Analysis of the Influence of Macroeconomic and Global Factors on the Composite Stock Price Index on the Indonesia Stock Exchange

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Abstract: Fluctuations in the movement of the Composite Stock Price Index are caused by the influence of macroeconomic and global factors. Looking at the inconsistencies in the results of previous research, the significance of the influence is still questionable. In this context, this study aims to analyze the Influence of Macroeconomic Factors with indicators of Inflation and Money Supply, as well as Global Factors with indicators of World Oil Prices with the Error Correction Model (ECM) approach. Using research observations from 2021-2023, it was found that the variables Inflation, Money Supply and World Oil Price have a long-term influence on the Composite Stock Price Index on the IDX, while in the short term, only the World Oil Price variable influences the Composite Stock Price Index on the JCI.

Keywords: *Composite stock price index, inflation, money supply, world oil price.*

Introduction

Investment is a type of investment activity, either direct or indirect, carried out with the expectation that capital owners will eventually obtain a certain level of profit (M.Samsul, 2008). As for according to Sunariyah (2004), investment is divided into 2 types, namely, *investment in real assets* and investment in securities (*financial assets*). The capital market is closely related to important events that have an impact on the stability of a country. Conditions related to national, political, and economic stability are some of the risk variables that have a major impact on capital market performance throughout the year.

Warsono's research (2008) states a number of factors that affect market performance. The overall condition of the economy is the first factor mentioned. A country's economic condition can be determined by a number of macroeconomic factors, including per capita income, inflation, general interest rates, economic growth rates, and currency exchange rates. The second factor is the current and future political climate, political events such as election results for legislative and executive councils can have an impact on capital market performance. The third factor is the condition of state security stability which is the main determinant of the running of business activities and economic activities.

A successful industry or business will also receive feedback from the market, usually in the form of higher prices for securities traded in the capital markets. There is no doubt that the rising component of market sentiment affects market performance. It is known that there are two different types of investor behavior that affect capital market sentiment, first, those that show a strong fear of possible losses, which cause the price of securities to form without taking into account the underlying factors, and secondly those that aim to make very large profits, especially when the price of securities increases and usually exceeds normal limits (*abnormal return*).

In addition, capital market performance may experience an increase *(bullish) or a decrease (*bearish) indicated by changes in stock prices, which are quantified by the Composite Stock Price Index. In this case, the Composite Stock Price Index is a measure that can be used to estimate the overall performance

of company shares listed on the Indonesia Stock Exchange. In this regard, the stock price and its fluctuations have reflected the company's performance and its response to macroeconomic factors in Indonesia. Jakarta Composite Index (JCI) is basically one of the strong indicators in the progress of a country's economy and is the main indicator for market players to assess the condition and trend of the Indonesian stock market.

Pergerakan IHSG

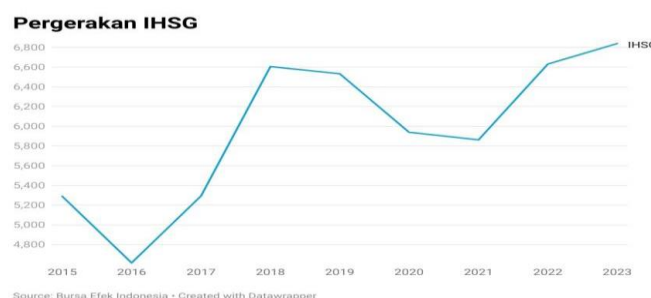Source: Bursa Efek Indonesia • Created with Datawrapper

Figure 1. IDX Composite Chart at Closing Price 2015-2023
Source: Indonesia Stock Exchange (data processed)

The Jakarta Composite Index (JCI), which rose 0.95% to 6,915, indicates a slow expansion in the capital market. This figure is lower than the growth of 4.09% in 2022, which peaked in September 2023, at the level of 7,318. Data from the Indonesia Stock Exchange (IDX) shows that over the past 10 years, JCI has decreased four times in 2013, 2015, 2018, and 2020. Although it tends to vary, JCI has increased when compared to statistics in 2013. The Fed's interest rate policy at that time caused negative sentiment towards the Indonesian stock market, which resulted in a decrease in JCI growth by 0.98%. However, JCI managed to bounce back in 2014, rising as high as 22.29%. JCI fell 12.13% in 2015 also due to China's economic downturn. The following year, this correction improved, with JCI growing 15.32% in 2016 and 19.99% in 2017. Trade tensions between the US and China triggered a sell-off in Indonesian stocks in 2018, with JCI down 2.54%. Despite this, JCI was still able to increase by 70% in 2019, although it was lower than the previous year. The Covid-19 pandemic in 2020 shook JCI, which had an impact on business performance during the pandemic. At that time, JCI fell 5.09%. However, the following year, JCI managed to rise 10.08%. Until the end of 2021, the overall stock market capitalization value increased 18.4% (yoy) to IDR 8,255.62 trillion. After the pandemic, the Indonesia Stock Exchange (IDX) re-opened regular stock trading hours on April 3, 2023. However, because the average daily transaction value (RNTH) was recorded at IDR 8.45 trillion, the impact of this policy is not expected to be felt too much (CNBC Indonesia, 2021).

In the third quarter of 2022, JCI experienced significant fluctuations in the stock market. The increase in the period was driven by an increase in the price of shares listed on the Indonesia Stock Exchange (IDX). On the other hand, the decline was influenced by factors such as the rising inflation rate, interest rate policy from Bank Indonesia, and the strengthening of the dollar exchange rate. During 2022, the inflation rate increased due to rising fuel prices and the impact of the war between Ukraine and Russia, causing shortages of energy and food sources. The increase in inflation was also triggered by Bank Indonesia's decision to respond *to the Fed'*s decision to raise interest rates globally. This affects the *BI rate* policy periodically (CNBC Indonesia, 2022).

The condition of constant price increases is known as inflation (Mishkin, 2010). For investors, rising inflation costs are bad news. According to research (Ayu et al. 2020), throughout the 2018-2021 time frame, world oil prices have a positive influence on JCI while inflation has a negative influence. Not in line with Krisna and Wirawati's (2013) research which states that inflation has a positive impact on JCI, Vella's (2022) findings show that inflation has no effect on JCI during the 2015-2019 period, however, the money supply (M2) has a positive and significant influence on JCI.

The existence of a variable money supply is related to the theory of demand for money. According to Keynes, interest rates serve as the main link between the monetary sector and the real sector (Nopirin,

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2009). Such interest rates will change if the money supply changes. Fluctuations in interest rates will have an impact on investment and spending. The high money supply will make banks issue policies to lower interest rates to absorb excess liquidity in the community in order to maintain the inflation rate. When bank interest rates decline, investors choose to invest their money in stocks rather than saving in banks with small interest rates. This will be followed by increasing demand for stocks and will increase JCI.

According to Blanchard (2006) factors that affect the capital market include, global economic conditions, world energy price levels, political stability of a country, etc. Among other commodities, oil plays an important role in the Indonesian economy. The rise in world oil prices can benefit mining businesses and oil-exporting countries because it will attract investor interest. For most exchanges in the world, falling oil prices are a breath of fresh air or at least positive news (*goodnews*). This reduces fears of global economic conditions leading to stagflation, which is a combination of slowing economic growth and high inflation rates. For the stock market in Indonesia, the falling oil price was actually responded by Indonesian capital market investors by carrying out a massive stock sell-off. Thus, making JCI corrected quite deeply. In Reinhardt Indonesia's research, 2022). All macroeconomic variables studied, including exchange rates, GDP, money supply, industrial production index, and consumer price index, can be explained by stock price index, according to Buyuksalvarci and Abidiouglu (2010) research on causal relationship between macroeconomic factors and stock price index in Turkey.

Based on the results of the presentation above, there are different results from several studies on the influence of macroeconomic factors and global factors on the composite stock price index on the Indonesia stock exchange. There are studies that state that macroeconomic and global variables have a positive or negative influence on the composite stock price index on the Indonesia Stock Exchange, while other studies state that there is no significant relationship between several macroeconomic and global variable indicators on the JCI on the Indonesia Stock Exchange. This shows the inconsistency of the results of one study with another study.

Therefore, the researchers are interested in examining **"The Influence of Macroeconomic Factors and Global Factors on the Composite Stock Price Index** on the Indonesia Stock Exchange" by taking macroeconomic factors with several indicators, namely inflation and money supply and taking global factors, namely world oil prices against the composite stock price index on the Indonesia Stock Exchange, which is analyzed for its effect in the short and long term on the stock price index combined on Indonesia Stock Exchange using data observation period from 2021 - 2023.

Literature Review
Macroeconomic Theory

Macroeconomic theory is a branch of economics that studies the behavior, structure, performance, and policies of the economy on an overall or national scale that impact a country's level of investment, consumption, trade balance and payments. Macroeconomic theory plays an important role in stock analysis and investment decisions. Macroeconomic variables such as national interest rates, foreign exchange rates, the state of the global economy, a country's economic cycle, inflation rate, regulations, and other factors can have a direct impact on stock performance and company performance. Likewise, against the increase in commodity prices associated with inflation. When macroeconomic conditions in a country experience positive or negative change, investors will calculate the impact on the company's performance in the future, then make a decision to buy or sell shares of the company concerned. This buying and selling action will result in changes in stock prices, which will ultimately affect the capital market index in the country.

Arbitrage Pricing Theory

Arbitrage Pricing Theory (APT) is a financial model that attempts to explain stock price variations based on the relationship between systematic risk factors or macroeconomic factors. APT was developed by Stephen Ross in 1976 as an alternative to the Capital Asset Pricing Model (CAPM). APT assumes that stock prices are influenced by several identifiable systematic risk factors. These factors can include macroeconomic variables such as interest rates, inflation, or economic growth. The APT model assumes that the relationship between risk factors and stock prices can be explained by a linear relationship. The price of a stock can be thought of as a linear combination of risk factors, and stock returns can be explained by sensitivity to each factor.

Jakarta Composite Index (JCI)

The Indonesia Stock Exchange has the authority to exclude certain companies from the JCI, especially if the market capitalization is high but the proportion of shares that are publicly traded (*freefloat*) is small. The goal is to prevent the stock prices of these companies from fluctuating disproportionately so that they have an impact on JCI movements. According to Samsul (2006), the calculation method of the composite stock price index is the same as the partial stock price index, which differs only in the number of issuers. The composite stock price index is calculated daily or every second during trading hours according to needs. Composite stock price indices change daily due to daily changes in market prices and the presence of additional stocks. The size of the influence on the market is the basis for calculating the composite stock price index.

JCI is determined by taking the entire market value of all shares listed on August 10, 1982. The overall market value is calculated by multiplying the price of each listed share by the share price on the IDX on that day, excluding companies that are part of the restructuring plan. The following is the calculation formula:

$$\text{JCI} = \frac{\Sigma p}{d} \times 100$$

where *p* is the Closing Price in the Regular Market, and *d* is the Base Value.

$$\text{JCI average} = \frac{Total\ JCI\ daily\ period\ for\ 1\ month}{Number\ of\ time\ periods\ for\ 1\ month}$$

Index calculation represents the movement of stock prices in the market or exchange as a result of auction trading mechanisms. The base value will be adjusted immediately if there is a change in the issuer's capital or other factors that are not related to stock price movements. Underlying Value is not affected by stock splits, stock dividends, or bonus shares because Market Value is not affected. According to Thobarry (2009), Base Value is the cumulative number of shares on the base day multiplied by the base price on the base day, while Market Value is the cumulative number of shares on this day multiplied by today's market price (market capitalization).

Inflation

According to Fahmi (2015), inflation is a condition where the prices of goods rise but the value of the currency decreases. An indication of concern for investors is relatively rising inflation. High inflation deters potential investors from getting into the stock market, leading to a negative market reaction and a slow stock market. Because almost all businesses that sell their shares on the stock market are vulnerable to this situation, JCI has decreased (Tandelin, 2010).

According to Utomo (2013) inflation can be divided into three categories for the magnitude of the inflation rate, namely:

1. Creeping *Inflation,* if the inflation rate is less than 10% per year, runs slowly, and for a relatively long time.
2. *Galloping Inflation*, price increases are quite large in a relatively short time and prices every week or month are different.
3. High Inflation (*Hyper inflation*), prices can increase 5-6 times, the value of money plummets so that it wants to be exchanged goods, causing rapid money flow.

According to Rahardja (2014) it is said that inflation if prices experience continuous increases in inflation, price increases for one or two commodities cannot be categorized as inflation. Calculating the percentage change in the price index is one way to measure inflation. The Consumer Price Index (CPI) is one of the indicators that is often used to calculate the inflation rate in Indonesia. The average price of some goods that consumers buy is tracked by the Consumer Price Index. Based on the level of significance, weight is given to each price of these commodities and services. To track regional

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developments, CPI is calculated in Indonesia based on several basic commodities. In particular, the inflation rate of important cities, especially provincial capitals, is considered.

The formula used to calculate the Consumer Price Index is:

$$Inflationi= \frac{IHKt-IHKt-1}{IHKt-1} \; x100$$

It can be concluded that inflation is a widespread and continuous increase in prices over time. Inflation shows the vulnerability of a country's economy so that this greatly affects the confidence of foreign investors in the prospects of income they will earn in the country. Inflation uncertainty affects the composition of financial assets. Rising inflation expectations keep the value of short-term debt fixed but lower the face (and then real) value of bonds and stocks (Siregar, 2011).

Money Supply

The money supply refers to the total face value of money that can be used to conduct transactions in an economy at a given period of time. Mankiw (2006) defines the Money Supply as the amount of money available. Money in circulation (JUB) in the narrow sense or known as M1 while money in circulation in the broad sense is called *Broad Money* (M2). Money supply in the narrow sense (M1) is a combination of currency and giral money that is liquid, which can be directly used as a means of payment.

While M2 is M1 plus time deposits and customer savings balances at banks (Putranto &; Ismail, 2018). According to (Sharew Denbeletal. 2016) *Narrow Money* is a money supply used in transactions consisting of cash owned by the public, traveler's cheques, time deposits and other check deposits. While M2 is a measure of domestic money offerings that include M1 and *Quasi Money* (savings deposits and time deposits), and personal balances in money market accounts. M2 includes money that can be quickly converted into M1.

According to Kusumawati (2017) the formula used to calculate the Money Supply is:

$$JUB= \frac{JUBt-JUBt-1}{JUBt-1} \; x100\%$$

It can be concluded that the money supply is all money officially issued by the central bank, including current accounts, savings, deposits, and foreign exchange. The money supply is modified to meet economic needs, including inflation goals set by the government and Bank Indonesia (BI).

World Oil Prices

The global oil market spot price standard used to calculate crude oil prices is West Texas Intermediate, or Brent, High-quality crude oil traded on the *West Texas Intermediate* (WTI) market. Crude oil in WTI has a low and light sulfur concentration. Since this type of oil is ideal for use as fuel, its price has become the global standard for oil trading. Crude oil prices in WTI are usually five to six dollars more expensive than crude prices in OPEC and one to two US dollars compared to crude oil prices in Brent. Fluctuations in world crude oil prices are also an indication that affects a country's capital market. Rising oil prices can boost corporate profits, especially in the mining sector. The increase in profit can attract investor interest, causing an increase in the company's stock price, and vice versa. This change in stock price has an impact on the Jakarta Composite Index (JCI).

Previous Research

Previous research is used as a reference in this study, to expand theories and research results that are relevant today. In previous studies there was no similar title as in this study, but previous studies used several other research variables as references to add to the study. The Composite Stock Price Index is one of the indicators of economic development, where JCI fluctuations are influenced by macroeconomic, political, and national stability conditions that have a dynamic influence on capital market performance that year.

In line with the results of Vella's research, (2021) shows that inflation has a negative effect on the Composite Stock Price Index while the money supply has a positive effect on the composite stock price index in the 2015-2019 research year period. The results of this study are contrary to the research of Dewi et al. (2022) that inflation and money supply have no influence on the composite stock price index. In addition, it can be said that fluctuations in world oil prices affect JCI because oil is one of the most important commodity goods for the Indonesian economic sector. In research, Alvin et al. (2021) said that world oil prices did affect JCI on the decline in stock prices. Not in line with the research of Risnawati et al. (2023) that world oil prices negatively affect JCI, because the increase in oil prices will affect or will encourage inflation and when this happens, the stock prices of several companies will decrease due to excessive inflation rates caused by the increase in world oil prices, it will be a negative sentiment for stock investors themselves.

Hypothesis Development

A hypothesis is an initial conjecture of research results that must be retested empirically. There are internal and external factors that investors need to pay attention to. This study tries to identify the factors that affect the composite stock price index, namely, inflation, money supply, and world oil prices. Based on the theoretical basis and previous research, this study assumes that the influence of macroeconomic factors and global factors on the composite stock price index on the IDX is as follows:

1. The Relationship of Inflation to the Composite Stock Price Index (JCI) on the IDX

Inflation is a condition in which the prices of goods in general and continuously increase widely (Mishkin, 2001). The impact of inflation on the economy can be positive or negative, depending on the high or low inflation rate. Fluctuations in the inflation rate in Indonesia have the potential to affect the level of investment in the capital market. The rising value of inflation is unfavorable for investors because it can have an impact on the company's revenue and costs.   An increase in costs that exceed revenue can result in a decrease in the company's profits. This can reduce investor interest in buying company shares, which in turn can cause a decline in stock prices and ultimately affect the decline in JCI.

According to (Nor Isniani &; Nunung, 2013) states that inflation has a significant negative influence on investment risk. In researchVivekananda et al. (2019) stated that high inflation can reduce company profitability which will subsequently have an impact on falling company stock prices. The high inflation rate causes stock prices to fall due to the decline in people's purchasing power (Safany et al. 2021) Based on the results of the explanation above, the following hypotheses can be proposed:

H1: Inflation (X1) negatively affects the IDX Composite Index (Y)

2. The Relationship of Money Supply to the Composite Stock Price Index (JCI) on the IDX

According to Mankiw (2006), money is a supply of assets that can be used today to complete transactions. According to Kurniadi (2013), money is a legal tender accepted in society for use in transactions, as a store of value, and for other uses). According to previous research by Heru Nugroho (2008) entitled Analysis of the Effect of Inflation, Interest Rates, Exchange Rates, and Money Supply on the LQ45 Index on the IDX for the 2002-2007 Period, changes in the money supply will have an impact on the performance of the LQ45 index on the IDX. The influence of the money supply shows that Indonesian people spend their money to buy shares or shares in addition to using them for transactions.

This hypothesis is supported by research by Fajar (2009), Miftahul (2015), Anggra and Dewi (2016) which states that the money supply has a positive effect on the Composite Stock Price Index. According to Mohamad's (2006) research, if the money supply increases, then the stock price rises. This is because when the money supply increases, people will tend to invest. When investors save their money in the form of stock investments, the company's stock price will increase which has an impact on increasing the stock price index (stock price movements). Based on the results of the above explanation, the following hypotheses can be proposed:

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H2: Money Supply (X2) has a positive effect on the Composite Stock Price Index (Y) on the IDX

3. The Relationship of World Oil Prices to the Composite Stock Price Index (JCI) on the IDX

World oil prices play an important role in the Indonesian economy. Fluctuations in world crude oil prices are also an indication that affects a country's capital market. Directly the increase in world crude oil prices will have an impact on the export and import sectors of a country. In addition, when the increase in oil prices will affect or will encourage inflation and when this happens, the stock prices of several companies will decline due to excessive inflation figures caused by the increase in world oil prices, it will be a negative sentiment for stock investors themselves.

In Harbi's research (2016) the increase in oil prices itself is negative information for investors in the capital market, in general it will encourage a decrease in demand for stocks in Indonesia. This is due to the increase in oil prices which makes the company's operating costs increase due to high fuel prices. This certainly resulted in a decrease in the company's profit, thereby reducing demand for shares and weakening JCI. Based on the results of the above explanation, the following hypotheses can be proposed:

H3: World Oil Price (X3) negatively affects the Composite Stock Price Index (Y) on the IDX

Theoretical Framework

To find out how Inflation, Money Supply, and World Oil Price variables affect the composite Stock Price Index on the IDX, background explanations, problem formulations, theoretical foundations, and previous research have been conducted. The following is the framework of thought used in this study:
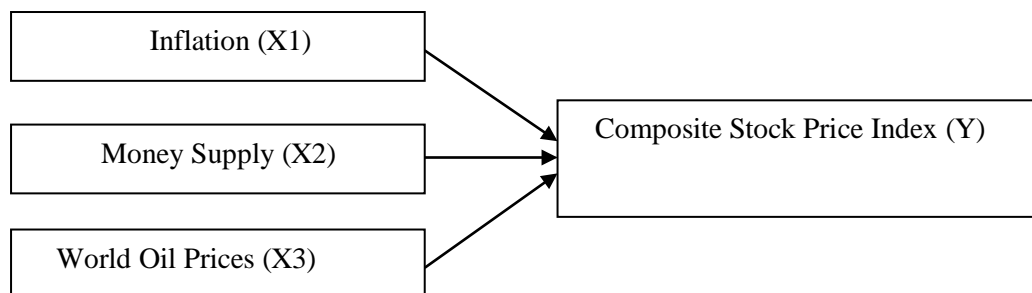

Figure 2. Theoretical Framework

The above framework can illustrate that Inflation, Money Supply and World Oil Price explain their effect on the Composite Stock Price Index on the Indonesia Stock Exchange.

Research Method

Research Type

This study uses a quantitative approach, which is a research method to test hypotheses in a specific population or sample. This approach involves collecting data using research instruments, data analysis is statistical, and its main purpose is to test established hypotheses

Data Type and Source

The type of data in this study used secondary data. The data is obtained from the official *websites* of the Indonesia Stock Exchange, Investing.com, Bank Indonesia, and the Central Statistics Agency. The secondary data in this study is in the form of *time series* data per month from January 2021 to November 2023. In this study using the variables Inflation, Money Supply, World Oil Price and Composite Stock Price Index

Variable Operational Definition

The variables of this study are divided into dependent and independent categories. The dependent variable is a variable that becomes a result because there is an independent variable or variable that is influenced. The value of the dependent variable depends on the independent variable being tested (Zikmund &; Babin, 2013). In this study, the dependent variables or dependent variables are as follows:

1. Composite Stock Price Index

JCI or Composite Stock Price Index reflects the prices of all stocks on the Indonesia Stock Exchange.JCI serves as a guide or indicator of changes in stock prices on the IDX. IDX first presented

JCI on April 1, 1983. Price movements of all ordinary shares and preferred shares listed on the IDX are included in this index.

An independent variable is a variable that causes changes or arises dependent variables or influencing variables. In this study, the independent variables are as follows:

1. Inflation

The tendency for the prices of goods and services to continue to rise overall is known as inflation. Inflation increases if the prices of goods and services in a country increase. Money loses its value as a result of rising prices for goods and services. The value of money decreases when the price of goods and services rises. Therefore, a decrease in the value of money in relation to the overall value of goods and services is another way to describe inflation.

2. Money Supply

The money supply in a broad sense (*broadmoney*), symbolized by M2 which is a picture of economic liquidity. M2 consists of currency and giral money (M1) plus quasi-money, namely time deposits, savings, and foreign exchange accounts owned by domestic private companies (Langi et al. 2014).

3. World Oil Prices

Fluctuations in world oil prices affect capital markets, especially for oil-exporting countries. Rising oil prices can boost corporate profits, especially in the mining sector. An increase in profits can attract investor interest, causing an increase in the company's stock price, and vice versa. This change in stock price has an impact on the Jakarta Composite Index (JCI).

Methodology

The analytical approach in this study uses quantitative techniques using the regression analysis method of the *Error Correction Model* to examine independent variables that affect Indonesia's economic growth. The presence or absence of long-term and short-term relationships between independent and dependent variables will be explained by the ECM approach itself using the *Eviews* analysis tool. In general, the equation in the short and long term in the ECM model can be written as follows:

ECM Model in Short Term

$$\Delta Y = \beta_0 + \beta_1 \Delta X_{1t} + \beta_2 \Delta X_{2t} + \beta_3 \Delta X_{3t} + ECT + u_t$$

ECM models in the long term

$$Y = \alpha_0 + \alpha_1 INF_t + \alpha_2 JUB_t + \alpha_3 HM_t + u_t$$

Stationary Test

Data stationarity is very important in time series data research, Unit root test can be used to ascertain whether the data is stationary. The unit root test, also called the Dickey-Fuller unit root test, is commonly used to determine the level of stationarity of data. The degree of integration test is the next stage, it must be done if the data tested is not stationary at the level. According to Widarjono (2013), testing continues at the integration stage until each data variable on the degree of integration test at *first difference* or *stationary second difference*.

Hypotheses :

Ho: data is not stationary

Ha: stationary data

If the results of the *Dickey-Fuller Augmented* test state that:

- The statistical ADF value > 0.05 then the stationary data and Ho are rejected
- The statistical ADF value < 0.05 then the data is not stationary and Ha is rejected.

Cointegration Test

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The cointegration test is an advanced method for determining whether independent and dependent variables have a relationship in the short and long term, in addition to the unit roots test. If the analyzed data integrate at the same rate, then a cointegration test can be performed (Engle and Granger, 1987). The cointegration test in this study used residual variables (ECT) from the estimated regression model.

Estimasi *Error Correction Model* (ECM)

Regression equations for short-term and long-term equilibrium, as well as model consistency, were found using ECM models. In addition, the ECM model attempts to address data problems that are related to time series data that are not stationary and inaccurate. *Error Correction Term* (ECT) will also be included in the study. This implies that ECT will be used to calculate the short-term adjustment rate (caused by data deviation) that leads to long-term equilibrium.

Classical Assumption Test

Classical assumption tests aim to obtain valid estimation results including, normality tests, multicollinearity, heterokedasticity and autocorrelation tests.

1. Normality Test

The purpose of the normality test is to ascertain whether the residuals are normally distributed or not. If the residual is normally distributed, then the significance test t will validate the influence of the independent variable on the dependent variable. In this study the normality test used the Jarque-Berra test (J-B Test) with a signification level of $\alpha = 5\%$

2. Multicollinearity Test

The correlation between the independent variable and other independent variables is known as multicollinearity. An equation model is considered to show the presence of impaired multicollinearity if the R2 value is high, but t-statistical tests show that there is little or no significant independent variable. To determine the presence or absence of multicollinearity is to examine the Variance Inflation Factor (VIF).

3. Heteroskedasticity Test

A model affected by heteroscedasticity is one that is consistent, unbiased, and no longer the best (Hakim, 2014). Breusch Pagan Godfrey is one of the techniques used in this study to identify heteroscedasticity.

4. Autocorrelation Test

The correlation between the research variables was displayed using the autocorrelation test. Variance is no longer minimal with autocorrelation, which indicates a relationship between one observation and another observation made at different times.

Hypotheses Test

1. Test t (Partial)

   According to Basuki et al. (2016), to ascertain whether the independent variable has a significant effect on the dependent variable, it is necessary to do a t test.

2. F Test (Simultaneous)

   The purpose of this test is to ascertain whether independent factors affect the dependent variable (bound) simultaneously or together (Basuki et al. 2016).

3. Test Coefficient of Determination (R^2)

   The extent to which changes in dependent variables can be explained by the coefficient of determination model. Between zero and one is the range of the coefficient of determination. Between zero and one is the range of the coefficient of determination. The higher the ability of independent variables to explain the variation of dependent variables in the regression model, the closer the value of R^2 Conversely, the less the independent variable explains the dependent variable, the closer R^2 is to zero (Susi, 2022).

Results and Discussion

1. Descriptive Analysis

Descriptive statistics is one in the statistics section that explains how to collect data then explains how to present it in a more understandable and easy-to-understand form. In this study the data presented in the statistical test results in the form of mean, median, maximum, minimum, standard deviation and observations have been tested using the *Eviews* 12 software application. The results of statistical tests in this study are:

Table 1. Descriptive Analysis Test Results on Data

	JCI (*closing price*)	INF (%)	JUB (M2)	HM (US$D/barel)
Mean	6676.286	3.128857	7823951.	80.23057
Median	6839.340	2.640000	7890747.	79.49000
Maximum	7228.910	5.95000	8528022.	114.6800
Minimum	5862.350	1.330000	6767408.	52.20000
Std. Dev.	411.7567	1.531844	555227.8	13.88009
Observations	35	35	35	35

Source: Eviews 12 Results

From the table presented above that there are 35 observations on the variables JCI, INF, JUB and HM. The dependent variable or main variable in the study, namely JCI, shows that the lowest value of 5862,350 occurred in January 2021 and for the highest value of 7228,910 in April 2022. The average (mean) JCI from January 2021 - November 2023 is 6676.286 with a standard deviation of 411.7567. In the variables INF, JUB and HM the minimum values of each variable are 1.330000, 6767408 and 52.20000. The maximum values are 5.950000, 8528022, and 114.6800. The mean is 3.128857, 7823951 and 80.23057 with standard deviations of 1.531844, 555227.8 and 13.88009.

2. Stationarity Test

To prevent spurious regression that makes statistical testing for each coefficient invalid and difficult to guide, data stationarity testing is the first step to form an Error Correction Model (ECM) on short-term equations and also estimate long-term equations (cointegration). The formation of ECM can be done if the dependent variable is not stationary at level or I (0). Depending on the predictable trends contained by each variable, the ADF Test technique can be used to perform a stationary test of this data.

Table 2. First Level and Differentiation Level Stationarity Test Results on Data

Variable	Order	Structure	Mackinon Critical Value(5%)	t-Statistic ADF
LNIHSG	Level	Intercept	-2.951125	-1,886724
	1ˢᵗDifference*	Intercept	-2.954021*	-6.470394*
LNINF	Level	Intercept	-2.951125	-1.124243
	1ˢᵗDifference*	Intercept	-2.954021*	-5.089582*
LNJUB	Level	Intercept	-2.951125	-1.581881
	1ˢᵗDifference*	Intercept	-2.954021*	-6.915021*
LNHM	Level	Intercept	-2.951125	-2.326452
	1ˢᵗDifference*	Intercept	-2.954021*	-5.639377*

*Indicates the Significance Level of *Mackinon Critical values 5*
Source: Eviews 12 Results

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4. Cointegration Test

This cointegration test uses residual variables (ECT) from the estimated regression model.

Table 3. Cointegration Test Results

Variable	P-Value	Description
ECT	0.0014	Stationer

Source: Eviews 12 Results

Based on the table above, it was found that the p-value of 0.0014 was obtained from the results of the stationary test on the ECT (residual) variable at the level level. H0 is rejected because this value is less than 5%, indicating that the residual value of the regression variable is stationary at the level level. It can be concluded that there is a long-term equilibrium relationship between independent and dependent variables in this study because the residual regression model is stable at the level level. It can be said that *the ErrorCorrection Model* (ECM) is a suitable data estimation model for this study.

1. Estimasi *Error Correction Model* (ECM)

Error Correction Model (ECM) is a model used to see the long-term and short-term effects of each independent variable on the bound variable.

Table 4. ECM Test Results in the Short Term

Independent Variable	Coefficient	Std. Error	t-statistic	Prob.
C	4.573319	27.33086	0.167332	0.8683
LNINFt	75.12044	58.29478	1.288631	0.2077
LNJUBt	0.000286	0.000244	1.171380	0.2510
LNHMt	13.06444*	3.432169	3.806467	0.0007*
ECT1	-0.611826	0.208700	-2.931601	0.0065

Source: Eviews 12 Results

Table 5. ECM Test Results in the Long Term

Independent Variable	Coefficient	Std. Error	t-statistic	Prob.
C	2707.495	444.0637	6.097085	0.0000
LNINFt	57.23523*	22.77731	2.512818	0.0174*
LNJUBt	0.000335*	6.51E-05	5.151369	0.0000*
LNHMt	14.55620*	1.979322	7.354134	0.0000*

Source: Eviews 12 Results

Based on the results of the ECM model analysis in short-term influence and long-term influence above, the variables Inflation, Money Supply and World Oil Price have a long-term influence on the Composite Stock Price Index on the IDX. Meanwhile, in the short term, only the variable world oil price affects the Composite Stock Price Index on the IDX.

1. Classical Assumption Test
   a. Normality Test
      The data is normally distributed if the probability value is greater than 0.05 tested using the histogram normality test.
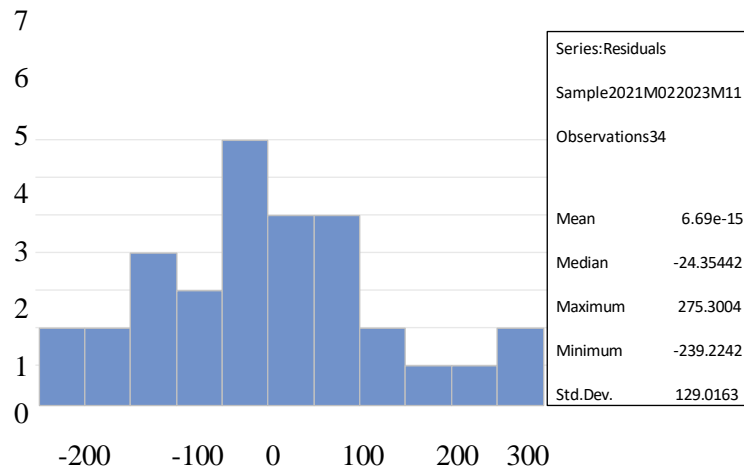
Series: Residuals	
Sample 2021M02 2023M11	
Observations 34	
Mean	6.69e-15
Median	-24.35442
Maximum	275.3004
Minimum	-239.2242
Std.Dev.	129.0163

Figure 3. Normality Test Results

It can be seen that the Probability value of $0.711858 > 0.05$ then Ho is accepted. This means that the data used in this study in analyzing the ECM model is said to be normally distributed.

b. Multicollinearity Test

The approach to determining the presence or absence of multicollinearity is to examine the *Variance Inflation Factor* (VIF).

Table 6. Multicollinearity Test Results

Variable	VIF
DINFt	1.235275
DJUBt	1.207666
DHMt	1.128272
ECT1	1.370547

Source: Eviews 12 Results

By using the conditions of VIF value < 10 and VIF value obtained for each variable in the table above, it can be stated that the independent variables in this study do not show any symptoms of multicollinearity.

c. Heterokedasticity Test

This study used the Breusch-Pagan test to test heteroscedasticity, which is indicated by the Obs*R-Squared value at the output. The heteroscedasticity problem is resolved if the probability value is higher than $\alpha = 5\%$.

Table 7. Heterokedasticity Test Results

F-statistic	0.681075	Prob. F(4,29)	0.6107
Obs*R-squared	2.919723	Prob.Chi-Square(4)	0.5713
Scaled explained SS	1.853843	Prob.Chi-Square(4)	0.7626

Based on the results of the table above, Obs *R-squared* probability values of $0.5713 > 0.05$ are consistent with F-statistic probability values of $0.6107 > 0.05$. So it can be concluded that there is no heteroscedasticity problem in this study.

d. Autocorrelation Test

Autocorrelation test in this study using Breusch-Godfrey Serial LM Test.

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Table 8. Autocorrelation Test Results

F-statistic	0.947821	Prob. F(2,27)	0.4001
Obs*R-squared	2.230502	Prob.Chi-Square(2)	0.3278

Source: Eviews 12 Results

The results of the table above show Obs*R-squared* Probability values of 0.3278 > 0.05 consistent with *F-statistic* Probability values of 0.4001 > 0.05, so it can be concluded that there are no autocorrelation problems in this study.

e. Hypothesis Test
  1. T test (Partial)
    a. The Influence of INF on JCI
      H0: There is no significant influence between INF variables on JCI
      H1: There is a significant influence between INF variables on JCI
      In the INF variable, a t-statistic value of 1.288631 and a p-value of 0.2077 were obtained. The significance level used is 5%, then 0.2077 >0.05 so that H1 rejection can thus be partially concluded that the INF variable does not have a significant effect on the JCI variable in the short term.
    b. JUB's Influence on JCI
      H0: No significant influence between JUB variables against JCI
      H1: There is a significant influence between JUB variables against JCI
      In the JUB variable, a t-statistic value of 1.171380 and a p-value of 0.2510 were obtained. The significance level used is 5%, then 0.2510 >0.05 so that H1 rejection can thus be partially concluded that the JUB variable does not have a significant effect on the JCI variable in the short term.
    c. HM's Influence on JCI
      H0: No significant effect between HM variables against JCI
      H1: There is a significant influence between HM variables against JCI
      In the HM variable, a t-statistic value of 3.806467 and a p-value of 0.0007 were obtained. The significance level used is 5%, then 0.2510 <0.05 so that the H0 rejection can thus be partially concluded that the HM variable has a significant effect on the JCI variable in the short term.
  2. F Test (Simultaneous)
    It is known that the value of F-statistic is 81.77539 with Prob. (F-statistic) of 0.0000 (0.05) then it can be stated that the Independent variable (X) INF, JUB and HM have a significant effect simultaneously (simultaneously) on the independent variable (JCI).
  3. Test Coefficient of Determination (R2)
    Based on the results of the Coefficient of Determination Test above, the Adjusted R-squared value of 0.876 can be said that the contribution of the influence of inflation variables, money supply and world oil prices on JCI variables simultaneously (simultaneously) amounted to 87.6% while the rest was influenced by other variables outside this study.

f. Hypothesis Test
1. T test (Partial)
a. The Influence of INF on JCI
H0: There is no significant influence between INF variables on JCI
H1: There is a significant influence between INF variables on JCI
In the INF variable, a t-statistic value of 1.288631 and a p-value of 0.2077 were obtained. The significance level used is 5%, then 0.2077 >0.05 so that H1 rejection can thus be partially concluded that the INF variable does not have a significant effect on the JCI variable in the short term.
b. JUB's Influence on JCI
H0: No significant influence between JUB variables against JCI
H1: There is a significant influence between JUB variables against JCI
In the JUB variable, a t-statistic value of 1.171380 and a p-value of 0.2510 were obtained. The significance level used is 5%, then 0.2510 >0.05 so that H1 rejection can thus be partially concluded that the JUB variable does not have a significant effect on the JCI variable in the short term.
c. HM's Influence on JCI
H0: No significant effect between HM variables against JCI
H1: There is a significant influence between HM variables against JCI
In the HM variable, a t-statistic value of 3.806467 and a p-value of 0.0007 were obtained. The significance level used is 5%, then 0.2510 <0.05 so that the H0 rejection can thus be partially concluded that the HM variable has a significant effect on the JCI variable in the short term.
2. F Test (Simultaneous)
It is known that the value of F-statistic is 81.77539 with Prob. (F-statistic) of 0.0000 (0.05) then it can be stated that the Independent variable (X) INF, JUB and HM have a significant effect simultaneously (simultaneously) on the independent variable (JCI).
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Discussion

1. Effects of Inflation on the Composite Stock Price Index

The first hypothesis (H1) shows that inflation does not have a short-term effect, but has a significant positive effect in the long term on the Composite Stock Price Index on the Indonesia Stock Exchange in 2021-2023. In the short term, inflation has a p-value of 0.2077 which means that the value is greater than α 5% thus inflation has no influence in the short term on the composite stock price index (JCI). However, inflation has a long-term positive influence on the Composite Stock Price Index with a coefficient value of 57.23. According to the research of Yilmaz (2010) and Kewal (2012), which found no relationship between a country's stock market and inflation. On the other hand, a spike in inflation can be a warning sign of impending disaster, the higher the inflation rate, the closer the economy enters the crisis. Therefore, an abnormal increase in inflation indicates that a national economic crisis is imminent.

This is also because the inflation rate in the research year, namely 2021-2023, is classified as low inflation (below 10% per year) so it can be assumed that investors ignore the temporary increase in inflation so that investors do not sell their shares when the inflation value rises. According to research (Kumalasari et al. 2016), this is closely related to the ability of Bank Indonesia's monetary policy to

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restore market confidence, which makes investors choose to hold on to their stocks even in the face of inflation.

2. The Effect of the Money Supply on the Composite Stock Price Index

The first hypothesis (H2) shows that the money supply does not have a short-term effect but has a significant positive effect in the long term on the Composite Stock Price Index on the Indonesia Stock Exchange in 2021-2023. In the short term, the money supply has a p-value of 0.2510 which means that the value is greater than α 5% thus the money supply has no influence in the short term on the Jakarta Composite Index (JCI). However, the money supply has a long-term positive influence on the Composite Stock Price Index with a coefficient value of 0.035.

According to I Putu, et al. (2016), the swelling of several components of net bills to the government, especially payments made in the framework of the bank obligation guarantee program and coupon payments on bank recapitalization bonds, as well as the high interest costs of capitalized deposits are the main causes of ineffectiveness of the money supply. Because there are no more funds available in the community that can be used for investment in the capital market, the growth of the money supply that is held by the public becomes very little and does not have any effect on the increase in stock prices.

3. The Effect of World Oil Prices on the Composite Stock Price Index

The third hypothesis (H3) shows that the World Oil Price has a significant positive influence in the short and long term on the Composite Stock Price Index on the Indonesia Stock Exchange in 2021-2023. Judging from the estimation results in the ECM model, in the short run inflation has a probability value of 0.0007 and 0.0000 in the long run and has a coefficient value of 13.06 in the short run and 14.55 in the long run. So it can be said that the World Oil Price has a positive influence in the short and long term on JCI on the IDX.

During the observation period, oil prices rose as a result of increased demand for the commodity. This explains why oil prices have a positive impact on JCI. According to research by Suryanto (2020), the decline in energy prices is a sign that the global economic recovery is becoming less strong. As a result, as the price of crude oil rises, so does the expectation that the business will perform better, which will naturally increase the stock price. It can also be assumed that currently stock trading transactions on the Indonesia Stock Exchange are dominated by stock trading in the mining sector. The increase in oil prices itself will generally encourage an increase in the stock price of the mining sector. This is because the increase in oil prices will trigger an increase in the price of mining materials in general. This certainly results in mining companies having the potential to increase their profits. The increase in mining stock prices will certainly encourage JCI to increase.

Conclusion

The results of testing and analysis of the impact of macroeconomic and global factors on the Composite Stock Price Index on the IDX using the Error Correction Model (ECM) method can be concluded that in the long-term influence model the Inflation variable has a positive influence in the long term of 57.23 on the JCI variable, however, in the short term the Inflation variable does not have a significant effect on the JCI variable on the IDX. The Money Supply has a long-term positive effect of 0.335 on the JCI variable, but in the short term the Money Supply variable does not have a significant enough influence on the JCI on the Indonesia Stock Exchange. World Oil Price is said to have a significant positive effect on JCI in the long and short term, reflected in the results in the ECM model which has a long-term influence of 14.55 on JCI but corrected in the short term to 13.06.

Suggestion

Based on the results of the research that has been done, there are several suggestions that need to be considered and can be taken into consideration for policy makers and for future researchers. The suggestions from researchers for related parties are as follows:

1. For researchers, to reveal different problems and impacts on JCI fluctuations listed on the IDX, researchers can make additional innovations that have not been covered in this study and continue to develop variations in other variable indicators that are still not good.
2. For investors, they can pay attention to some of the influential factors above as one of the basic references for decision making in investing in the capital market.
3. For the Government, in order to pay attention to the influence factors of capital market progress, not only in terms of macroeconomic factors, but also from global factors, where it can be used as a reference in advancing the Indonesian capital market in order to increase and compete in the world capital market.

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