

# Deaths and diseases: The impact of Covid-19 in Indonesian stock return

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## Abstract

*This study aims to determine whether COVID-19 can have an impact on the stock market returns in the Indonesia Stock Exchange, especially on the LQ45 Index. This study uses secondary data, specifically confirmed positive cases of COVID-19 and cases of death due to COVID-19 during the period 1 April to 30 June 2020 obtained from the official website of the Komite Penanganan COVID-19 dan Pemulihan Ekonomi Nasional - SATGAS Penanganan COVID-19. This study uses a panel data regression method to test the hypothesis. Our findings show that confirmed positive cases of COVID-19 and cases of death due to COVID-19 have a positive effect on stock market returns on the LQ45 Index.*

## Keywords

COVID-19; LQ45; stock market returns.

## INTRODUCTION

In early January 2020, information about the COVID-19 outbreak in China began to emerge, the outbreak has caused many casualties and continues to have an impact on global economic conditions (Fernandez-Perez et al., 2020). WHO (*World Health Organization*) informs that COVID-19 is a global health emergency, which has drastically impacted the world economy (Lahmiri and Bekiros, 2020). In January, Chinese authorities also made policies that include containment measures with quarantine, including closing major cities, borders, and prohibiting people from leaving their homes to limit the spread of COVID-19 (Yang et al., 2020).

A long number of cases of people exposed to the COVID-19 outbreak that haven't increased has also resulted in an increase in the number of deaths of people exposed to the outbreak. This huge phenomenon is certainly able to significantly affect stock market returns (Zach, 2003). Stock market returns (stock returns) react to major events. Previous research has noted a number of major events that could have an impact on such returns, such as, the environment (Alsaifi et al., 2020; Guo et al., 2020), political events (Bash and Alsaifi, 2019; Shanaev and Ghimire, 2019), news (Li, 2018), and disasters (Kowalewski and Śpiewanowski, 2020). Stock market returns can also react due to pandemic diseases, such as the Ebola Virus

(EVD) outbreak (Ichev and Marinč, 2018) and the SARS outbreak (Chen et al., 2020). However, previously there was little research related to the extent to which this outbreak had an impact on stock market returns, starting from the time of the first emergence of COVID-19 in China at the end of 2019.

On March 2, 2020, the first case of COVID-19 appeared in Indonesia, but over time the case has continued to grow until now. This research can be used as literature related to the performance of the Indonesian sectoral stock market. Research related to the impact of COVID-19 on stock market returns has been carried out by various researchers, but in Indonesia research related to the impact of COVID-19 on stock market returns is still rarely encountered. Therefore, this is a motivation for researchers to conduct research. Until recently, from an investment point of view, there was a need to assess how much impact the COVID-19 outbreak would have on efficiency in crypto-currencies as well as the stock market (Lahmiri and Bekiros, 2020). Al-Awadhia, Alsaifi, Al-Awadhib, & Alhammadi (2020); Aslam et al., (2020); Just & Echaust (2020); Liu, Manzoor, Wang (2020) stated that the main driver for conducting research is to observe the significant influence of COVID-19 on stock market prices and returns.

Similarly, there are differences in stock market returns before and also after the transformation of trading time during the COVID-19 outbreak in Indonesia (Kusnandar

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& Bintari, 2020) However, according to Dilla S., et al., (2020) only the agricultural sector in Indonesia was directly affected at the beginning of the emergence of COVID-19, then the mining sector took a longer time to be affected by COVID-19. For other sectors were not found abnormal returns during the period of event. The stock rate of return is negatively related to the growth of daily cases in total confirmed positive cases of COVID-19 as well as the daily growth in total deaths caused by COVID-19 (Al-awadhi et al. 2020). So that this study has the aim of determining the impact of COVID-19 cases on stock market returns in Indonesia.

This research focuses more on companies listed in the LQ45 Indeks in Indonesia. To investigate the effects of the COVID-19 outbreak on stock market returns, we used a panel regression approach using two measurements: (1) daily growth in total confirmed cases and (2) daily growth in total deaths caused by COVID-19 (Al-Awadhi A.M., et al.; 2020). Our results have a significant positive effect on both measurements of stock market returns across all companies and sectors during the period 1 April - 30 June 2020. Further testing, LMCAP or market cap stocks also have a significant positive effect on stock market returns. The implications of our research are important for stock market participants to understand and predict stock market return behavior when the COVID-19 outbreak occurs.

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

In early 2020, 2019-nCoV infections developed into a global health issue. It began on December 31, 2019 with the issuance of a statement about the emergence of a pneumonia cluster with a derivation that at that time was not clearly known in Wuhan City, Hubei Province, China by the *World Health Organization* (WHO) (Ministry of Home Affairs; 2020). COVID-19 is included in the *Coronaviruses* family that can cause disorders ranging from mild ones such as the common cold to more severe illnesses and disorders (Yang et al., 2020). According to Hasibuan et al., (2020) virus COVID-19 can spread through the air from the presence of people who have been infected then coughing or sneezing, so it is very necessary to understand the ethical practice of sneezing or coughing appropriately (such as coughing or sneezing

on a bent elbow). Transmission of the virus can have a worse effect on people who have congenital diseases. The high number of confirmed cases of victims has made WHO (*World Health Organization*) designate the status of COVID-19 as a pandemic or outbreak. The existence of this pandemic has caused a lot of losses in many countries in the world, especially in the economic field.

### Stock return

Stock market returns are defined as profits or losses resulting from an investment. The acquisition of this investment itself depends on the analysis of an investor in assessing an outcome that will be obtained and of course is based on the share price offered by an issuer. Stock market returns are long- or short-term gains that investors earn from an issuer. Basically, returns will be obtained when there are capital gains in the form of dividends or others. Safitri (2012) states that capital gain is a condition in which the value of the selling price is above the purchase price of an issuer. The higher the rate of return promised by the company or expected, of course, the more investors will choose to invest in the company.

### The relationship between COVID-19 and stock market returns in Indonesia

COVID-19 has resulted in companies listed on the Indonesia Stock Exchange (IDX) experiencing a decline in price, this gives a bad signal for investors where investors will receive low stock returns. The length of the COVID-19 outbreak that hit the world had an impact on the global financial crisis, and resulted in the stock price of issuers that continued to decline (Aslam et al., 2020). A study conducted by Al-Awadhi et al., (2020) on the Chinese capital market revealed that the daily growth of COVID-19 cases has led to a decline in capital market yields. Ashraf (2020) conducted a study of 43 countries confirming the decline in stock market returns as a risk to be borne due to the rampant COVID-19 cases.

The negative impact of the impressive increase in the number of COVID-19 cases in the world is also felt in the capital market. This is indicated by the presence of high volatility in developed and developing countries so that both levels of return obtained by investors gradually experience a decrease (Just & Echaust, 2020; Rahman et al., 2020; Zaremba, Kizys, Aharon, & Damir, 2020).

**Table 1.**  
**Descriptive statistic**

	<b>DR</b>	<b>DGTCC</b>	<b>DGTDC</b>	<b>LMCAP</b>	<b>MTB</b>
Mean	0.007	396.776	23.586	17.871	0.000
Median	0.004	371.000	21.000	17.801	0.000
Std. Deviation	0.039	179.367	13.480	0.318	0.000
Skewness	0.968	1.123	1.042	0.731	1.124
Kurtosis	1.935	1.875	0.511	-0.161	0.835
Minimum	0.07	106.00	7.00	17.33	0.000
Maximum	0.14	973.00	60.00	18.61	0.000

Many of them suggest that reactions to COVID-19 are influenced by behavioral factors such as fear and ignorance. Gormsen and Koijen (2020) found that the decline in stock prices has far exceeded the expected decline in growth, there are other factors such as shifting risk aversion affecting market reaction. Thus the hypotheses present in this study are:

*H1: COVID-19 has negative impact on stock market returns.*

## **METHODS**

This research is a type of quantitative research. In this study we used panel data regression to examine the relative performance of stocks in relation to COVID-19.

The object of research is a problem topic in a study. The object of research in this study is the effect of the COVID-19 growth case on the return of company stocks included in the LQ45 index.

The type of data and sources used in this study are secondary data. We use company data recorded in LQ45 stock Indeks during the period 1 April – 30 June 2020. We purposely chose that period to as we want to focus on the early stage of the COVID-19 pandemic in Indonesia when the cases were rapidly increasing. The chosen period aligns with the theme of the research, which involves observing the growth of COVID-19 cases and analyzing mortality data. During the chosen research period, COVID-19 cases in Indonesia experienced a substantial increase. This growth phase offers an opportunity to examine the escalation of infections and its effect to financial market. The data was obtained from Mandiri Security (MOST) by including the closing price of the shares,

market capitalization, and market-to-book ratio for the period (45 shares and 7817 observations). We also obtained the number of confirmed daily active cases and daily deaths due to COVID-19 in Indonesia for the same period, data obtained from the Committee for Handling COVID-19 and National Economic Recovery (2020).

The dependent variable in this study is the COVID-19 case, while the independent variable in this study is stock market returns. Then there are control variables, namely the natural logarithm of daily market capitalization (LMCAP), the market-to-book ratio (MTB), and dummy variables including mining, basic Industry & chemicals, miscellaneous, consumer goods industry, property, real estate, and building construction, infrastructure, utility, and transportation, finance, trade, service, and investment. The model estimated using panel data regression, which able to reduces the estimation bias and mulcolinearity, controls the heterogeneity and able to the time-varying effect on the dependent variabels. We follow the model of estimation from Baltagi (2008), Hsiao (204) and Al-Awadhi et al (2020).

We estimate stock returns as follows:

$$DR_{i,t} = \alpha_0 + \alpha_1 C19_{i,t-1} + \beta X_{i,t-1} + \varepsilon_{i,t}$$

where  $DR_{i,t}$  is the daily stock return of stock  $i$  at day  $t$ , regressed on the lagged values of firm return predictors because we believe the market cannot make return adjustment based on the new information regarding covid case in the same day. While,  $C19_{i,t-1}$  measured using two proxies (1) daily growth in total confirmed cases (DGTCC) and (2) daily growth in total cases of death caused by Covid-19 (DGTDC) (Al-awadhi et al. 2020).  $X_{i,t-1}$  is vector of firm specific factors and  $\varepsilon_{i,t}$  is

**Table 2.**  
**Matrix correlation**

	DR	DGTCC	DGTDC	LMCAP	MTB
DR	1				
DGTCC	- 0.145	1			
DGTDC	0.031	0.322*	1		
LMCAP	0.288*	0.138	- 0.090	1	
MTB	0.228	0.129	- 0.080	-0.941**	1

error term.  $X_{it} - 1$  measured by natural logarithm of daily market capitalization (LMCAP) and daily market-to-book ration (MTB)

## RESULTS AND DISCUSSION

Table 1 shows the average value of the daily growth of COVID-19 cases which shows the data on confirmed cases of COVID-19 and also the data on deaths from COVID-19 for 58 days from April to June. It is interpreted that when the standard deviation has a value smaller than the average value, it indicates an increase in cases. The results of summary statistics show that the standard deviation has a value that is smaller than the average value in both cases (confirmed and death), so it can be interpreted that there is a significant increase in the number of cases in Indonesia during the observation.

Then there is a low variation, which can be seen from the minimum and maximum values in confirmed cases. This indicates that the case of high growth will have a significant effect on the economy in Indonesia, especially on stock market returns. It can also be seen that the maximum daily stock return in the period is 14% and at its minimum is -7%.

Table 2 shows the results of statistical correlation measuring the strength of the relationships between the variables in this study. The relationship or correlation of confirmed cases of COVID-19 to stock returns that are negatively correlated is -0.145. It can be interpreted that the correlation or relationship of confirmed growth cases of COVID-19 is negatively related to stock returns. Then the correlation of death cases in the period correlated positively by 0.031 to stock returns. Which means that covid-19 deaths during the period are related or positively correlated. In table 2, there is also a significant positive correlation between market

capitalization and stock market returns of 0.288

Table 3 Panel A shows that the rate of return or return on shares has a negative relationship with the case of daily growth in confirmed cases of a significant nature. Furthermore, in Panel B, it can be seen from table 3 that the result is to show that also the rate of return or return on shares has a negative relationship. Then the LMCAP on both panels shows that the capitalization rate is significantly positive for the daily MTB on the LQ45 index issuer and likewise on panel A and panel B it is definitely MTB (column 3) that the MTB data shows positive significance to LMCAP on the LQ45 index issuer. Panels A and B proved that the DGTCC and DGTDC variables negatively affect stock returns. The increase in the number of deaths, lowered investor optimism which was then reflected in the daily stock return cuts.

The results of this study support the findings of Al-Awadhi et al (2020) which tested the impact of infectious diseases in China using data from the Hang Seng Index and the Shanghai Stock Exchange Composite Index during the Covid-19 pandemic. The results of this study are also in line with the findings of a number of previous studies that tested the impact of major events that can have an impact on stock returns such as, the environment (Alsaifi et al., 2020; Guo et al., 2020), political events (Bash & Alsaifi, 2019; Shanaev & Ghimire, 2019), news (Li, 2018), and disasters (Kowalewski & Spiewanowski, 2020).

## Sector analysis

During the pandemic, it is very possible that each industry is affected differently because each industry has a different beta with the market. In this study, we tested several industries including Mining, Basic and

**Table 3.**  
**Hypothesis testing**

Model	(1)	(2)	(3)
<b>Panel A : Daily growth in total confirmed cases</b>			
$\alpha_0$	0.322* (0.014)	0.090 (0.503)	-0.080 (0.549)
DGTCC	-0.034* (0.300)	-0.138** (0.300)	-0.129 (0.334)
LMCAP		-0.129** (0.334)	-0.941** (0.000)
MTB			-0.003** (0.000)
<b>Panel B : Daily growth in total cases of death caused by Covid-19</b>			
$\alpha_0$	0.322* (0.014)	0.138 (0.300)	0.129 (0.334)
DGTDC	-0.009* (0.503)	-0.090*** (0.503)	-0.080* (0.549)
LMCAP		-0.080* (0.549)	-0.056** (0.000)
MTB			-0.007** (0.000)

**Note.** This table records the coefficient of panel regression results in issuers incorporated in LQ45, from April 1 to June 30, 2020. On panel A presents the regression coefficient of panel data for the daily growth ratio in the total confirmed cases. Then in panel B it is the regression coefficient of the panel for the growth ratio of the total deaths. The bound variables, namely DR<sub>it</sub>, are stock returns on day t,  $\alpha_0$  i.e. intercept, DGTCC i.e. growth in days n confirmed cases, DGTDC i.e. growth in death cases, LMCAP i.e. natural logarithms of market capitalization, and MTB.

Chemical Industries, Miscellaneous Industries, Consumption Goods Industry, Property and Real Estate, Infrastructure and Transportation, Finance and Trade.

Based on the table 4, the results show the closeness of the relationship between variables in the Kendalls Tau-b correlation. It can be said that the value of the correlation coefficient of 1.00 means that it has a perfect relationship. The results of the test showed that: The LMCAP has a value of 0.177, which means that the value is included in the range of 0.00-0.025 which means that the correlation value of the coefficient is very weak to all dummy values.

The variable MTB has a value of 0.214 where the value is included in the criteria range of 0.00 – 0.025 which means that the correlation value is a very weak correlation value against all dummy values.

In the industrial dummy variable, there are three industries that have a negative beta coefficient value to the daily stock return, namely the Financial Industry, Infrastructure

and Transportation Industry and Miscellaneous Industries. The findings could be due to the characteristics of the industry that depend on people's purchasing power. During the pandemic, economic growth slowed down causing these industries to be affected. But on the contrary, there are also industries that can survive during the pandemic, for example the pharmaceutical sector which has experienced a significant increase during this pandemic.

## CONCLUSION

The results show that DGTCC, DGTDC, LMCAP, MTB are independent variables and DR is a dependent variable. So it can be concluded that in this study there is a negative influence between the existence of confirmed cases of COVID-19 and cases of death due to COVID-19 on the rate of return of the stock market. With these results, the initial hypothesis in this study is accepted and also our results are different from previous studies

**Table 4.**  
**Sectoral Analysis**

	1	2	3	4	5	6	7	8
$\alpha_0$	0.112	0.112	0.112	0.112	0,112	0.112	0.112	0.112
	0.306	0.306	0.306	0.306	0,306	0.306	0.306	0.306
LMCAP (X3)	0.177	0.177	0.177	0.177	0,177	0.177	0.177	0.177
	0.105	0.105	0.105	0.105	0,105	0.105	0.105	0.105
MTB (X4)	0.214*	0.214*	0.214*	0.214*	,214*	0.214*	0.214*	0.214*
	0.050	0.050	0.050	0.050	0,050	0.050	0.050	0.050
Dum_Mining (X5)	0.019*							
	(0.000)							
Dum_Basic and Chemical Industries (X6)		0.554**						
		(0.677)						
Dum_Miscellaneous Industries (X7)			-					
			0.002*					
			(0.001)					
Dum_Consumption Goods Industry (X8)				0.014**				
				(0.006)				
Dum_Property and Real Estate (X9)					0.043*			
					(0.005)			
Dum_Infrastructure and Transportation (X10)						-0.054*		
						(0.000)		
Dum_Finance (X11)							-0.001**	
							(0.005)	
Dum_Trade (X12)								0.004*
								(0.002)

**Note.** This table shows the coefficient of results from panel regression treated using the *corelate bivariate* method with Kendall's Tau-b calculation technique with the help of the IBM 25 SPSS Statistics program. For companies included in the LQ45 Index during the period 1 April - 30 June 2020, taking into account certain sectors. The bound variable is DRit is the return on shares.  $\alpha_0$  is an intercept, LMCAP is a natural logarithm of the daily company's market capitalization, MTB is the diary market ratio on the LQ45 index. These sectors include mining, transportation infrastructure, property and estate, basic and chemical industries, finance, various industries, consumer goods industries, and trade in services and investments worth 1 and 0 are the opposite. \*, \*\*, indicates the degree of statistical significance.

that show covid-19 cases have a negative impact on stock market returns. The results of this study are in line with the findings of the results of this study supporting the findings of Al-Awadhi et al (2020), Alsaifi et al., (2020), Guo et al., (2020), Bash & Alsaifi, (2019), Shanaev & Ghimire, (2019), Li (2018), and Kowalewski & Śpiewanowski (2020).

In addition, this study also examines the impact of the pandemic sectorally (industry) to test whether there are specific differences between industries that cause different returns in each industry. The findings of this study

show that each industry has a different response to this pandemic, as evidenced by the influence on different returns.

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