The Influence of Inflation, Interest Rate, Exchange Rate, and Gross Domestic Products (GDP) on Joint Stock Price Index (CSPI) in Indonesia Stock Exchange (BEI) Period 2009-2018

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Abstract: This investigation means to decide and break down the impact of macroeconomic factors, including expansion, loan costs, the swapping scale of the rupiah against the US dollar, and GDP on the CSPI time frame 2009 - 2018. This investigation is utilized auxiliary information and incorporated into information time arrangements gathered by archiving information of expansion, loan fees, the conversion standard of the rupiah against the US dollar, GDP, and the CSPI for the period 2009-2018. The investigative instrument utilized in this examination is different relapse investigation and speculation testing utilizing the f-test to discover to decide the impact of all the while free factors on the reliant variable. The results of this study are inflation, interest rates, the exchange rate of the rupiah against the US dollar, and GDP jointly affect the CSPI with a significance level of 5%. In part, swelling and loan costs do not influence the CSPI, while the conversion scale of the rupiah against the United States dollar negatively affects the CSPI and GDP positively affect the Index CSPI.

1 INTRODUCTION

The capital market is important for a country's economy. According to Jones (2000: 74), the capital market is vital for the functioning of the capitalist economy because it functions to channel funds from investors to borrowers. Furthermore, the capital market provides an vital allocation role through linking funds to who can use it optimally. Dandelion (2017) states that the capital market is a gathering point between gatherings who have abundance reserves and the individuals who need assets by exchanging protections. Capital markets can fill in as a delegate.

Data about securities exchange execution is frequently condensed in a record called financial exchange files. The securities exchange list is a pointer that mirrors the presentation of stocks in the market since it is a marker that depicts the development of stock costs, the financial exchange list is additionally called the stock value file. In Indonesia Stock Exchange (IDX) stock price index called Composite Stock Price Index (CSPI). As per Moraga and Pakarti (2001), CSPI is a file that demonstrates the development of stock costs as a rule recorded on the stock trade as a kind of perspective for the advancement of exercises in the capital market. CSPI can be used to assess the general market situation or measure whether stock prices have increased or decreased. CSPI also involves all share prices listed on the exchange. The stock price index has three main benefits, such as:

1. Market direction markers.
2. Level of profit.

The estimation of the Composite Stock Price Index changes as per the degree of stock exchanging action on the IDX. The movement of the CSPI can be related to the macroeconomic environment in Indonesia. Tandelilin (2017) states that economic analysis is one of the three analyzes that investors need to do in determining their investment decisions. Economic analysis needs to be done because of the tendency for a strong relationship between what happens in the macroeconomic environment and the performance of a capital market. Jones (2000: 342) mentions that estimates of good economic conditions have significant value for investors.
because economic conditions and capital markets are tightly bound, estimates of good macroeconomic variables will be very useful. Sunariyah (2011: 23) states that several macroeconomic variables affect the equity market, including GDP growth, industrial production growth, inflation, interest rates, the rupiah exchange rate, unemployment, and budget deficits.

Many studies have been conducted which aim to examine the effect of macroeconomic variables on the CSPI. The aftereffects of research led to macroeconomic factors on the CSPI changed, and there were irregularities. Research on the impact of swelling on the CSPI directed by Astuti et al. (2013) produces proof that expansion has a negative and not massive impact on the CSPI. Another investigation directed by Wijaya (2013) found that the expansion variable had no significant impact on the CSPI. Simbolon and Purwanto (2018) led an investigation of macroeconomic factors on stock costs and found that swelling rates had a positive and critical impact on stock costs.

Research on the impact of loan costs on the CSPI led by Astuti et al. (2013) found that the loan cost (SBI) had a negative and massive impact on the CSPI. In a similar report, directed by Wijaya (2013) found that financing costs did not fundamentally impact the CSPI.

Research on the impact of exchange rates on the CSPI led by Astuti et al. (2013) brings about the finding that the Rupiah conversion standard has a negative and critical impact on the CSPI. Another study conducted by Mulyani (2012) found that exchange rates hurt the Jakarta Islamic Index. Another study conducted by Simbolon and Purwanto (2018) found that exchange rates had a positive effect on the CSPI.

Research conducted by Simbolon and Purwanto (2018) found that GDP growth did not affect the CSPI. In a study conducted by Mulyani (2012), it was found that GDP had a positive effect on the Jakarta Islamic Index.

Considering the importance of the CSPI in relation as an indicator of stock trading activities on the IDX that has a relationship with macroeconomic variables in Indonesia and the existence of research gaps on research into the influence of macroeconomic factors on the CSPI, conducted research aimed to test the effect of macroeconomic variables on the CSPI. The research conducted aims to determine the effect of inflation, interest rates, exchange rates, and GDP on the CSPI on the IDX for the 2009-2018 period.

2 LITERATURE REVIEW AND HYPOTHESES

2.1 Inflation

According to Sukirno (2015), inflation can be defined as a process of rising prices prevailing in an economy. According to Samuelson and Nordhaus (2011), inflation shows an increase in the general price level. The swelling rate is the pace of progress in the general cost, and can be estimated as pursues:

The rate of inflation (year t) = \[
\frac{\text{price levels (t) - level price (year t - 1)}}{\text{level price (year t - 1)}} \times 100
\]

(Samuelson and Nordhaus, 2011)

2.2 Interest Rates

According to Samuelson and Nordhaus (2011), interest rates are payments made for the use of money. Financing cost is the measure of intrigue paid per unit time. In macroeconomics, there are two kinds of loan fees, to be specific, the ostensible financing cost and the original financing cost.

Samuelson and Nordhaus (2011) express that the ostensible loan cost is the financing cost in cash esteem, while the genuine loan fee is an amendment to expansion and is characterized as the ostensible loan fee less the swelling rate. Mathematically the calculation of nominal and real interest rates is as follows:

Nominal interest rate = real interest rate + inflation rate
Real interest rate = nominal interest rate - inflation rate

(Mankiw, 2018: 177)

Indonesian Central Bank has fortified the working system money related approach by executing a benchmark intrigued rate or a new approach rate, BI 7 Day (Turn around) Repo Rate, which has been compelling since Admirable 19, 2016, replaces the BI Rate. Strengthening the framework of the monetary operation is a common practice in various central banks and is a best practice internationally in the conduct of monetary operations. The monetary operating framework is constantly being refined to strengthen the effectiveness of policies in achieving the set inflation targets. The BI 7-instrument day (Reverse) Repo Rate used as a new policy rate because it can quickly affect the money market, banking, and the real sector. The 7-BI instrument day Repo Rate as
another reference has a more grounded relationship to currency market loan fees, is value-based or exchanged available, and energizes budgetary market developing, explicitly the utilization of repo instruments.

2.3 Currency Exchange

According to Sukirno (2015), foreign exchange rates indicate the price or value of a country's currency expressed in the value of another country's currency. Foreign exchange rates can also be defined as the amount of domestic money needed, i.e., the amount of rupiah needed to obtain one unit of foreign currency. Foreign exchange rates, according to Samuelson and Nordhaus (2011), are prices of foreign currencies in domestic currency units.

The conversion scale or likewise called the swapping scale in different exchanges or purchasing and selling of outside monetary standards, there are known four sorts, to be specific (Kewal, 2012):

2.1.1. Selling rate, which is the rate controlled by a bank for the clearance of certain outside monetary standards at a specific minute.

2.1.2. The average rate, for example, the center rate between the selling rate and the outside conversion scale of purchasing against the national cash, which is dictated by the Central Bank at some random minute.

2.1.3. Buying rate, which is the conversion scale controlled by a bank to buy certain outside monetary standards at a specific time.

2.1.4. Flat rate, the conversion standard is winning in the purchasing and selling of banknotes and voyager check, in which the swapping scale has considered the advancement and different costs-other.

2.4 Gross Domestic Product (GDP)

Samuelson and Nordhaus (2011) argue that GDP / GDP is the total output produced within a country's borders for one year. Simbolon and Purwanto (2018) express that GDP is a proportion of all monetary yield inside a nation's fringes for a specific period, typically yearly or quarterly. Gross domestic product is determined by including the complete estimation of the yearly yield of a nation's merchandise and enterprises.

According to Sukirno (2015), gross domestic product (GDP) can be interpreted as the value of goods and services produced in the country in one year. In the economy, in developed and developing countries, goods and services are produced not only by companies owned by the residents of these countries but by residents of other countries. National production is always invented by factors of production originating from abroad.

Theoretically the formula for calculating GDP is:

\[ GDP = C + G + I + NX \]

\[ \text{(Mankiw, 2018: 10)} \]

Where:

- C = Private (public) consumption,
- G = Government expenditure,
- I = Investment,
- NX = Country's net exports (total exports - total imports).

Using the GDP equation, GDP growth can be formulated as follows:

\[ GDP\text{ growth} = \frac{GDP_n - GDP_{n-1}}{GDP_{n-1}} \]

Where:

- GDPn = Growth of domestic products in year n,
- GDPn-1 = GDP one year before year n.

2.5 Composite Stock Price Index (CSPI)

Composite Stock Price Index (CSPI) describes a series of historical information about the movement of the combined share price of all shares, up to a specific date. Composite Stock Price Index of all offers is a worth used to gauge the joined presentation of all offers recorded on a stock trade (Sunariyah, 2011).

According to Sunariyah (2011: 142), there are two methods of calculating the Composite Stock Price Index (CSPI), namely:

2.5.1 The Average Method

In this method, the market price of the shares included in the calculation of the index is added up then divided by a dividing factor certain. The Composite Stock Price Index (CSPI) formula with the common method is:

\[ CSPI = \frac{\sum PS}{\sum P_{base}} \]

where:

- CSPI = Composite Stock Price Index
- PS = Stock market price
- \(\sum P_{base}\) = A divisor value
\[ \sum P_{\text{base}} \] is a divider value factor where this dividing factor must be able to adapt to changes in theoretical stock prices because there are actions of issuers such as the right issues, stock dividends, bonus shares, and so on. As with other index calculations, the CSPI is determined based on the index calculation. On the base day, the base price is the same as the market price, so the index is 100%.

### 2.5.2 The Weighted Average Method

In this method, the index adds weighting in addition to the stock market price and the base price of the stock. Two experts propose this method:

#### 2.5.3 Paasche Method

\[
CSPI = \frac{\sum (P_x \times S_x)}{\sum (P_{\text{base}} \times S_x)}
\]

where:
- \(CSPI\) = Composite Stock Price Index
- \(P_x\) = Market price of shares
- \(S_x\) = Number of shares issued (outstanding shares)
- \(P_{\text{base}}\) = Price of shares

#### 2.5.4 The Laspeyres Method

\[
CSPI = \frac{\sum (P_x \times S_0)}{\sum (P_{\text{base}} \times S_0)}
\]

where:
- \(CSPI\) = Composite Stock Price Index
- \(P_x\) = Market price of shares
- \(S_0\) = Number of shares issued on the base day
- \(P_{\text{base}}\) = Stock price base

### 2.6 Hypothesis

The theory can be characterized as a coherently unsurprising connection between at least two factors, which is expressed in the structure or definition of explanations that can be tried. The hypothesis in this study are as follows:

- **H1**: inflation, interest rates, the exchange rate of the rupiah against the US dollar, and the GDP effect together on CSPI at the IDX in the period 2009-2018.
- **H2**: inflation negatively affects CSPI at the IDX in the period 2009-2018.
- **H3**: interest rates harm the CSPI on the IDX for the period 2009-2018.
- **H4**: The exchange rate of the rupiah against the US dollar has a negative effect on the CSPI on the IDX for the period 2009-2018.
- **H5**: GDP has a positive effect on the CSPI on the IDX for the period 2009-2018.

### 3 RESEARCH METHOD

Sort of research led in this examination is a causal report. The reliant variable in this examination is the CSPI, while the autonomous factors utilized are swelling, financing costs, the conversion scale of the rupiah against the US dollar, and the GDP.

The kind of information utilized in this investigation is optional information. Information sources utilized in this examination are auxiliary sources gotten from the site. The information utilized in this examination is observational information from 2009 to 2018.

Information accumulation strategies are done by reporting expansion information, loan fees, the swapping scale of the rupiah against the US dollar, Gross domestic product, and the CSPI during the 2009-2018 period acquired through related locales on the web. The type of time-recurrence of information gathered is resolved in the quarterly structure, so the information for every factor will be gathered in the measure of 40 observational information.

The systematic device utilized in this investigation is various relapse examination and theory testing utilizing the \( f \) test to discover to decide the impact of at the same time autonomous factors on the reliant variable and \( t \) test to decide the impact of halfway free factors on the needy variable.

### 4 RESULTS

#### 4.1 Research Result

Results of multiple regression analysis in this study are summarized in the following table:
Based on table 1.1 the regression equations are prepared using the formula as follows:

\[ Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e \]

Resulting in a regression equation as follows:

\[ \text{CSPI} = 521.9823 + 73.032756 \text{(Inflation)} - 8.785210 \text{(Interest Rate)} - 0.181549 \text{(Exchange Rate)} + 0.002393 \text{(GDP)} \]

Hypothesis testing is done with the F test and t-test. The F test was carried out to determine the effect of the independent variables together on the dependent variable. In table 1.1, it can be seen that the statistical F value is 90.277837, with a probability value of 0.000000. Based on these results it can be said that \( H_1 \) is accepted because the significance value of the results < \( \alpha = 5\% \) (Widarjono, 2015), thus it can be concluded that there is a simultaneously effect of inflation, interest rates, exchange rates of rupiah against the dollar The United States, and GDP against the Composite Stock Price Index (CSPI). In other words, \( H_1 \) in this study is "proven."

T-test was conducted to determine the effect of partially independent variables on the dependent variable. The rule in this test is that if the probability value of \( \rho \) is smaller than \( \alpha \), then the hypothesis of each variable is accepted, and vice versa if the probability value of \( \rho \) is greater than the value of \( \alpha \), then the hypothesis of each variable is rejected (Widarjono, 2015). In light of these outcomes, acknowledgment or dismissal of the speculation is made for every theory of each proposed variable.

The decision to reject and accept the hypothesis in this study is as follows:

### 4.1.1 Influence of Inflation on the CSPI on the IDX for the period 2009-2018.

Based on the results of the t-test, inflation has a value \( t = 1.587135 \) with a probability value amounted to 0.1215, greater than the significance level of 0.05 (5%). This shows that the hypothesis is rejected, meaning that inflation has no effect on the Composite Stock Price Index (CSPI) in the period 2009 - 2018. Thus, \( H_2 \) in this study is "not proven."

### 4.1.2 Effect of Interest Rates on the Composite Stock Price Index (CSPI) on the Indonesia Stock Exchange (IDX) for the period 2009-2018

Based on t-test results, interest rates have a t-statistic value of -0.091667 with a probability value of 0.9275, greater than the level significance of 0.05 (5%). This suggests that the hypothesis is rejected, meaning that the interest rate does not affect the Composite Stock Price Index (CSPI) in the period 2009 - 2018. Thus, the H3 in the study "not proven."

### 4.1.3 Effect of Exchange Rates of Rupiah against the US Dollar on the CSPI on the IDX for the period 2009-2018

In light of the consequences of the t-test, the conversion scale of monetary forms against the US of America had a t-measurement estimation of -2.893436 with a likelihood estimation of 0.0065, littler than the essentialness level of 0.05 (5%). This suggests that the hypothesis is accepted, which means the exchange rate of the rupiah against the US dollar negatively affects Composite Stock Price Index (CSPI) in the period 2009 - 2018. Thus, H4 in this study "proved." This means that if the variable value of the rupiah exchange rate against the US dollar increases, the value of the CSPI will decrease.

### 4.1.4 Effect of GDP on the CSPI on the IDX for the period 2009-2018

Based on the results of the t-test, GDP has a t statistic value of 9.869284 with a probability value of 0.0000, smaller than the significance level of 0.05 (5%). This suggests that the hypothesis is accepted, meaning that GDP positive influence on Stock Price Index (CSPI) in the period 2009 - 2018. Thus, H5 in this study "proved." This means that if the value of the GDP variable increases, the value of the CSPI variable will increase.
5 DISCUSSION

5.1 Influence of Inflation on CSPI

The results show that inflation does not affect the Composite Stock Price Index (CSPI) for the period 2009 - 2018. The aftereffects of this examination are in accordance with the consequences of research directed by Kewal (2012), which found that half the swelling rate did not significantly affect the CSPI. The results of this study are also in line with the results of research conducted by Wijaya (2013), who found that inflation did not affect the CSPI. The consequences of different examinations that are following the aftereffects of this investigation are the consequences of research led by Astuti et al. (2013), who found that expansion did not influence the CSPI.

According to Kewal (2012), inflation does not have a significant effect on the Jakarta Composite Index (CSPI) due to inflation that occurs in Indonesia, not including the inflation rate that is too high, so it does not affect the stock price. Based on inflation data on descriptive statistics, the average-average inflation rate during the study period amounted to 4.9315%, with a maximum value was 8.4%. The market can still accept if the inflation rate is below 10% (Kewal, 2012). However, if inflation breaks the 10% mark, the capital market will be disrupted. If inflation exceeds the 10% level, the Indonesian Central Bank will increase the BI rate, which causes investors to tend to shift their capital in the banking sector.

5.2 Effect of Interest Rates on the CSPI

The outcomes demonstrated that loan costs had no impact on the CSPI for the period 2009 - 2018. The aftereffects of this investigation are following the consequences of research directed by Wijaya (2013), who found that loan costs do not influence the CSPI. The aftereffects of this examination are likewise in accordance with the consequences of research led by Kewal (2012), who found that the SBI financing cost did not influence the CSPI. Astuti et al. (2013), in their examination, likewise found similar outcomes. To be specific, the conversion scale negatively affected the CSPI.

In several theories, it states that high-interest rates will undoubtedly have an impact on the investment fund allocation of investors. Investments in bank products such as deposits or savings are less risky than investments in shares. The investor will sell his shares and will then save the funds in the bank. The simultaneous sale of shares will have an impact on a significant decline in share prices (Arifin, 2007:).

The interest rate in the 2009-2018 period experienced a change that was not too large from quarter one to another quarter. The maximum value of the interest rate for the period 2009-2018 is 7.75%. The interest rate does not affect the CSPI due to the low-interest rates prevailing in Indonesia during the period 2009-2018, which is still below 10%, so it does not cause a shift in investor funds to investments in the form of savings or time deposits.

5.3 Effect of Exchange Rates of Rupiah against the US Dollar on the CSPI

The outcomes demonstrated that the conversion scale of the rupiah against the United States dollar had a critical negative impact on the CSPI for the period 2009 - 2018. The consequences of this examination are in accordance with the discoveries in an investigation directed by Wijaya (2013), which found that the swapping scale negatively affected the CSPI. Research conducted by Kewal (2012) also found the same results as this study, namely, the exchange rate harms the CSPI. The reinforcing of the United States dollar swapping scale will cause a decrease in the estimation of the CSPI. Then again, if the estimation of the US dollar conversion standard debilitates, it will build the estimation of the CSPI.

Simorangkir and Suseno (2004) state that three main factors affect foreign exchange demand. First, import payment factors. The higher the import of goods and services, the greater the demand for foreign exchange so that the exchange rate will tend to weaken and vice versa. Second, the capital outflow factor. The greater the capital outflow, the greater the demand for foreign exchange and will further weaken the exchange rate. Capital outflows include payment of the debt of Indonesian citizens (both private and government) to foreign parties and placement of funds of Indonesian citizens abroad. Third, speculation activities. The more outside cash hypothesis exercises completed by examiners, the more noteworthy the interest for remote trade to debilitate the conversion scale of the nearby money against outside monetary standards.

Meanwhile, the foreign exchange supply is influenced by two main factors. First, the factor of export revenue. The greater the volume of receipts from exports of goods and services, the greater the amount of foreign currency owned by a country and in the continued exchange rate of foreign currencies.
tends to strengthen or appreciate and vice versa. Second, the factor of capital inflow (capital inflow). The greater the capital inflow, the exchange rate will tend to get stronger. The capital inflow can be in the form of foreign debt receipt, placement of short-term funds by foreign parties (portfolio investment), and foreign direct investment.

Judging from foreign exchange demand factors, the capital outflow from Indonesia which causes the US dollar to strengthen will have an impact on the decline in the Composite Stock Price Index (CSPI) because the funds used to invest in the Indonesia Stock Exchange (IDX) are reduced due to capital outflow. A large capital inflow will cause the US dollar exchange rate to weaken and will cause the CSPI to strengthen due to investment funds entering the Indonesia Stock Exchange. The weakening of the value of the US dollar exchange rate has reduced investor interest in investing in foreign currencies and tends to divert funds to the capital market.

5.4 **Effect of GDP on the CSPI**

The outcomes demonstrated that GDP had a noteworthy beneficial outcome on the CSPI for the period 2009 - 2018. The aftereffects of this examination were in accordance with the consequences of research led by Neny Mulyani (2012), which found that GDP negatively affected JII. As indicated by Sukirno (2015), GDP is the estimation of merchandise and ventures in a nation created by components of generation claimed by the natives of that nation and remote nations. Tandelilin (2017) states that increasing GDP is a good (positive) signal for investment and vice versa if GDP decreases. The increase in GDP has a positive influence on consumer purchasing power so that it can increase demand for company products. These conditions will increase the profitability of the company so that it will affect stock prices and push up the CSPI.

In line with the opinion of Tandelilin (2017), according to Sunariyah (2011), an increase in GDP will have a positive effect on consumer income because it can increase demand for company products, this will provide high optimism and also spur positive market sentiment so that it has a significant influence positive for the equity market. The increase in GDP in the Indonesian economy will encourage the creation of stock trading activities on the IDX to be more excited so that it will push the pace of the Composite Stock Price Index (CSPI) towards an increase.

### 6 CONCLUSION

Based on the results of research in this research, conclusions that can be produced are as follows:

- Inflation, interest rates, the exchange rate of the rupiah against the US dollar, GDP simultaneously affect the CSPI period 2009 – 2018.
- Inflation does not affect on the CSPI on the IDX for the period 2009-2018.
- Interest rates do not affect the CSPI on the IDX for the period 2009-2018.
- The exchange rate of the rupiah against the United States dollar has a negative effect on the CSPI on the IDX for the period 2009-2018.
- GDP has a positive effect on the CSPI on the IDX for the period 2009-2018.

### 7 LIMITATION

#### 7.1 Further Researchers

Based on the results of the coefficient of determination (R²) in this study amounted to 90.1543%, which means that the variable inflation, interest rates, exchange rates, and GDP can explain changes in the CSPI of 90.1543%. Other variables outside the model can explain the JCI change of 9.8457%.

Suggestions for the next researcher are expected to be able to conduct research using variables outside the research model such as the amount of money in circulation, the balance of payments, income per capita, employment opportunities, and others, which can explain changes in the Composite Stock Price Index.

#### 7.2 For Investors

Advice that researchers can give to investors is in investing in getting the maximum profit; investors must pay attention to variables that affect trading activities in the capital market, especially the GDP variable.

GDP is an indicator of a country's economic growth. The higher value of a country's GDP reflects activities in the country's capital market that have favorable prospects for investing. Conversely, if the value of GDP decreases under these conditions, trading activity in the country's capital market is not conducive to investment.
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