearity problem.

Table 3. Multicollinearity Test

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	-1760.376	598.118		-2.943	.006		
	BI 7-DRR	216.008	38.206	.426	5.654	.000	.657	1.523
	INFLASI	253.889	31.048	.706	8.177	.000	.501	1.996
	S&P 500	.365	.139	.199	2.620	.013	.649	1.541

a. Dependent Variable: IDX ENERGY

4.2.3 Normality Test

Normality is a test carried out to prove whether the disturbance variables are allocated normally or not. The normality test in this study uses the Kolmogorov-Smirnov test. In this test, data is indicated as normal if it has a significance number (2-tailed) greater than 0,05. Based on the results of the analysis on the asymptotic significance 2-tailed, the significance number is 0,200, which means it is greater than 0,05. Therefore, it can be concluded that the disturbance variable is normally distributed.

Table 4. Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		36
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	190.76025169
Most Extreme Differences	Absolute	.115
	Positive	.115
	Negative	-.051
Test Statistic		.115
Asymp. Sig. (2-tailed)		.200[c,d]
a. Test distribution is Normal.		

4.3 Regression Analysis

Regression analysis obtained the following results:

Table 5. Regression Coefficient

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	-1760.376	598.118		-2.943	.006
	BI 7-DRR	216.008	38.206	.426	5.654	.000
	INFLASI	253.889	31.048	.706	8.177	.000
	S&P 500	.365	.139	.199	2.620	.013
a. Dependent Variable: IDX ENERGY						

With econometric equations, the equation is obtained, namely:

$$Y = -1760{,}376 + (216{,}008\ X1) + (253{,}889\ X2) + (0{,}365\ X3) \quad (2)$$

a. The constant of -1760,376 indicates that if X1, X2, and X3 are equal to 0 then Y will be constant at 1760,376.
b. Sourced from variable X1 from the regression coefficient, it has a positive result with a value of b = 216,008. If variable X1 escalates by one point, there will be an escalation to variable Y of 216,008.
c. Sourced from variable X2 from the regression coefficient, it has a positive result with a value of b = 253,889. If the X2 variable escalates by one point, there will be an escalation to variable Y of 253,889.
d. Sourced from variable X3 from the regression coefficient, it has a positive result with a value of b = 0,365. If variable X3 escalates by one point, there will be an escalation to variable Y of 0,365.

4.4 Hypothesis Test

Hypothesis testing in this study was carried out to prove the impact of the independent variable on the dependent variable with the following results:

4.4.1 Coefficient of Determination

R Square (R^2) shows the coefficient of determination to assess the percentage of total Y variation with the independent variables used in the study. The coefficient of determination with the number pointing to one, the better the regression line because it can describe the actual data. Based on this study, the R^2 number is 0,881 (88,1%). This proves that the variables X1, X2, and X3 are able to describe variable Y by 88,1%. While the remaining 0,119 or 11,9% is influenced by variables other than BI 7–DRR, Inflation, and S&P 500.

Table 6. Coefficient of Determination

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.938[a]	.881	.869	199.50185
a. Predictors: (Constant), S&P 500, BI 7-DRR, INFLASI				

4.4.2 *t–Test*

This test is carried out to prove what kind of impact the independent variables have on the dependent variable fragmentarily or partially. The independent variable has an impact on the dependent variable when the *t* table value is smaller than the *t* count with a significance of less than 0,05. Or it means that the independent variable has a positive and significant impact on the dependent variable partially. Determination of the *t* table in this study with a two-sided significance level (two tailed) of 0,05 with a *df* value of 32 (36 - 4), the *t* table value in this study is 2,03693. Based on the explanation of the regression coefficient table, it is concluded that:

a. Based on the analysis results in the regression coefficient table above, the *t* value of the BI 7–DRR variable (X1) is 5,654 which is greater than the *t* table (2,03693). In addition, BI 7–DRR (X1) variable has a significance of 0,00 which is smaller than 0,05. So, it means that H1 is accepted and H0 is rejected or the BI 7–DRR variable (X1) partially has a positive and significant impact on the Energy Sector Stock Index variable (Y).
b. Based on the analysis results in the regression coefficient table above, the *t* value of the Inflation variable (X2) is 8,177 which is greater than the *t* table (2,03693). In addition, the Inflation (X2) variable has a significance of 0,00 which is smaller than 0,05. So, it means that H2 is accepted and H0 is rejected or the Inflation variable (X2) partially has a positive and significant impact on the Energy Sector Stock Index variable (Y).
c. Based on the analysis results in the regression coefficient table above, the *t* value of the S&P 500 variable (X3) is 2,620, which is greater than the *t* table (2,03693). In addition, the S&P 500 (X3) variable has a significance of 0,013 which is smaller than 0,05. So it means that H3 is accepted and H0 is rejected or the S&P 500 variable (X3) partially has a positive and significant impact on the Energy Sector Stock Index variable (Y).

4.4.3 *F*-Test

This test is carried out to prove what the feasibility of the independent variables has an impact on the dependent variable (overall fit) simultaneously. This test can be known through ANOVA. The independent variables simultaneously have an impact on the dependent variable if the *F* table value is smaller than the *F* count with a significance of less than 0,05. Or in other words, the independent variables simultaneously have a positive and significant impact on the dependent variable. Determination of the *F* table in this study with a significance level of 0,05 with a *df1* value of 3 (4 - 1) and *df2* of 31 (36 - 4 - 1), the *F* table value in this study is 2,911. Based on the explanation of the regression coefficient table, it is concluded that:

Table 7. ANOVA Table – *F* Test

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9389060.524	3	3129686.841	78.633	.000[b]
	Residual	1273631.577	32	39800.987		
	Total	10662692.100	35			

a. Dependent Variable: IDX ENERGY
b. Predictors: (Constant), S&P 500, BI 7-DRR, INFLASI

Based on the table of analysis results above, the calculated *F* value is 78,633 which is greater than the *F* table (2,911). In addition, the significance value is 0,00 which is smaller than 0,05. From these two statements, the BI 7–DRR (X1), Inflation (X2), and S&P 500 (X3) variables simultaneously have a positive and significant impact on the Energy Sector Stock Index variable (Y).

4.5 Explanation of Results

4.5.1 Analysis of the Impact of BI 7–Day Repo Rate on the Energy Sector Stock Index

Based on the regression coefficient in this study, the BI 7–DRR variable has a positive and significant impact on the Energy Sector Stock Index from January 2021 to December 2023. This result is obtained from the *t*-test result of the BI 7–DRR variable of 5,654 which is greater than the *t* table (2,03693) and has a significance of 0,00 which is smaller than 0,05. In addition, if there is an escalation of BI 7–DRR by 1 point, there will be an escalation to the Energy Sector Stock Index variable of 216,008.

These results are in line with the study of Perdana and Imaningsih (2024), where the BI 7–DRR variable has a positive and significant impact on the energy sector stock price index from 2021 to 2022. BI 7–DRR, which is escalating slowly, causes investors to maintain their stock investment instruments without moving them to other forms of investment instruments. This condition shows that the degree of confidence in investing capital is increasing.

4.5.2 Analysis of the Impact of Inflation on the Energy Sector Stock Index

Based on the regression coefficient in this study, the Inflation variable has a positive and significant impact on the Energy Sector Stock Index from January 2021 to December 2023. This result is obtained from the *t*-test result of the Inflation variable of 8,177 which is greater than the *t* table (2,03693) and has a significance of 0,00 which is smaller than 0,05. In addition, when there is an escalation of Inflation by 1 point, there will be an escalation to the Energy Sector Stock Index variable of 253,889.

These results are in line with the study of Novianto and Paramita (2023), where Inflation has a positive and significant impact on the energy sector stock price index from 2020 to 2022. Inflation is a reflection of market prices that can describe information about overall market conditions, which will motivate investors to invest. Slow inflation is considered a stimulus for economic growth when rising prices are not followed by a rapid increase in labor wages which has an impact on increasing company profits. Increased corporate profits will lead to increased investment and ultimately the company's share price will escalate.

4.5.3 Analysis of the Impact of S&P 500 on the Energy Sector Stock Index

Based on the regression coefficient in this study, the S&P 500 variable has a positive and significant impact on the Energy Sector Stock Index from January 2021 to December 2023. These results are obtained from the *t*-test results of the Inflation variable of 2,620 which is greater than the *t* table (2,03693) and has a significance of 0,013 which is smaller than 0,05. In addition, if there is an escalation of the S&P 500 by 1 point, there will be an escalation to the Energy Sector Stock Index variable by 0,365.

These results are in line with the study of Abnaina and Swandari (2022), where the S&P 500 has a positive and significant impact on the JCI. Domestic investors in considering investment decisions will compare the stock index of the targeted sector with those of other countries. S&P 500 as an index of 500 stocks of leading companies in the United States can be a material comparison of investment portfolio performance as a basis for providing investment decisions to be made. When the S&P 500 escalates, which includes the energy sector stock index, investors will assume that the domestic energy sector stock index is also escalating. The energy sector as a sector in the industrial group classification contains stocks of companies that run their business by extracting non-renewable natural resources whose revenues are directly affected by world energy product prices. When the price of the extracted natural resources escalates, the profits of these companies will also escalate which in turn will result in an increase in the energy sector stock index.

5. Conclusions And Suggestions

5.1 Conclusion

Based on the discussion and analysis results of this study, there are conclusions, namely:

a. The results of the analysis of the BI 7–DRR variable have a positive and significant impact on the Energy Sector Stock Index variable partially. Evidenced by the *t* value of 5,654 which is greater than the *t* table of 2,03693 and with a significance of 0,00 which is smaller than 0,05.
b. The results of the analysis of the Inflation variable have a positive and significant impact on the Energy Sector Stock Index variable partially. Evidenced by the *t* value of 8,177 which is greater than the *t* table of 2,03693 and with a significance of 0,00 which is smaller than 0,05.
c. The results of the analysis of the S&P 500 variable have a positive and significant impact on the Energy Sector Stock Index variable partially. Evidenced by the *t* value of 2,620 which is greater than the *t* table of 2,03693 and with a significance of 0,013 which is smaller than 0,05.
d. Analysis of independent variables in the form of BI 7-DRR, Inflation, and S&P 500 has a positive and significant impact on the Energy Sector Stock Index variable simultaneously. Evidenced by the calculated *F* value of 78,633 where this figure is greater than the *F* table of 2,911 and with a significance value of 0,00 which is smaller than 0,05.

5.2 Advice

a. Investment in the form of a stock portfolio has a high risk compared to other investment portfolios. Investors or investors need to review in making investment decisions in order

to get the expected benefits by analyzing factors that are able to cause fluctuations in stock indices in general such as macroeconomic factors both internally within the country and externally abroad.

b. The energy sector stock index has a fairly good probability of profit, but fluctuations often occur regarding the operational conditions of energy sector companies which will ultimately affect the stock index apart from macroeconomic factors. Therefore, it is necessary to have good skills and knowledge when deciding to buy energy sector stocks.

c. Variables in similar studies have similar or even different results. This is due to differences in time series and methods used. This can be used by future researchers to continue similar research so that the results of the study continue to develop over time.

References

[1] Ekananda, M. (2021). *Modul BMP ESPA4420 Ekonomi Keuangan Internasional*. Edisi 2. Tangerang Selatan: Universitas Terbuka.

[2] Hartono, J. (2020). *Modul BMP EKSI4203 Teori Portofolio dan Analisis Investasi*. Edisi 3. Tangerang Selatan: Universitas Terbuka

[3] Lestari, E.P. (2018). *Modul BMP ESPA4227 Ekonomi Moneter*. Edisi 2. Tangerang Selatan: Universitas Terbuka.

[4] Priyati, R.Y. (2023). *Modul BMP ESPA4123 Statistika Ekonomi*. Edisi 2. Tangerang Selatan: Universitas Terbuka.

[5] Widarjono, A. (2018). *Modul BMP ESPA4312 Ekonometrika*. Edisi 2. Tangerang Selatan: Universitas Terbuka.

[6] Abnaina, E., Swandari, F. (2022). Pengaruh Variabel Makro Ekonomi dan *Variable Global Index* terhadap Indeks Harga Saham Gabungan (IHSG). *Jurnal Manajemen dan Bisnis*, 19(1), 83 – 92.

[7] Novianto, F., Paramita, R.A.S. (2023). Pengaruh Harga Minyak, Inflasi, Suku Bunga, dan Kurs terhadap Indeks Saham Sektoral IDX Energy. *Jurnal Ilmu Manajemen*, 11(3), 536 – 549.

[8] Perdana, A.F., Imaningsih, N. (2024). Analisis Pengaruh Harga Batubara Acuan, Suku Bunga BI 7-Day Repo Rate & Nilai Tukar Terhadap Indeks Harga Saham Sektor Energi Pada Bursa Efek Indonesia (BEI). *Journal of Economic, Business and Accounting*, 7(3), 4202 – 4209.

[9] Sari, M.B.S., Sari, C.M. (2022). Pengaruh Inflasi, BI 7-*Day Repo Rate*, dan Nilai Tukar terhadap Harga Saham Pada PT Adaro Energy Indonesia. *Jurnal Ilmiah Bidang Sosial, Ekonomi, Budaya, Teknologi, dan Pendidikan*, 1(11), 2409 – 2420.

[10] Tejokusumo, P., Anastasia, P., Atmadja, A.S. (2022). The Influence of Real Interest Rates, Inflation, Exchange Rate, And GDP On Stock Return In The Property Sector. *Jurnal Ekonomi dan Manajemen*, 16(2), 86 – 95.

[11] Widodo, B.S., Swandari, F., Sadikin, A. (2020). Pengaruh Kurs, Suku Bunga SBI, Laju Inflasi Dan Harga Emas Terhadap Indeks Harga Saham Pertambangan. *Jurnal Wawasan Manajemen*, 8(1), 1 – 15.

[12] bi.go.id. Information Data of BI 7-Day Repo Rate 2021 – 2023. Accessed on May 7, 2024, from https://www.bi.go.id/id/statistik/indikator/bi-7day-rr.aspx

[13] bi.go.id. Information Data of Inflation 2021 – 2023. Accessed on May 7, 2024, from https://www.bi.go.id/id/statistik/indikator/data-inflasi.aspx

[14] dcfx.co.id. Get To Know The S&P 500 Index, Meaning, History, and Influence. Accessed on May 7, 2024, from https://www.dcfx.co.id/news/article/103436
[15] id.investing.com. Historical Data of S&P 500 January 2021 – December 2023. Accessed on May 7, 2024, from https://id.investing.com/indices/us-spx-500-historical-data
[16] idx.co.id. Stock Indeks and Guide of IDX Industrial Classification Versi 1.1 (January, 2021). Accessed on May 7, 2024, from https://www.idx.co.id/id/produk/indeks
[17] idx.co.id. IDX Monthly Statistics January 2021 – December 2023. Accessed on May 7, 2024, from https://www.idx.co.id/id/data-pasar/laporan-statistik/statistik/
[18] ksei.co.id. IDX Statistics December 2021 Edition. Accessed on May 7, 2024, from https://www.ksei.co.id/publications/Data_Statistik_KSEI