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THE IMPACT OF COVID-19 ON STOCK MARKET RETURNS

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ABSTRACT

This study is done to analyze the effect of COVID-19 on stock returns in manufacturing companies listed on the Indonesian Stock Exchange (IDX) from March 2, 2020 to December 31, 2020. Sample was selected using purposive sampling method and the valid data was 167 companies. This study uses a fixed effect model and multiple linear regression analysis and analyzed utilizing EViews 12. The results in this study indicate that the daily growth in total confirmed COVID-19 cases, daily growth in total COVID-19 deaths and Large-Scale Social Restrictions (PSBB) has a negative significant effect on stock returns, while daily growth in total recovered COVID-19 cases has an insignificant effect on stock returns.

Keywords: *COVID-19 pandemic, PSBB, stock returns*

1. INTRODUCTION

At the end of 2019, the world was appalled by COVID-19, or Coronavirus Disease, which is a virus that can infect the respiratory system with symptoms of fever, cough, runny nose, and difficulty breathing [1]. The World Health Organization (WHO) officially labelled the COVID-19 outbreak a worldwide pandemic on March 11, 2020, citing the epidemic's fast growth and global effect. [2].

The outbreak of the COVID-19 virus has had a profound impact on society and has had a devastating effect on the economy. The future economic impact of COVID-19 is highly uncertain as the spread of the disease as mortality rates, disease severity, and responses from policymakers are unknown [3]. Indonesia has also been affected; since Indonesia experienced its first positive case of COVID-19 on March 2, 2020, there was a reasonably deep correction in the stock market, where the Jakarta Composite Index (JKSE) closed 91 points (1.67%) to 5,361 on the same day. JKSE has also decreased by 22% at the beginning of 2020, indicating a drastic decline in the stock market is in line with the news of COVID-19. [4].

As a response to the COVID-19 outbreak, governments worldwide have implemented emergency government policies, such as lockdowns, quarantines, flight restrictions and stimulus packages [5]. The Indonesian government has implemented a Large-Scale Social Restrictions (PSBB) that aims to reduce the level of population contact and thereby reduce the transmission of the virus. However, this restriction will lead to a reduction in purchasing power and hamper economic growth. Activity restrictions and the implementation of lockdowns in several countries have an impact on the global economy; for instance, supply chains will be disrupted, the industrial sector will collapse, and company operations will stop [6]. COVID-19's impact on Indonesian manufacturing will be examined in this study. This sector was chosen as it consists of various sub-sectors to give a better understanding of the reaction in the stock market amid the COVID-19 pandemic as a whole. Indonesia. This sector was chosen as it consists of various sub-sectors to give better understanding of the reaction in the stock market in the midst of the COVID-19 pandemic as a whole.

We examined the daily growth in confirmed COVID-19 cases, confirmed COVID-19 fatalities, and recovered COVID-19 cases, and PSBB to determine their impact on the stock market's return.

The daily growth in total confirmed COVID-19 cases would signify the virus's increasing transmission rate and how contagious it is, which may affect investors' decisions in the stock market. Several previous studies conducted by Al-Awadhi et al. [7], Lee and Chen [8], Mugiarni and Wulandari [9] show that a rise in positive COVID-19 cases have a significant negative effect on stock market returns. The increase in deaths due to COVID-19 is tracked by comparing the number of people who died on a given day to the number of people who died the day before. The daily increase in the total number of COVID-19 deaths had a significant negative impact on stock market returns, as it sent a signal to investors that the government was not managing the pandemic properly, affecting public confidence that investors would decrease, so investors are more willing to withdraw their investments, as shown in the study by Nurcahyono et al. [10].

The daily growth in total recovered COVID-19 cases is used to measure the increase of recovered patients from the COVID-19 virus. If the growth rate increases, it may make investors more optimistic about their investments, as it shows that the pandemic can be overcome by both patients and hospitals or the potency of the COVID-19 virus has decreased over time. A study done by Lee and Chen [8] shows that the daily growth in total recovered COVID-19 cases has a positive relationship with stock market returns.

Large-Scale Social Restrictions (PSBB) is a government policy introduced in 2020 to contain the spread of the COVID-19 virus by limiting population contact. However, if the PSBB is implemented stringently, there will be economic uncertainty which will lead to a restructuring of the investor portfolio so that investors will be more reluctant to invest their capital. The study was done by Agustin [11] and Ashraf [12] show that PSBB has a significant negative impact on stock market returns.

This study also uses a control variable, namely market capitalization, which is related to a company's size. The larger it is, the easier it is for companies to gain external funding from investors therefore the impact of the virus may be minimized.

There is still inconsistency of the research results above, therefore this study sought to empirically examine the effect COVID-19 cases and PSBB on stock market returns.

2. LITERATURE REVIEW

Efficient Market Hypothesis is a theory on how a market reacts to information and how quickly the information is absorbed, resulting in an adjustment in stock prices [13]. News related to the COVID-19 outbreak has an effect on the ups and downs of the market, which will be reflected in the market price of the company's shares. Rational investors will use relevant information in determining the decision to buy or sell their shares, so that there will be stock price movements every time new information appears.

The Black Swan theory is a metaphor that describes an awe-inspiring event that has a significant impact but is often incorrectly rationalized afterwards. [14]. The result of a Black Swan event is a risk that must be faced when operating in the stock market. Therefore, even though the probability of its occurrence was low, if the Black Swan event were to be ignored,

it would have fatal consequences. A well-balanced portfolio is necessary for investors when they face various economic or financial situations. The COVID-19 outbreak is one of Black Swan events.

Signal theory theorizes that investors receive information in aa a signal to help them make an investment choice. First, the information is analyzed and categorized as either good or bad by market participants. Investors will become more interested in stock trading when this information is seen as a good signal. The market's reaction will be reflected in the stock trading volume [15].

According to Nurcahyono et al. [10], several market variables, including COVID-19, were positive and negative for stock returns during the pandemic. As a result, investors should pay attention to the impact of COVID-19 when making investment decisions. If the COVID-19 situation worsens, investors will perceive the event as a bad signal and will be more reluctant to invest in the stock market.

Stock Market Returns

Stock market returns is a factor that encourages investors to invest and is the rate of return obtained by investors on their investment decisions. The purpose of investors who invest their capital is to obtain a return on the capital invested in the company, which is measured by the difference between the current investment price and the previous period's price [7].

Daily Growth in Total Confirmed COVID-19 Cases

According to Ashraf [5], the daily increase in the total confirmed COVID-19 cases is the daily growth in the number of documented COVID-19 instances over the previous day. The number of positive cases will increase if the patient is tested positive when taking a rapid test or polymerase chain reaction (PCR).

Daily Growth in Total COVID-19 Deaths

According to Lee and Chen [8], the daily increase in total COVID-19 deaths is the growth in the number of people who died due to the COVID-19 virus compared to the previous day. The death growth rate indicates how deadly the virus is and how the outbreak is progressing.

2.4. Daily Growth in Total Recovered COVID-19 Cases

According to Lee and Chen [8], the daily growth in total recovered COVID-19 cases the growth in the number of cases of people who have successfully recovered from the COVID-19 virus compared to the previous day. Confirmed cases of COVID-19 without symptoms or with mild, moderate, or severe/critical symptoms are declared cured if the person concerned is removed from isolation and a monitoring completion statement is issued based on the facility physician's assessment.

Large-Scale Social Restrictions (PSBB)

PSBB is a government policy aimed at limiting the movement of people carried out by the government with the aim of reducing the negative impact and spread of COVID-19. According to Agustin [11], PSBB can be measured a dummy variable. Those who live in

areas susceptible to COVID-19 are subject to PSBB, which prohibits them from engaging in certain activities to keep COVID-19 from spreading further, which involves closing or restricting access on public spaces.

3. RESEARCH MODEL AND HYPOTHESES DEVELOPMENT

The Effect of Daily Growth in Total Confirmed COVID-19 Cases on Stock Market Returns

Positive cases of COVID-19 have resulted in increased risk and economic uncertainty for investors [16]. Therefore, risk-averse investors are more reluctant to invest because they will avoid taking risks in an investment if the investment does not provide an appropriate expected return as compensation according to the risk that must be borne by the investor.

In accordance with the Efficient Market Hypothesis theory, the stock market reflects all available information to form new prices, the stock market reacts to information related to COVID-19. Information about an uncontrolled increase in the transmission of positive COVID-19 cases will be considered by the market as negative information, resulting in an impact on stock returns for investors.
H_1: Daily Growth in Total Confirmed COVID-19 Cases has a negative impact on Stock Market Returns.

The Effect of Daily Growth in Total COVID-19 Deaths on Stock Market Returns

Nurcahyono et al. [10] stated that that the daily increase in the total number of COVID-19 deaths is negatively affecting stock returns, as the high death rate can give investors the impression that the government's response to COVID-19 is unsatisfactory and non-existent and that there is uncertainty when the virus ends, investors are more willing to withdraw their investments.

According to signal theory, COVID-19 variables are positive and negative signals for stock returns. The impact of rising COVID-19 deaths bodes poorly for investors when making investment decisions. Investors will be more reluctant to invest in stocks if the COVID-19 situation worsens.
H_2: Daily Growth in Total COVID-19 Deaths has a negative effect on Stock Market Returns.

The Effect of Daily Growth in Total Recovered COVID-19 Cases on Stock Market Returns

The growth in the number of recovered COVID-19 cases will give investors an indication that hospitals can handle patients who have contracted COVID-19 well or the potency for the COVID-19 virus has decreased. The growth in the number of recovered cases of COVID-19 will positively signal and increase investor confidence about potential future stock returns. It shows that the COVID-19 situation is improving and raises expectations that its operations can typically run in the future and maintain going concern.

Signal theory suggests that COVID-19's impact on stock returns is positive and negative. Growth in the number of COVID-19 cases recovered is seen as a good signal for investors, resulting in higher stock market returns.
H_3: Daily Growth in Total Recovered COVID-19 Cases has a positive impact on Stock Market Returns.

The Effect of PSBB on Stock Market Returns

Zaremba et al. [17] states that movement restriction implemented by the government can stimulate investors' portfolio reconstruction so that they prefer to invest in safer investments such as cash or gold. In addition, in the midst of the PSBB, a drastic decline in revenue caused companies to lay off workers and employees due to the company's cash flow shortage, as an effort to reduce operating costs. If there is a period of high unemployment prolonged period, will reduce economic growth. Considering that one of the economic indicators is stock returns, stock returns will also increase negatively affected.

In accordance with Black Swan's theory, unpredictable events will occur and have a major impact. New risks and unpredictable events that appear in the stock market could impact stock returns significantly.
H_4: PSBB has a negative impact on Stock Market Returns.

The research model of this study as presented in Figure 1 as follow:

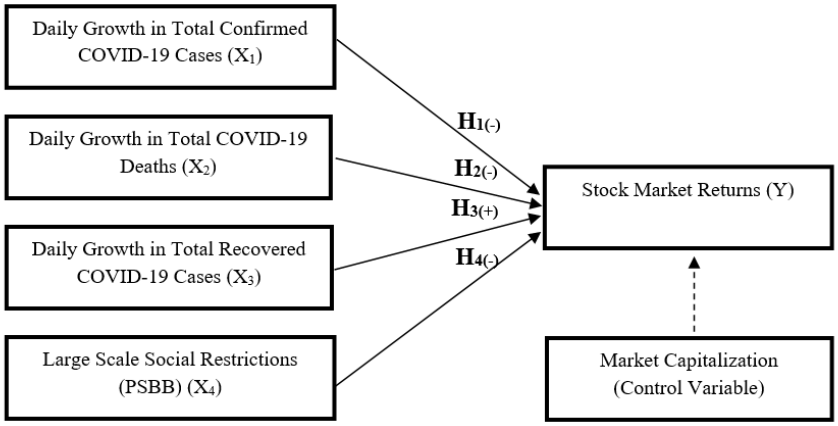

Figure 1 The Research Model

4. RESEARCH METHOD

The population used in this research is all manufacturing listed on the Indonesia Stock Exchange for the 2020 period, using daily data ranging from March 2 to December 31, 2020. The sampling technique uses purposive sampling which result in 167 samples and the amount of data was in accordance with the following sample criteria: Manufacturing companies that are listed on the IDX in the 2020 period, does not conduct IPOs during the 2020 period, and are not subject to stock suspension. All data processed in this research uses the EViews 12 software. Table 1 below shows the operationalization of this research's variables:

Table 1 Operationalization of Research Variables

Variables	Description	Adopted From
Stock Market Returns	$SR: \frac{\Delta Closing\ Price}{Closing\ Price}$	Al-Awadhi et al. (2020)
Daily Growth in Total Confirmed COVID-19 Cases	$DGCC: \frac{\Delta Total\ Confirmed}{Total\ Confirmed}$	Ashraf (2020)
Daily Growth in Total COVID-19 Deaths	$DGDC: \frac{\Delta Total\ Deaths}{Total\ Deaths}$	Ashraf (2020)
Daily Growth in Total Recovered COVID-19 Cases	$DGRC: \frac{\Delta Total\ Recovered}{Total\ Recovered}$	Lee and Chen (2020)
Large Scale Social Restrictions (PSBB)	1 if PSBB is implemented, 0 if not implemented	Agustin (2021)
Market Capitalization	LMCAP = Ln (Closing Price x Total Number of Outstanding Shares)	Al-Awadhi et al. (2020)

Based on the hypothesis above, the regression equations formed:9

$$Y= \alpha + \beta_1X_1 + \beta_2X_2 +\beta_3X_3+\beta_4X_4+ \beta_5X_5 + \varepsilon \ldots\ldots\ldots (1)$$

Note:
Y : Stock Market Returns
B : Regression Coefficient
X_1: Daily Growth in Total Confirmed COVID-19 Cases
X_2 : Daily Growth in Total COVID-19 Deaths
X_3: Daily Growth in Total Recovered COVID-19 Cases
X_4 : PSBB
X_5 : Market Capitalization
ε : Error

5. RESULT

Stock market returns are utilized as the dependent variable in this model. They range from 0.350000 to -0.990.000, with an average of 0.001695 and a standard deviation of 0.042733. The first independent variable is the daily rise in the total number of confirmed COVID-19 cases, which ranges between 3.750000 and 0.000000, with a mean of 0.083221 and a standard deviation of 0.294819. The second variable, daily increases in the total number of COVID-19 deaths range between 1.714286 and 0.000000, with a mean of 0.054797 and a standard deviation of 0.156206. The third variable, which is daily growth in recovered COVID-19 cases ranges from 0 to 0.875000, mean value of 0.070537 and a standard

deviation of 0.120671. The fourth independent variable, PSBB, ranges from 0.000000 to 1.000000, mean value of 0.860000 and a standard deviation of 0.346992. For the market value control variable, the highest and lowest values are 33.42140 and 23.36232, respectively, while the mean is 27.75060 and the standard deviation is 2.034482.

According to the Chow test results, the correct model to be used is a fixed-effects model because the probability value of the chi-square cross-section is 0.0000. This study would have been better served by a fixed-effects model, as demonstrated by the Hausman test results, which showed that the random cross-section had a probability value of 0.0000. Time-series and cross-sectional data are combined in panel data for this study. A fixed-effects model was used to test a slew of linear equations in this study. Panel data necessitate the use of tests for multicollinearity and heteroskedasticity. In the multicollinearity test, all variables have a correlation coefficient of < 0.80 which means there is no multicollinearity in this study so that it can be used for regression testing. In the Breusch-Pagan heteroscedasticity test, X_2Sum Squared Resid (1.230572) < X_2Chi-Square (9.48773), therefore it can be stated that the data in this study passed the heteroscedasticity test. According to the F-test, all independent variables have the same significant impact on the dependent variable, with a significance level of 0.0000. Adjusted R Square shows a value of 0.018317. So that it proves that the independent variables in this study are able to explain stock market returns as a dependent variable of 0.018317 or 1.8317%. There is a significant negative correlation between stock market returns and the daily growth of confirmed COVID-19 cases, deaths, and the PSBB, according to the t-test results. However, the control variable, market capitalization, is positively correlated with stock market return. This is shown in Table 2, which includes the hypothesis testing results:

Table 2 The Results of Hypotheses Testing

Variable	Coefficient	Sig. Value	Results
Constants	-0.406800	0.0000	
Daily Growth in Total Confirmed COVID-19 Cases	-0.013555	0.0000	H_1 is supported
Daily Growth in Total COVID-19 Deaths	-0.017193	0.0000	H_2 is supported
Daily Growth in Total Recovered COVID-19 Cases	-0.002326	0.3349	H_3 is rejected
Large Scale Social Restrictions (PSBB)	-0.007524	0.0000	H_4 is supported
Market Capitalization (control variable)	0.015034	0.0000	

The regression analysis model is obtained as follow:

$$Y = – 0.406800 – 0.013555\ DGCC – 0.017193\ DGDC – 0.002326\ DGRC – 0.007524\ PSBB + 0.015034\ LMCAP + \varepsilon$$

6. DISCUSSION

According to the results of this study, the authors have obtained several results of the discussion. First, when COVID-19 cases rose each day, the stock market had a significant negative impact, confirming the first hypothesis. The growing number of confirmed COVID-19 cases that continues to increase can result in tremendous panic and economic uncertainty that will affect investors decisions to invest, resulting in a decline in stock returns. In a situation of increasing economic uncertainty, investors will be more likely to avoid risky investments such as stocks. This result corraborates the research done by Al-Awadhi et al. [7], Lee and Chen [8], Mugiarni and Wulandari [9]. Second, stock market returns are negatively affected by the rise of daily COVID-19 deaths, which supports the second hypothesis. The increasing growth in the number of COVID-19 deaths will be interpreted as a bad signal, therefore investors are more wary in making investment decisions, where a high COVID-19 death rate indicates that companies will be more likely to go into liquidation, thus prompting investors to panic-sell or selling almost all investments without paying attention to existing fundamental considerations. The result corroborates with research done by Al-Awadhi et al. [7], Lee and Chen [8], Nurcahyono et al. [10], Bahrini and Filfilan [18]. Third, daily growth in total recovered COVID-19 cases has a negative and insignificant effect on stock market returns, so the third hypothesis is rejected. Not all recovered patients are completely free of the deadly symptoms of COVID-19. a number of patients with severe symptoms who recover may also experience long-term symptoms of COVID-19, which includes autoimmune and multiorgan diseases that can be fatal, so the growth in the number of COVID-19 cured cases is not entirely a positive signal for investors. Therefore, the increase in recovered cases will not necessarily increase investor confidence and prevent risk-averse investors from withdrawing their investment in the stock market. Lastly, Large Scale Social Restrictions (PSBB) has a negative significant effect on stock market returns, so the fourth hypothesis is supported. Policies set by the government to deal with the COVID-19 pandemic, namely the implementation of PSBB in a number of areas can have a negative impact on the economy. The strict implementation of PSBB will hamper the economy, by implementing PSBB which is intended to avoid crowds by closing offices and various types of businesses, PSBB has contributed to increasing the number of layoffs. This happens because the closure or reduction of business operating hours and restrictions on people's movement will reduce the amount of revenue for each business, so that various industries are forced to lay off their employees to reduce operating costs which will reduce people's purchasing power. Investors will be more reluctant to invest and reconstruct portfolios if investors predict that companies will be negatively affected by PSBB, and if going concern cannot be guaranteed. The findings of this study corroborate the research done by Ashraf [5], and Agustin [11].

7. CONCLUSION

The research findings can be deduced from the data processing and testing results. Stock market returns have been adversely affected by the daily increase in the total number of confirmed COVID-19 cases, daily rise in COVID-19 fatalities and PSBB. While daily growth in recovered COVID-19 cases has insignificant effect on stock market returns. This study has several limitations that are expected to be improved and updated in future research. The sample for this research only consisted of manufacturing businesses listed on IDX for the 2020 period, between March 2 and December 31, 2020. This study only examines several

independent variables, therefore some suggestions that can be given to further research are to add independent variables such as vaccines injected, or total active cases. It is hoped that future research can use a longer time period extending to at least 2021. Then, it is hoped that future research can expand research subjects not only to manufacturing companies but also to mining, consumer goods, property, and other sectors on the IDX.

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