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# Analysis of The Effect of World Crude Oil Prices, Exchange Rates, Inflation, Dow Jones Industrial Average, and The Nikkei 225 Index on The Composite Stock Price Index

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**Abstract**

This study aimed to analyze and determine the effect of world crude oil prices of the WTI type, Exchange Rate, Inflation, Dow Jones Industrial Average Index, and Nikkei 225 Index on the Composite Stock Price Index. The data collection technique in this study uses the Correction Model (ECM) method. The results of this study indicate that the application of the error correction model (ECM) that has been used can provide an explanation of the influence of world crude oil prices, exchange rates, inflation, Dow Jones Industrial Average, and Nikkei 225 Index on the Composite Stock Price Index. Overall in the long-term model the variable world crude oil prices, exchange rates, inflation, dow jones industrial average, and nikkei 225 index has a variation of 0.784464 or 78.44% able to simultaneously or together affect the value of the composite stock price index, while the remaining 21.56% is influenced by variables outside this variable. The short-term model has a negative and significant effect on the composite stock price index, this is indicated by a probability value that is less than the 5% significance value (0.0378 <0.05). Simultaneously the variable world crude oil prices, exchange rates, inflation, dow jones industrial average, and nikkei 225 index has a variation of 0.430077 or 43% where the variation in the development of up or down can jointly affect the value of the composite stock price index, while the remaining 57% is influenced by variables outside this research variable.

*Keywords: Error Correction Model (ECM); WTI; Exchange Rate; Inflation; Dow Jones Industrial Average; Nikkei 225 Index; JCI*

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## 1. Introduction

The movement of the JCI includes the stock exchange index of other countries (Mawadddah and Nurwulandari, 2018), world oil prices which are used as the world's main source of energy, global stock price indices, movements in world gold prices and Fed interest rates. This part of the indicator makes the JCI fluctuate and can be influenced by various macroeconomic indicators. The capital market is interesting to review with the trend from year to year until the development of the current era. One way to see the economy in a country has decreased or increased is by looking at the indicators of the economy itself. The number of foreign investors is a sign that a country is experiencing a good economy. Investors review by looking at the movement of a stock in one particular issuer or a combination of stocks from market prospects where it can be invested. A stock price index that explains the combined issuers that have joined and are listed on the Indonesia Stock Exchange.

Oil is one of the strategic energy sources to ensure the development of modern industry and economy. Oil price fluctuations are always considered a reference for forecasting economies around the world, so any changes in oil prices are always a hot issue to be discussed in political and economic circles in each country. Oil price fluctuations in the international market in principle follow the generally accepted assumptions in a market economy, where the prevailing price level is largely determined by the supply and demand mechanism as a factor. Since 1970, Indonesia has been considered as one of the largest oil producing countries in the world. Petroleum became an important commodity in international trade activities. At that time, Indonesia's economy relied heavily on oil commodities. From 1980 to early 1990, Indonesia's economic growth was so rapid that it reached a level of nine percent per year and was referred to as

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one of The Asian Miracle Economies because of its fantastic economic growth. (Klein, 2018) argues that there are two crude oil prices used as a benchmark by the international community, namely Europe Brent and West Texas Intermediate (WTI). West Texas Intermediate (WTI) is one of the indices to measure the level of crude oil. In 2020, the impact of the Covid-19 pandemic which has spread to all countries in the world has caused a decline in the price of WTI crude oil, which was recorded in April 2020 to have reached a decline of 37.63 USD/barrel (Kurniawan, 2022). Opinions that state WTI has an influence on the Composite Stock Price Index such as research conducted by (Istamar, 2019); (Safitri, 2020).

According to (Ningsih, 2021) Macroeconomic indicators that affect JCI include the exchange rate. The USD/IDR exchange rate also weakened due to the economic crisis. The economic crisis in 1997-1998 was an unforgettable moment that the rupiah exchange rate weakened in 1997 (Astuty, 2020). At that time in 1997 in June the weakening of the rupiah currency value was around Rp.2,380 per USD, entering August the rupiah increased in fluctuations as high as Rp.3000 per 1 USD. This was due to a 30% increase in the Indonesian interest rate. At the end of August, the Jakarta Composite Index (JCI) stood at 493 with a capitalization value of Rp.86.45 trillion. The JCI and market capitalization has declined by more than 30% since early 1997. Currently, there is another threat of economic crisis due to the global health crisis where the spread of the Covid-19 virus has caused the global economy to be sluggish. A sluggish economy results in a weakening exchange rate (Ramadhan, 2022). According to (Haryanto, 2020) Fluctuations in the Rupiah exchange rate before the Covid-19 pandemic were driven by several perspectives such as concerns that the financial crisis that occurred in Argentina and Turkey could spread to developing countries that experienced deficits such as Indonesia. Another factor is the risk caused by the trade war between the United States and China. One of the macroeconomic factors that affect the composite stock price index besides the exchange rate is inflation (Nasution,2020); (Sejati, 2021) and (Tanjung, 2022). In general, inflation can be interpreted as a process of rising prices in the economy (Darmawan, 2022). Increased inflation can increase company revenues and costs. If the company's costs are higher than the revenue earned from increasing prices, the issuer's profits will decrease. The decline in profits will affect investor interest in buying the company's shares.

A global stock price index that is often referenced in investors' decision-making and information processes is the Dow Jones Industrial (DJIA). This is because the DJIA is the oldest market performance measurement index in the United States (US) that is still running today. In addition, some factors affect the value of shares in the capital market, including factors that come from outside the company, such as foreign exchange trading which is characterized by exchange rates and Inflation. Foreign currencies that are often used in Indonesia are four types of foreign currencies such as USD (United States Dollar), € (European Euro) ¥ (Japanese Yen), and AUD (Australian Dollar). The reason for using the four currencies is because these currencies have represented the continents in the world, namely America, Europe, Asia and Australia,, and also Indonesia often conducts international trade with countries in the four continents. According to previous research such as (Setiawan, 2019); (Ainanur, 2021); (Mahendra, 2022) the Dow Jones Industrial Average is an important assessment of changes in the Composite Stock Price Index in Indonesia. According to (Herlianto, 2020); (Prahesti, 2020) and (Hartantio, 2020) Another index that is often used for investor decision-making and the global economy is the Nikkei 225 (N225) which is the Japanese composite stock price index. The Nikkei 225 or Nikkei Index and often referred to as the Nikkei 225 Index is a stock index in Japan, precisely in Tokyo. Japan is the largest consumer of energy material exports such as petroleum and coal. So that the rise and fall of the Nikkei 225 Index will affect the movement of the JCI on the Indonesia Stock Exchange. As the data described in the World Bank as of 2015, Japan has a GDP of 4.123 trillion US dollars which makes Japan influential in terms of the world economy.

This study aimed to analyze the effect of world crude oil prices of the WTI type, Exchange Rate, Inflation, Dow Jones Industrial Average Index, and Nikkei 225 Index on the Composite Stock Price Index. In this research methodusesg Error Correction Model (ECM) data as an econometric tool where there are 2 modeling, namely long-term and short-term models (Lina Situngkir, 2019). The Error Correction Model (ECM) model is used to answer research problems, namely analyzing the short-term and long-term effects of independent variables on the dependent variable (Situngkir, 2020). This study found that world crude oil prices have a positive effect both in the long term and short term on the Composite Stock Price Index. The exchange rate has a significant negative effect on the long-term and short-term models of the composite stock price index. Inflation has a positive and significant effect in the long-term model but in the short-term model. short-term does not significantly affect the composite stock price index. The Dow Jones industrial average has a significant positive effect in the long-term model and has no significant effect in the short-term model on the composite stock price index. The Nikkei index has a significant negative effect in the long-term model and has no significant effect in the short-term model on the composite stock price index.

## 2. Literature Review

Previous research has provided many opinions about the influence of the rise or fall of the composite stock price index. The JCI provides historical information to investors regarding stock price movements in one period to another (Ramadhan, 2022). There are part indicators that can affect the movement of the JCI. Research conducted by (Suryanto, 2017) shows that the price of crude oil of the WTI type has a positive influence on the Composite Stock Price Index. This is in line with research (Basit, 2020) and (Mahendra, 2022) which shows that the world crude oil price of WTI type has a positive influence on the composite stock price index. However, research from (Hanoeboen, 2017) and (Anggriana, 2021) shows that the price of crude oil of the WTI type has a negative and insignificant effect on the composite stock price index.... Research conducted by (Ambarwati, 2022; Zahara, 2022; Raudatullaily, 2023) where the estimated results of the exchange rate variable have a negative and significant effect on the composite stock price index variable in both short-term and long-term models. Research conducted by (Hasanudin018) Inflation has a positive effect on JCI. According to (Nuraeni, 2022) in his research the DJIA Index has a positive effect on the JCI and the Nikkei 225 Index has a negative effect on the JCI.

## 3. Methods

his study uses the ECM (Error Correction Model) Two Step Angle Granger data analysis method (Evy, 2019) and (Zahara, 2022). The ECM model can use more variables for short-term analysis and consistency of empirical models with economic theory, and cn explain the imbalance between the phenomenon that economic actors want and the reality (Kurniasih, 2019). The data used uses time series data with an observation value of 96, this is used from the period January 2015 - December 2022, which is calculated with data on the first of the month. The econometric model in this study is:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 4X4 + \beta 5X5 + \varepsilon t$$

Description:

Y = Change in JCI in a given time
X1 = Change in World Crude Oil Price (WTI)
X2 = Change in Rupiah Exchange Rate to US Dollar X3 = Change in inflation
X4 = Change in Dow Jones Industrial Average Index X5 = Change in Nikkei 225 Index
β Coefficient
$\varepsilon t$ = Error Term / Residuals of the model

The ECM model in this study uses a long-term model equation as follows:

$$IHSGt = \beta 0 + \beta 1WTIt + \beta 2USD\_IDRt + \beta 3INFt + \beta 4DJIAt + \beta 5NIKKEIt + \varepsilon t$$

Where the formation of the short-term equation model includes the following:

$$\Delta IHSGt = \alpha 1\Delta WTIt + \alpha 2\Delta USD\_IDRt + \alpha 3\Delta INFt + \alpha 4\Delta DJIAt + \alpha 5\Delta NIKKEIt + \alpha 6ECt - 1 + \varepsilon t$$

## 4. Result and Discussions

In this study, the data used is secondary data in the form of a time series for 7 years starting from 2015 to 2022 with the Error Correction Model approach method. In this study, the independent variable data is the world crude oil price which in this case uses WTI (West Texas Intermediate) data as a benchmark, the Rupiah Exchange Rate which in this case uses the dollar exchange rate against the rupiah, Inflation, Dow jones industrial averages, Nikkei 225 Index while the Dependent variable is the Composite Stock Price Index.

Descriptive data in table 1 provides an explanation where the minimum value of the JCI variable data is 4223.910 and the maximum value of the JCI variable is 7228.910, meaning that the lowest index size of the JCI variable was recorded in September 2015 at 4223.910 this is reviewed from the period January 2015 - December 2022 while the highest index size in the JCI variable displays in April 2022 which has an index of 7228.910 while the average value of the JCI variable is 5815.837 meaning that the composite stock price index in the period January 2015 - December 2022 displays an average index data of 5815.837 but this JCI variable has a large middle value which shows an index of 5943.755.

Good research is research whose data has been tested on classical assumptions. If the data is not accepted in the classical assumption test, it will have an impact on reducing the quality of the data to be studied. According to (Laksono T.Y.,

2017) the analysis carried out on the research model used is BLUE (Best, Linear, Unbiased and Estimator), so first a classic assumption test will be carried out, namely to find out whether there are classic assumption problems in the research model. This study uses classical assumption testing as an initial testing process.

**Table 1.** Descriptive Research Data

| | IHSG | WTI | USD_IDR | INF | DJIA | NIKKEI |
|---|---|---|---|---|---|---|
| **Mean** | 5815.837 | 58.47625 | 14039.05 | 3.468854 | 25314.22 | 22373.88 |
| **Median** | 5943.755 | 54.12500 | 14075.00 | 3.265000 | 25396.24 | 21899.18 |
| **Maximum** | 7228.910 | 114.6700 | 16300.00 | 7.260000 | 36338.30 | 29452.66 |
| **Minimum** | 4223.910 | 18.84000 | 12665.00 | 1.320000 | 16284.70 | 15575.92 |
| **Std. Dev.** | 748.8213 | 17.94913 | 677.8490 | 1.550440 | 5918.392 | 3817.034 |
| **Skewness** | -0.105144 | 0.857799 | 0.533068 | 0.860834 | 0.179219 | 0.327963 |
| **Curtosis** | 2.202356 | 3.909608 | 3.461631 | 3.251478 | 1.907417 | 2.030450 |
| **Jarque-Bera** | 2.721829 | 15.08266 | 5.398995 | 12.10952 | 5.288863 | 5.481069 |
| **Observations** | 96 | 96 | 96 | 96 | 96 | 96 |

**Table 2.** Normality Test

| Statistics | Results |
|---|---|
| **Std. Dev.** | 216.1598 |
| **Skewness** | -0.047273 |
| **Curtosis** | 3.085560 |
| **Jarque-Bera** | 0.064361 |
| **Probability** | 0.968332 |

Table 2 shows that the residual data is normally distributed, this can be seen in the figure where it has a probability value of 0.968332 which is above $\alpha = 0.05$. based on the figure above, it is concluded that the residual data is normally distributed with the resulting significance value greater than 0.05 or 5%.

The multicollinearity test is used to assess how independent variables are linearly correlated. One of the requirements in the classical assumption test is that no problematic data should be found in the multicollinearity test. In the multicollinearity test to ensure the data does not have a problem in the multicollinearity test, there are variables that have a value greater than 0.85 (Gujarati, 2007).

**Table 3.** Multicollinearity Test

| | WTI | USD_IDR | INF | DJIA | NIKKEI |
|---|---|---|---|---|---|
| **WTI** | 1.000000 | 0.356822 | -0.012289 | 0.664813 | 0.684125 |
| **USD_IDR** | 0.356822 | 1.000000 | -0.249193 | 0.634338 | 0.587184 |
| **INF** | -0.012289 | -0.249193 | 1.000000 | -0.558038 | -0.425101 |
| **DJIA** | 0.664813 | 0.634338 | -0.558038 | 1.000000 | 0.946234 |
| **NIKKEI** | 0.684125 | 0.587184 | -0.425101 | 0.946234 | 1.000000 |

Table 3 provides an explanation that the correlation matrix does not contain multicollinearity elements. In the world crude oil price variable against the Inflation variable of -0.012289 which has the strongest correlation while the world crude oil price variable against the Nikkei 225 Index variable of 0.684125 this has the weakest correlation of the rupiah exchange rate variable, the inflation variable and the Nikkei 225 Index variable. The rupiah exchange rate variable against the world crude oil price variable, the inflation variable, the dow jones industrial averages variable, and the Nikkei 225 Index variable has the strongest correlation of -0.249193 against the Inflation variable while the weakest value is 0.634338 for the dow jones industrial averages variable. In the inflation variable against other variables that have the strongest correlation is -0.012289 to the world crude oil price variable while the weakest value is -0.558038 to the dow jones industrial averages variable. In the dow jones industrial averages variable, the strongest correlation value is -0.55803.

The next classic assumption test is the heterosdeasticity test. This test aims to review in the regression model there is

an inequality of variance from the residuals of one observation to another (Ghazali, 2009).

Table 4 show heteroscedasticity test data where the results in this model display a Chi-Square probability value of 0.1460 with Obs * R2 9.528257, which is above the 0.05 or 5% significance level. Thus in this model there is no heteroscedasticity which means Ho is accepted. Autocorrelation testing aims to see in the linear regression model there is a correlation between confounding errors in period t and confounding errors in period t-1 (Ghazali, 2009).

**Table 4.** Heteroscedasticity Test

| **Heteroskedasticity Test: Breusch-Pagan-Godfrey** | | | |
|---|---|---|---|
| F-statistic | 1.635017 | Prob. F(6,88) | 0.1469 |
| Obs*R-squared | 9.528257 | Prob. Chi-Square(6) | 0.1460 |
| Scaled explained SS | 8.525589 | Prob. Chi-Square(6) | 0.2021 |

**Table 5.** Autocorrelation Test

| **Breusch-Godfrey Serial Correlation LM Test:** | | | |
|---|---|---|---|
| F-statistic | 71.20754 | Prob. F(2,88) | 0.0000 |
| Obs*R-squared | 59.33573 | Prob. Chi-Square(2) | 0.0000 |

In Table.5 show that the Autocorrelation test with the LM test, it can be seen that the Chi-Square probability value is 0.0000 or smaller than $\alpha = 0.05$. this reveals that in this model there is no autocorrelation, which means Ho is accepted.

The linearity test aims to determine whether the two or more variables tested have a linear relationship or not significantly.

**Table 6.** Linearity Test with Ramsey Reset Test

| | **Value** | **df** | **Probability** |
|---|---|---|---|
| t-statistic | 1.355514 | 87 | 0.1788 |
| F-statistic | 1.837419 | (1, 87) | 0.1788 |
| Likelihood ratio | 1.985483 | 1 | 0.1588 |

Table 6 show data that in the Probability section of the F-statistic line is 0.1588 (Likelihood Ratio) which gives a meaning greater than the alpha probability level of 0.05 so it can be concluded that the independent variable is linear with the dependent variable.

The next stage of measurement by looking at the data has stationarity. Stationary data is data that exposes the mean, variance, and autovariance (variation on lag) values to remain the same at any time the data is formed or used, with the intention that stationary data time series models can be said to be more stable. According to (Dinata, 2020) Data can be said to be stationary when it meets three criteria if the mean and variance are constant over time and the covariance between two time series data depends only on the lag between the two time periods.

**Table 7.** Unit Root Test Augmented Dicky Fuller Test

| **No** | **Variable** | **Significance level test** | |
|---|---|---|---|
| | | **ADF** | **Prob.** |
| 1 | IHSG | -8.335645 | 0.0000 |
| 2 | WTI | -8.700686 | 0.0000 |
| 3 | USD_IDR | -11.25003 | 0.0001 |
| 4 | Inflasi | -7.973837 | 0.0000 |
| 5 | DJIA | -11.04812 | 0.0000 |
| 6 | Nikkei | -10.17018 | 0.0000 |

In table.7, it can be seen that each variable has a level of data because all probabilities display data less than 0.05, which means that the data is stationary at the level level.

Before testing the *Error Correction Model* (ECM), the next requirement is to conduct cointegration testing where this test uses the *Eangle Granger* method. In this case study, we chose the Engle- Granger (EG) test by testing the ADF unit root on the residuals of the regression model estimation results (Pratiwi, 2022). This is done in order to determine whether the data is suitable for testing with a long-term model.

**Table 8.** Cointegration Test with Eangle Granger Method

| | | t-Statistic | Prob.* |
|---|---|---|---|
| **Augmented Dickey-Fuller test statistic** | | -3.446522 | 0.0117 |
| **Test critical values:** | 1% level | -3.500669 | |
| | 5% level | -2.892200 | |
| | 10% level | -2.583192 | |

*MacKinnon (1996) one-sided p-values.

Table 8 shows the ADF test value> CV (*Critical Values*) 5%, which is -3.446522> -2.892200 with a probability value of 0.0117, meaning that the residual value of the equation is stationary, so that each variable is said to be cointegrated or there is an indication of a long-term relationship.

**Table.9** ECM Estimation of Long-Term Model

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| WTI | 20.50524 | 3.468858 | 5.911237 | 0.0000 |
| USD_IDR | -0.191394 | 0.073962 | -2.587744 | 0.0113 |
| INF | 78.67125 | 38.68179 | 2.033806 | 0.0449 |
| DJIA | 0.156940 | 0.027078 | 5.795818 | 0.0000 |
| NIKKEI | -0.127214 | 0.032404 | -3.925879 | 0.0002 |
| C | 5904.315 | 910.2219 | 6.486677 | 0.0000 |
| R-squared | 0.784464 | Mean dependent var | | 5815.837 |
| Adjusted R-squared | 0.772489 | S.D. dependent var | | 748.8213 |
| S.E. of regression | 357.1734 | Akaike info criterion | | 14.65478 |
| Sum squared resid | 11481554 | Schwarz criterion | | 14.81505 |
| Log-likelihood | -697.4295 | Hannan-Quinn criter. | | 14.71957 |
| F-statistic | 65.51256 | Durbin-Watson stat | | 0.447994 |
| Prob(F-statistic) | 0.000000 | | | |

Thus the equation for the long-run estimation is as follows:

$$\text{IHSGt} = 5904.315\text{C} + 20.50524\text{WTI} + -0.191394\text{USD\_IDR} + 78.67125\text{INF} + 0.156940\ \text{DJIA} - 0.127214\ \text{NIKKEI} + \varepsilon t$$

In the long term, partially the WTI variable has a positive and significant effect on the composite stock price index, this is indicated by a probability value that is less than the 5% significance value (0.0000 <0.05). The exchange rate variable has a negative and significant effect on the composite stock price index, this is indicated by a probability value that is less than the 5% significance value (0.0000 <0.05). Inflation variable has a positive and significant effect on the composite stock price index, this is indicated by a probability value that is less than the 5% significance value (0.0000 <0.05). The dow jones industrial average variable has a positive and significant effect on the composite stock price index, this is indicated by a probability value that is less than the 5% significance value (0.0000 <0.05). The Nikkei 225 index variable has a negative and significant effect on the composite stock price index, this is indicated by a probability value that is less than the 5% significance value (0.0000 <0.05). Overall the variable world crude oil prices, exchange rates, inflation, dow jones industrial average, nikkei 225 index has a variation of 0.784464 or 78.44% able to simultaneously or jointly affect the value of the composite stock price index, while the remaining 21.56% is influenced by other variables.

Short-term models have generally been tested for long-term models followed by estimation to produce residual values. The residual value is the error correction term that is estimated jointly with the independent variables (World crude oil price, Rupiah exchange rate against the US dollar, Inflation, Dow Jones Industrial Average Index, Nikkei 225 Index) and the dependent variable (Composite stock price index).

**Table 10.** ECM Estimation of Short-Term Model

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| D(WTI) | 4.962864 | 3.016451 | 1.645266 | 0.1034 |
| D(USD_IDR) | -0.246771 | 0.052891 | -4.665656 | 0.0000 |
| D(INF) | -11.75540 | 46.31949 | -0.253789 | 0.8002 |
| D(DJIA) | 0.034015 | 0.022473 | 1.513599 | 0.1337 |
| D(NIKKEI) | 0.012530 | 0.024039 | 0.521257 | 0.6035 |
| ECT(-1) | -0.110359 | 0.052347 | -2.108219 | 0.0378 |
| R-squared | 0.430077 | Mean dependent var | | 16.43389 |
| Adjusted R-squared | 0.398059 | S.D. dependent var | | 216.6639 |
| S.E. of regression | 168.0984 | Akaike info criterion | | 13.14805 |
| Sum squared resid | 2514881. | Schwarz criterion | | 13.30935 |
| Log likelihood | -618.5325 | Hannan-Quinn criter. | | 13.21323 |
| Durbin-Watson stat | 1.816178 | | | |

Thus it can be seen that the acquisition value of the short-term estimation equation is as follows:

$$\text{HSGt} = 4.962864\text{WTI} - 0.246771\text{USD\_IDR} - 11.7554\text{INF} + 0.034015\text{DJIA} + 0.012530\text{NIKKEI} - 0.110359\text{ECT}(-1)$$

In the short term, partially the WTI variable has no significant effect on the composite stock price index, this is characterized by a probability value greater than the 5% significance value (0.1034>0.05). The exchange rate variable has a negative and significant effect on the composite stock price index, this is indicated by a probability value that is less than the 5% significance value (0.0000 <0.05). Inflation variable has no significant effect on the composite stock price index, this is characterized by a probability value greater than the 5% significance value (0.8002>0.05). The dow jones industrial average variable has no significant effect on the composite stock price index, this is characterized by a probability value that is less than the 5% significance value (0.1337>0.05). The Nikkei 225 index variable has no significant effect on the composite stock price index, this is characterized by a probability value greater than the 5% significance value (0.6035>0.05). In the short-term model has a negative and significant effect on the composite stock price index, this is characterized by a probability value that is less than the 5% significance value (0.0378 <0.05). Simultaneously the variable world crude oil prices, exchange rates, inflation, dow jones industrial average, nikkei 225 index has a variation of 0.430077 or 43% where the variation of development Up or down are able to jointly affect the value of the composite stock price index, while the remaining 57% is influenced by other variables.

## 5. Conclusions

This study provides an explanation that there is an effect of World Crude Oil Prices, Exchange Rates, Inflation, Dow Jones Industrial Average, and Nikkei 225 Index, on the Composite Stock Price Index. The world crude oil price variable has a significant positive effect in the long-term model on the composite stock price index variable. While in the short-term model, the world crude oil price variable has no significant effect. to the composite stock price index. The exchange rate variable has a significant negative effect in the long-term and short-term models on the composite stock price index variable. The inflation variable has a significant positive effect in the long-term model and has no significant effect in the short-term model on the composite stock price index variable. The Dow Jones industrial average variable has a significant positive effect in the long-term model and has no significant effect in the short term on the composite stock price index variable. The Nikkei 225 Index variable has a significant negative effect in the long-term model and has no significant effect in the short term on the composite stock price index variable.

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**References**

Ainanur, Y. R., & Pertiwi, T. K. (2021). Indeks Dow Jones, Nikkei225, Inflasi Dan Volume Perdagangan: Analisis Pengaruh Terhadap Ihsg. *Ecobisma (Jurnal Ekonomi, Bisnis Dan Manajemen)*, 8(2), 113–132. https://doi.org/10.36987/ecobi.v8i2.2166

Anggriana, R. S., & Paramita, R. S. (2020). Analisis Pengaruh BI Rate, Kurs, Inflasi, Harga Minyak, dan Harga Emas Dunia terhadap Indeks Harga Saham Gabungan Periode 2016-2019. *Jurnal Ilmu Manajemen*, 8(3), 1085. https://doi.org/10.26740/jim.v8n3.p1085-1098

Ambarwati, Rahayu, D. P., & Dewi, J. P. C. (2022). Pengaruh Harga Emas Dunia, Harga Minyak Dunia, dan Nilai Tukar Rupiah/Dolar Amerika Terhadap Indeks Harga Saham Gabungan. *JCA (Jurnal Cendekia Akuntansi)*, 3(2), 1–15. http://journal.unpar.ac.id/index.php/unpargraduate/article/view/552

Basit, Abdul. 2020. Pengaruh Harga Emas Dan Minyak Dunia Terhadap IHSG Periode 2016-2019. *JAA*, 5(1).

Darmawan, S., & Saiful Haq, M. S. (2022). Analisis pengaruh makroekonomi, indeks saham global, harga emas dunia dan harga minyak dunia terhadap Indeks Harga Saham Gabungan (IHSG). *Jurnal Riset Ekonomi Dan Bisnis*, 15(2), 95. https://doi.org/10.26623/jreb.v15i2.4381

Dinata, A. V., & Oktora, S. I. (2020). Pengaruh Quantitative Easing dan Tapering Off serta Indikator Makroekonomi terhadap Nilai Tukar Rupiah. *Kajian Ekonomi Dan Keuangan*, 4(1), 64–85. https://doi.org/10.31685/kek.v4i1.520

Evy Sulistianingsih, M. S. (2019). Model Koreksi Kesalahan (Ecm) Pada Kasus Data Runtun Waktu Indeks Harga Konsumen Di Jawa Tengah. *Bimaster: Buletin Ilmiah Matematika, Statistika Dan Terapannya*, 8(1), 111–116. https://doi.org/10.26418/bbimst.v8i1.30647

Hartantio, V., & Yusbardini, Y. (2020). Pengaruh Berbagai Indeks Saham Asia terhadap Indeks Harga Saham Gabungan Tahun 2015-2019. *Jurnal Manajerial Dan Kewirausahaan*, 2(4), 1096. https://doi.org/10.24912/jmk.v2i4.9895

Haryanto. (2020). Perencanaan, K., Nasional, P., & Indonesia, B. R. (2020). Dampak Covid-19 terhadap Pergerakan Nilai Tukar Rupiah dan Indeks Harga Saham Gabungan (IHSG). *Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning*, 4(2), 151–165.

Herlianto, D., & Hafizh, L. (2020). Pengaruh Indeks Dow Jones, Nikkei 225, Shanghai Stock Exchange, Dan Straits Times Index Singapore Terhadap Indeks Harga Saham Gabungan (IHSG) Di Bursa Efek Indonesia (BEI). *INOBIS: Jurnal Inovasi Bisnis Dan Manajemen Indonesia*, 3(2), 211–229. https://doi.org/10.31842/jurnalinobis.v3i2.133

Istamar, Sarfiah, S. N., & Rusmijiati. (2019). Nalysis of the Influence of World Oil Prices, Gold Prices, and Rupiah Exchange Rate of the Joint Stock Price Index in Indonesia Stock Exchange in 1998-2018. *DINAMIC: Directory Journal of Economic*, 1, 433–442.

Klein, T. (2018). Trends and contagion in WTI and Brent crude oil spot and futures markets - The role of OPEC in the last decade. *Energy Economics*, 75, 636–646.

Kurniasih, E. P. (2019). The Long-Run and Short-Run Impacts of Investment, Export, Money Supply, and Inflation on Economic Growth In Indonesia. *Journal of Economics, Business & Accountancy Ventura*, 22(1), 21–28. https://doi.org/10.14414/jebav.v22i1.1589

Kurniawan, A. M. Z. (2022). Harga Minyak, Harga Emas, Nilai Tukar IDR/USD, dan Jumlah Positif Covid-19 Serta Implikasinya Terhadap Indeks Harga Saham Gabungan di Bursa Efek Indonesia. *Jurnal Manajemen Dan Perbankan (JUMPA)*, 9(2), 54–72.

Laksono T.Y., R. (2017). Analisis Pengaruh Suku Bunga, Pendapatan Nasional Dan Inflasi Terhadap Nilai Tukar Nominal : Pendekatan Dengan Cointegration Dan Error Correction Model (Ecm). *Jurnal Riset Akuntansi Dan Keuangan*, 4(1), 911–926. https://doi.org/10.17509/jrak.v4i1.7715

Lina Situngkir, T. (2019). Pengaruh Jangka Pendek Dan Jangka Panjang Variabel Suku Bunga Terhadap Indeks Harga Saham Gabungan (Ihsg) Dengan Pendekatan Error Correction Model. *Sistemik : Jurnal Ilmiah Nasional Bidang Ilmu Teknik*, 7(2), 28–33. https://doi.org/10.53580/sistemik.v7i2.26

Mahendra, A., Amalia, M. M., & Leon, H. (2022). Analisis Pengaruh Suku Bunga, Harga Minyak Dunia, Harga Emas Dunia Terhadap Indeks Harga Saham Gabungan Dengan Inflasi Sebagai Variabel Moderating Di Indonesia. *Owner*, 6(1), 1069–1082. https://doi.org/10.33395/owner.v6i1.725

Mawaddah, T., & Nurwulandari, A. (2018). Pengaruh Indeks KLCI, STI, SET, dan PSEI (Integrasi AFTA) terhadap IHSG. *Oikonomia: Jurnal Manajemen*, 14(2). Retrieved from link http://journal.unas.ac.id/oikonamia/article/viewFile/525/419

Nasution, M. R., Ruslan, D., & Tanjung, A. A. (2021). Peramalan Inflasi Di Indonesia: Dynamic Model Average. *Media Ekonomi*, 28(2), 91–98. https://doi.org/10.25105/me.v28i2.7085

Ningsih, D. R., Arifah Tara, N. A., & Muhdin, M. (2021). Pengaruh Tingkat Inflasi, Suku Bunga Bi, Dan Nilai Tukar Rupiah Terhadap Ihsg. *JMM Unram - Master of Management Journal*, 10(2), 118–129. https://doi.org/10.29303/jmm.v10i2.655

Nuraeni, R., & Panjawa, J. L. (2022). Analisis pengaruh indeks saham asing terhadap indeks harga saham gabungan dengan pendekatan Error Correction Model. *Journal of Economics Research and Policy Studies*, 1(1), 25–39. https://doi.org/10.53088/jerps.v1i1.37

Prahesti, S. D., & Paramita, R. . S. (2020). Pengaruh Indeks SSEC, N225, STI, dan Faktor Makroekonomi terhadap IHSG. *Jurnal Ilmu Manajemen*, 8(3), 878. https://doi.org/10.26740/jim.v8n3.p878-893

Pratiwi, Y. E., & Hutajulu, D. M. (2022). ANALISIS PENDAPATAN ASLI DAERAH PROVINSI JAWA BARAT DENGAN PENERAPAN ERROR CORRECTION MODEL. *JEB*, 26(2), DOI : https://doi.org/10.24123/jeb. 26(2), 79–89.

Raudatullaily, N., & Uswatun Khasanah. (2023). Pengaruh Pengaruh Variabel Makro Ekonomi Terhadap Indeks Harga Saham Gabungan. *Jurnal Simki Economic*, 6(2), 255–258. https://doi.org/https://doi.org/10.29407/jse.v6i2.248

Ramadhan, Dea, Fadhillah, Simamora, & C, S. (2022). Pengaruh Nilai Tukar (kurs) dan Suku Bunga (BI RATE) Terhadap Indeks Harga Saham Gabungan (IHSG) Dimasa Pandemi. *Jurnal Inovatif Mahasiswa Manajemen*, 2(2), 142–153. http://www.tjyybjb.ac.cn/CN/article/downloadArticleFile.do?attachType=PDF&id=9987

Safitri, Y. D., & Robiyanto, R. (2020). Korelasi Dinamis Antara Pergerakan Harga Minyak Dunia Dan Indeks Harga Saham Sektoral Di Bursa Efek Indonesia. *Jurnal Ekonomi Bisnis Dan Kewirausahaan*, 9(3), 188. https://doi.org/10.26418/jebik.v9i3.42949

Sejati, G., & Wijaya, E. (2021). Analisis Pengaruh Makroekonomi Dan Indeks Global Terhadap Ihsg (Januari 2016 – Mei 2021). *Business Management, Economic, and Accounting National Seminar*, 2(2), 870–884.

Situngkir, T. L., Ronggo, J., & Karawang, L. (2020). Indeks Harga Konsumen Dan Nilai Tukar Berpengaruh Terhadap IHSG Dengan Pendekatan Error Correction Model. *Jurnal Administrasi Kantor*, 8(1), 13–24.

Suryanto. (2017). Pengaruh Harga Minyak Dan Emas Terhadap Indeks Harga Saham Gabungan Di Bursa Efek Indonesia Suryanto. *Jurnal Riset Bisnis dan Manajemen*, 1(1).

Tanjung, A. A., & Annisa Anggreini Siswanto. (2022). Analisis Kurva Phillips Di Indonesia. *Media Ekonomi*, 30(1), 71–77. https://doi.org/10.25105/me.v30i1.10066

Zahara, V. M., Suci, S. C., & Adha, S. (2022). Error Correction Model Analysis of Ihsg in a Macroeconomic Perspective. *Journal of Innovation Research*, 1(12), 1783–1786.