INVESTOR SENTIMENT AND STOCK RETURNS DURING COVID-19 PANDEMIC IN INDONESIA

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ABSTRACT

The Covid-19 pandemic had an impact on financial markets, included Indonesian capital market. In addition, the capital market gave benefits to investor and contributed to economic development in Indonesia. The COVID-19 pandemic has caused concern for stock market investors. However, companies had a high interest to enter the stock market. Therefore, the factor that affected investor sentiment need to identified as the causes of stock price fluctuations. This study aimed to predict investor sentiment, and macroeconomics (interest rates, and inflation) on stock returns during the COVID-19 pandemic in Indonesia. Investor sentiment interpreted as the tendency of investors to speculate. Investors were overly optimistic or pessimistic about an investment risk could influence stock prices for a significant period of time. The Covid-19 pandemic made investors pessimistic about the future of companies in Indonesia. This study used stock return variable measured by the monthly Jakarta Composite return index data. Investor sentiment variable proxied by monthly consumer confidence index data. Macroeconomics variables measured by monthly interest rates, and monthly inflation during March 2020 – April 2021. This research used the Classical Linier Regression Model (CLRM) with Augmented Dickey-Fuller (ADF) Test and Wald Test. Results revealed, investor sentiment had a significant impact on the stock returns during the covid-19 pandemic. However, interest rate and inflation had not a significant effect on the stock returns during this period. The government, financial institutions, and investors could consider the results of this study before made a decision. However, this study was limited by its short period.

Keywords: *Investor sentiment, foreign financial flows, exchange rates, interest rates, inflation, stock returns.*

INTRODUCTION

The development of the capital market shows the level of economic activity in a country (Iddrisu & Malik, 2017), through which companies can obtain long-term capital and the public can invest (IDX,2020). Public companies listed on the stock exchange are required to provide financial reports regularly so that investors can use them as a basis for analysis. This encourages companies to go public to improve their performance. The literature show that the stock market tends to affect the company's performance (Sulong & Ahmed, 2018). Company performance can be influenced by internal and external factors. One of the external conditions that have an impact on all aspects is the COVID-19 pandemic, one of which is the condition of the Composite Stock Price Index (JCI) in Indonesia.
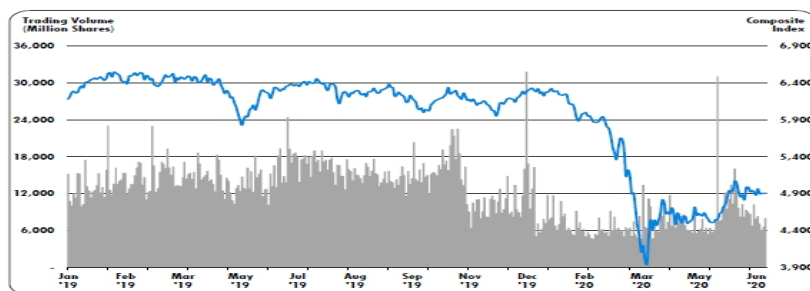
Figure 1. Jakarta composite stock price index and trading volume
Source: IDX (2020)

Data shows a sharp correction occurred in March 2020; this is further strengthened by a Bloomberg report by Pratomo (2020) that the JCI correction was the lowest since semester I/2002 in the last 18 years. In addition, Sahala (2020) stated that the JCI recorded a decline of 26.43 percent, followed by a decrease in market capitalization of 26.11 percent, as well as a decrease in the average daily transaction value of 23.84 percent at the close of trading on April 17, 2020. The conditions that occurred in the Indonesian capital market during the COVID-19 pandemic raised concerns for investors who have the same goal, namely financial returns. On the other hand, IDN Financials (2020) argues that the company's interest in entering the capital market is still relatively high, this is indicated by the presence of 28 companies that will be included in the pipeline for listing new shares. These two conditions are certainly a concern for investors, especially during this COVID-19 pandemic. Therefore, things that affect investor sentiment need to be known as the cause of stock price fluctuations. First, the sentiment caused by data on the movement of the number of Covid-19 cases in Indonesia. Our World in Data shows that the graph and the death rate in Indonesia due to COVID-19 is the second highest in the Asia Pacific and number one in ASEAN (Kurnia, 2020). The next sentiment was caused by the Large-Scale Social Restrictions (PSBB) policy which caused the JCI to plunge 154.7 points or 2.99 percent to position 4,988.33 on Thursday, September 10, 2020 (Ramadhani, 2020)

French and Wei-Xuan (2017) proved that investor sentiment and foreign financial flows affect stock returns. Muguto, Rupande, and Muzindutsi (2019) found that investor sentiment also affects foreign financial flows. Furthermore, Iddrisu and Malik (2017) stated that capital market conditions are related to economic conditions. This study aims to predict stock returns and macroeconomics (interest rates, and inflation) on investor sentiment, during the COVID-19 pandemic in Indonesia. This research is expected to contribute to the development of studies and literature review, especially in the field of finance, besides that it can be utilized by stakeholders (such as government, financial institutions, and investors).

LITERATURE REVIEW AND HYPOTHESIS
Investor sentiment is the result of researchers who find that the return relationship is not by the Market Efficiency Hypothesis which was popularized by Fama in 1970 (Oprea, Stefan, & Laura, 2014). Investor sentiment can be interpreted as the tendency of investors to speculate (Chowdhury, Sharmin, & Rahman, 2014). Investor sentiment is an individual's feeling of being pessimistic or excessively optimistic about a situation (Mehrani, Roodposhti, Nekomaram, & Saedi, 2014). A tendency to show a behavior that shows psychological behavioral factors, namely feelings and beliefs about certain situations. In addition, what is expressed by Oprea *et al.*, (2014) behavioral finance shows that irrational sentiments, namely investors who expect too optimistic or pessimistic about an investment risk, can affect stock prices for a significant period.

Chowdhury *et al*. (2014) stated that extreme sentiment plays an important role in determining changes in market returns. Gong *et al*. (2016) show that several previous researchers have tested whether investor sentiment is influenced by stock market returns and volatility. Generally, bullish investors expect higher returns than the average investor, so high sentiment can push stock prices away from their fundamental values (Chowdhury *et al*., 2014). In the context of the Covid-19 pandemic, investors can feel pessimistic about the

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future of companies in Indonesia. This causes investors to sell their shares which causes the stock price to fall or it can be said that there is a negative investor sentiment towards the stock price. Based on this, the research hypotheses are:

H_1 : Investor sentiment has a significant impact by stock returns during the COVID-19 pandemic

The interest rate will affect changes in the amount of investment, the interest rate will affect investors to withdraw their stock investments and then move them to other forms of investment, such as savings or deposits. The Bank Indonesia Interest Rate (SBI) is used by Bank Indonesia to control the circulation of money in the community. Utami, Retno, Hartoyo, and Maulana (2015) stated that interest rates hurt stock returns. Tandelilin (2010) states that inflation is detrimental to stock returns, this increase will have an impact on increasing selling prices and production costs which will be followed by a decrease in profitability, which has an impact on decreasing returns.

H_2: Interest rates has a significant influence on stock returns during the COVID-19 pandemic

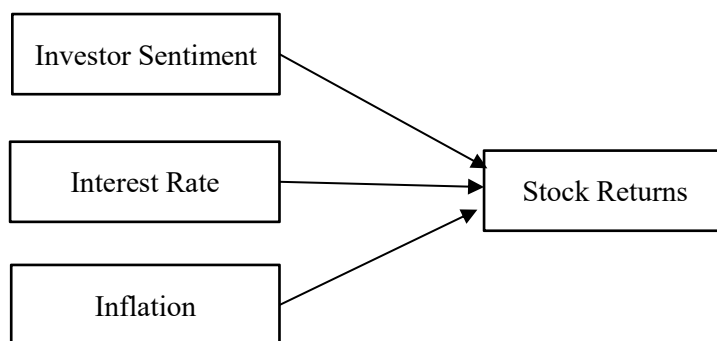H_3: Inflation can have a significant effect on stock returns during the COVID-19 pandemic

Figure 2. Conceptual framework

RESEARCH METHOD
This research used descriptive quantitative research with multiple regression methods. The population is all companies listed on the Indonesia Stock Exchange (IDX) and the sample is companies that are included in Jakarta Composite Index (JCI) during the research period. The data used time series data, sourced from March 11, 2020 (WHO's the first announcement of the Covid-19 pandemic) to April 30, 2021. This study uses stock return variables as measured by using the monthly JCI return data. Investor sentiment variable proxied by monthly consumer confidence index data. Macroeconomics variables measured by monthly interest rates, and monthly inflation during March 2020 – April 2021. JCI return data were obtained from yahoo finance, while interest rate data and inflation data were taken from Bank Indonesia. This research uses the Classical Linier Regression Model (CLRM) with Augmented Dickey-Fuller (ADF) Test and Wald Test.

FINDINGS
Descriptive Statistics
The number of data for each variable is 14, table 1 shows that the consumer confidence index (CCI) has a mean value of 1.12, a median value of 1.15, a maximum value of 1.47, and a minimum value of 0.65. The results of the Skewness test show that the CCI, JCI return (RTN), inflation (INF), and interest rate (IRT) have values that are still between -1.96 to 1.96, so the data is close to symmetrical. The results of the Kurtosis test on CCI, RTN, and INF have a value of more than 1.96 which indicates that the data distribution is uneven, so that the data is not normal. The curve has a conical distribution because all variables have positive kurtosis values.

Table 1

Descriptive Statistics Test Results

Types	RTN	CCI	INF	IRT
Mean	0.01	1.12	0.11	0.04
Median	0.02	1.15	0.09	0.04
Maximum	0.09	1.47	0.45	0.05
Minimum	-0.16	0.65	-0.10	-0.03
Std.Dev	0.07	0.21	0.14	0.00
Skewness	-1.28	-0.61	0.70	0.25

Kurtosis	4.34	3.21	3.29	1.86

Source: Authors, 2021

Classical Assumption Test

Correlation regression analysis requires the fulfillment of various assumptions so that the model can be used as a good predictor. However, it is not uncommon for researchers to face problems in their model. Various problems that are often encountered in regression and correlation analysis, such as: multicollinearity, heteroscedasticity, autocorellation, and normality. The following are the results of testing the four problems:

Table 2
Classical Assumption Test Results

Test	Multicollinearity	Heteroscedasticity	Autocorellation	Normality
Result	VIF CCI: 1,33 VIF INF: 1,07 VIF IRT: 1,41	Probability: 0,24 Obs*R-squared: 11,55	Durbin-Watson statistic: 2,37	Jarque-Bera: 1,01 Probability: 0,60

Source: Authors, 2021

The multicollinearity test aims to test whether in the regression model there is a high or perfect correlation between the independent variables. Table 2 shows that the RTN, INF, and IRT Variance Inflation Factors (VIF) values show values below 10, meaning that there are no symptoms of multicollinearity.

The heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from the residuals of one observation to another observation. A heteroscedasticity test was carried out using the white test. The results in table 2 show the Obs*R-squared value of 11.55 and the probability value is 0.24 (greater than = 5%), it can be concluded that the data is homoscedastic or there is no heteroscedasticity.

The autocorrelation test aims to test whether in a linear regression model there is a correlation between the residual error in period t and the error in period t-1 (previous). Table 2 shows the Durbin-Watson statistic of 2.37, so it can be concluded that the data does not contain autocorrelation.

The normality test aims to test whether, in the regression model, the residuals have a normal distribution. Normality test was performed using the Jarque-Bera (JB) test. The test results show the JB value of 1.01 (less than 2) and the probability is greater than 5%, so the data is normally distributed

Stationarity Test and Cointegration Test

In time series analysis, the assumption of stationarity of the data is an important property. In the stationary model, statistical properties in the future can be predicted based on historical data that has occurred in the past (Rosadi, 2012). Stationarity testing was carried out using a unit root test using the Augmented Dickey-Fuller (ADF) Test model. The results of the Augmented Dickey-Fuller (ADF) Test can be seen in Table 3:

Table 3
Augmented Dickey-Fuller (ADF) Test Results

Variable	Level	Probability	Result
CCI	Level	0.0007	Stasioner
Return	Level	0.0009	Stasioner
Inflation	2nd difference	0.0068	Stasioner
Interest Rate	2nd difference	0.0063	Stasioner

Source: Authors, 2021

Based on the stationary test results from Table 3, it is stated that the probability of the ADF test statistic from CCI, RTN, INF, and EXC is stationary. Stationary time series data have the same mean, variance, and autocovariance (at various lags) regardless of time (time-invariant). INF and IRT are not stationary before differentiation but are stationary at the second level of differentiation, cointegration will likely occur, meaning that there is a long-term relationship between the two. Therefore, the researcher conducted a cointegration test.

A cointegration test was carried out using the Johansen test. The test results show that the trace statistic value of 8.21 is smaller than the critical value at the 5% confidence level of 15.49, so it can be concluded that the two variables are not cointegrated.

Hypothesis Test

Based on the results of the classic assumption test, it was found that the data were free from all problems. Hypothesis testing was carried out by multiple linear regression analysis using the Ordinary Least Squares (OLS) method.

Table 4

Results of Multiple Linear Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.12	0.31	-0.37	0.72
CCI	0.13	0.10	1.28	0.23
INF	0.10	0.13	0.75	0.47
IRT	-0.76	6.02	-0.13	0.90
R-squared	0.25	Mean Dependent Var		0.01
Adjusted R-squared	0.02	S.D. Dependent Var		0.07
S.E. of Regression	0.07	Akaike Info Criterion		-2.34
Sum Squared Resid	0.04	Schwarz Criterion		-2.16
Log Likehood	20.37	Hannah-Quinn Criter		-2.35
F-statistic	1.11	Durbin Watson Stat		2.37
Prob (F-statistic)	0.39			

Source: Authors, 2021

The results in Table 4 show the adjusted R^2 of 0.25 that can cause inference problems, so the solution is to add independent variables in the regression equation model (Dimas, 2020). The dynamic equation model as follows:

$$RTN = \beta_0 + \beta_1 CCI + \beta_2 INF + \beta_3 IRT + \beta_4 RTN_{4-1}$$

Dynamics is one of the important aspects that must be considered in econometric modeling using time series variables . Among these various variables, it is possible to have a dynamic relationship. The value of a variable is not only influenced by the value of other variables in the same period, but also by the value of other variables at different times (Ariefianto, 2012). Next, we performed the Wald test to check the independent variables that had been added to the regression model had an additional contribution. From Table 5, The F-statistic value in the value section is 14.78 with a probability of 0.00. Thus, we can conclude that the additional independent variable coefficients have an additional contribution when entered the regression model.

Table 5

Wald Test Results

Test Statistic	Value	df	Probability
t-statistic	3.84	8	0.00
F-statistic	14.78	(1, 8)	0.00
Chi-square	14.78	1	0.00

Source: Authors, 2021

However, Table 6 shows a small value of the standard error, this value indicates that the regression model is more accurate in predicting the stock return. Moreover, the addition of the independent variable makes the value of R^2 higher, so we need to add the independent variable. The result show CCI probability value is 0.04, so we can concluded that investor sentiment has a significant impact by stock returns during the COVID-19 pandemic or we can accept hypothesis 1. Meanwhile, the variables of inflation, and interest rate are insignificant because probability values are above 0.05, it can be concluded that interest rate and inflation had not a significant effect on the stock returns during the COVID-19 pandemic. So, hypothesis 2 and hypothesis 3 are rejected.

Table 6
Results of Multiple Linear Regression Analysis with Dynamic model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.17	0.14	-1.18	0.27
CCI	0.11	0.05	2.31	0.04
INF	0.12	0.06	1.97	0.08
IRT	-1.18	2.85	0.41	0.69
D(RTN)	0.39	0.10	3.84	0.00
R-squared	0.73	Mean Dependent Var		0.02
Adjusted R-squared	0.59	S.D. Dependent Var		0.04
S.E. of Regression	0.02	Akaike Info Criterion		-3.92
Sum Squared Resid	0.01	Schwarz Criterion		-3.71
Log Likehood	30.52	Hannah-Quinn Criter		-3.97
F-statistic	5.46	Durbin Watson Stat		1.96
Prob (F-statistic)	0.02			

Source: Authors, 2021

DISCUSSION

The results of testing the first hypothesis show that investor sentiment has a significant impact on JCI returns during the COVID-19 pandemic from March 2020 to April 2021. This shows that investor sentiment, which is indicated by the value of the consumer confidence index, has an effect on JCI returns. The value of the consumer confidence index is calculated from a consumer survey conducted by Bank Indonesia. This value shows consumer confidence in economic conditions. Thus, investors optimistic or pessimistic perceptions affect stock market conditions as indicated by stock returns. The data shows that the CCI value is below 100% (pessimistic) in March 2020 and January 2021, which has a negative effect on the JCI return. On the other hand, Huang, Jiang, Tu, and Zhou (2015) found that investor sentiment has statistically and economically significant predictive power on returns The results of this study are in line with the research of Muhammad (2021); Xiong and Wu (2020) who found that investor sentiment has a significant effect on stock returns.

The second hypothesis gives the result that macroeconomic variables (inflation and interest rates) have no effect on stock returns during the COVID-19 pandemic from March 2020 to April 2021. This result shows that inflation and interest rate data during the study period do not have high volatility, so these two macroeconomic variables have no effect on JCI returns. In addition, the BI 7-Day Reverse Repo Rate (BI7DRR) used in the variable interest rate is determined by the Meeting of the Board of Governors of Bank Indonesia. The determination was based on several things, such as: maintaining the stability of the Rupiah exchange rate, strengthening the monetary operations strategy, and lowering the maximum limit for credit card interest rates (BI, 2021). On the other hand, Bank Indonesia carried out various policies to maintain inflation in accordance with the inflation target set. The results of this study are in accordance with research conducted by Banchit, et al (2020), which found that investor sentiment had no effect on economic indicators in the Australian and New Zealand markets. Combey and Togbenou (2017) find that inflation has no effect on returns in Togo. The results of this study are also supported by research by Abbas, Bashir, Wang, Zebende, and Ishfaq (2019) that macroeconomic variables have weak evidence of returns in the Chinese market.

CONCLUSION

We examined the effect of investor sentiment and macroeconomics on stock returns under the CLRM approach. Investor sentiment has an impact to stock returns, the results support the behavioral financial theory which shows that investor behavior affects the stock market (from a psychological point of view). Whereas, macroeconomics variables (inflation and interest rate) have no significant effect on the return of the stock returns during the period March 2020 - April 2021. These results can be used as a consideration for the government and investors. The short study period and the availability of data (monthly) caused the limitations of the research data. It is considered to increase the research period, so that causality tests can be carried out with Vector Autoregression (VAR) and Impulse Response Function (IRF) to capture dynamic and casual relationships.

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