

Market Reaction Before and After the Pandemic

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ABSTRACT

Indonesia's economic situation, such as the JCI, Rupiah exchange rate, inflation, and interest rates, will be affected by the pandemic. Therefore, this study aims to understand the impact of JCI, the Rupiah exchange rate, inflation, and interest rates before and after the pandemic. This type of research uses event studies. Analysis used analysis of variance (ANOVA) F-difference test and sampling technique used objective sampling. The company's sampling criteria are as follows: 1. JCI is closed daily for 7 days before the event and 7 days after the event. 2. Rupiah exchange rate for 7 days before the event and 7 days after the event. 3. Seven months before and after the inflation event. 4. 7-month interest rates before and after the event. JCI before and after are the same and the average difference in the JCI descriptively between the JCI is not significantly the same as the rupiah exchange rate, while inflation and average interest rates show differences before and after the announcement of the Covid 19 pandemic.

Keywords: JCI, Exchange Rate, Inflation, BI Exchange Rate



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INTRODUCTION

The Covid-19 virus outbreak that has hit the world in 2020. The COVID-19 virus first appeared in Wuhan, China at the end of 2019. The spread of this virus is from person to person, from one country to another. It has spread all over the world, including Indonesia. The Covid-19 pandemic has also affected the Jakarta Composite Index (JCI), where investors use the Composite Stock Index (JCI) to estimate the country's economic growth rate and investment development (Devi, 2021).

The capital market is one of the driving forces of the national economy. This is because the capital market provides long-term financing to support the national economy and increase public participation in financing. The more important the role of capital markets in a country's economy, the more sensitive it is to those affected (Fatmasita, 2021).

One of the global economic conditions affecting JCI is the COVID-19 pandemic. According to WHO (2020), coronavirus is a virus that infects the respiratory tract called Covid-19. According to the Ministry of Health, the outbreak of COVID-19 began in Wuhan on December 30, 2019. On March 2, 2020, the COVID-19 virus was introduced into Indonesia, causing concern and fear in the government, society, and society investor. So the government has taken precautions by closing

several schools, working from home for civil servants, closing tourist attractions, and imposing massive social restrictions (PSBB) (Rahim, 2021).

During the pandemic, IDX halted 7 trades. The first trading halt occurred on March 12, 2020, when the JCI fell to the 4,895.74 level. The next stop in trading occurred on March 13, 2020, when the JCI plunged to the 4,650.58 level. On March 17, 2020, when the JCI plunged to the 4,456.09 level, authorities again froze the trade. Then on March 19, 2020, the JCI fell to 4,113.64 and then froze again. IDX stopped trading again on March 23, 2020, when JCI fell to 3,985.07 positions. On March 30, 2020, the JCI has frozen again, dropping to the 4,318.29 level. Finally, IDX stopped trading on September 10, 2020, when JCI fell 5%. In the last trading month of September, the JCI closed down 0.19% or 9 points at 4,870.03, a cumulative 22 correction (Suryaputri & Kurniawati, 2020).

During the COVID-19 pandemic that started in Indonesia on June 1st, Indonesia will gradually turn the wheel of business again as it follows strict health rules to experience a new daily life or lead a short life. To avoid the threat of a global recession. The New Normal has made capital market participants feel even better after this week (2-5 June 2020). The JCI rose 1.98% to 4,847.51, the highest since April 7. The self-esteem of the Indonesian Stock Exchange strengthened for five consecutive days, recording the longest JCI rally since October 2019. Yesterday the stock exchange (IDX) was nearly Rp. Foreign investors net bought Rp 12 trillion. 753.81 billion in the general market. The total net purchases included in the irregular market were Rp 872.3 billion (CNBC Indonesia, 2020).

On the other hand, the exchange rate of the rupiah to the US dollar is Rp. 20,000 per US dollar due to the COVID-19 outbreak. It is in the Rp range for a reasonable estimate. 17,500 won for 1 dollar. This is part of one of the 2020 macro-what-if scenarios that experience all the changes such as economic growth estimated at -0.4% from 2.3%. Inflation was also 5.1% and the price of Indonesian crude fell to \$31 a barrel. The reason for the weakness of the rupiah is that investors panic, causing capital reversals or capital outflows. During the pandemic from January to March 2020, Rp. Article 167.9 (VOA Indonesia, 2020)

Due to the global crisis and the spread of COVID-19, global investors have disclosed high-risk assets. These investors tend to choose safe-haven assets such as gold and currencies that are not affected by inflation such as the dollar. As a result, currencies that are vulnerable to volatility, such as the rupiah, are devalued as the currency strengthens (Khoiri et al., 2020).

Inflation in March was still fairly low at 0.10%, which marked a JCI drop of 0.17% to 4,538.93 points due to the COVID-19 pandemic. This is due to rising gold prices and rising food consumption. However, inflation continued to decline every month from July to September until deflation occurred, and from July to September the JCI rose to the 5,000 level. Inflation rose again to 0.45% in December (Devi, 2021).

The impact of the pandemic on businesses is not only to shut down operations and increase unemployment but also to hamper and reduce Indonesia's gross domestic product (GDP) and economic growth. In such a situation, what governments can do is optimize fiscal and monetary policies to avoid recessions and revive the country's economy. One of the economic indicators that confirms the stability of a country's economy is inflation. This is because changes in this indicator affect the dynamics of economic growth. From an economic point of view, inflation is a monetary phenomenon in a country. Therefore, inflation is often the target of government policy (Silaban et al., 2020).

The real interest rate is a concept that measures the real interest rate after reducing the nominal interest rate by the expected inflation rate. Interest rates are used by the government to control the price level. When inflation is high and there is a lot of money circulating in the local community,

the government prepares for this by setting high-interest rates. What is expected from high-interest rates is a decrease in the money supply, which reduces aggregate demand and overcomes inflation (Silaban et al., 2020).

Against this background, Indonesia's economic conditions, such as the JCI, rupiah exchange rate, inflation rate, and interest rates, will be affected by the pandemic. Therefore, this study aims to understand the impact of JCI, the Rupiah exchange rate, inflation, and interest rates before and after the pandemic.

The Composite Stock Index (JCI) is an index that uses all issuers as a component of the index calculation. The Indonesian Stock Exchange is authorized to issue and/or issue one or more companies. Recorded in JCI calculations. Above all, it is considered a case where the number of issued shares (free liquidity) owned by the general public is relatively small and the market capitalization is large, so there is a possibility that the issuer's stock price change may affect the fairness of the issuer. JCI movement (Devi, 2021).

JCI calculations are performed daily after the close of the transaction (Rahim, 2021) The methods you can use to calculate JCI are:

Table 1. JCI Measurement Scale

Variable	Measurement Scale	Operational Definition
Composite Stock Index (JCI)	The closing price composite stock index is calculated on the Indonesian Stock Exchange.	an indicator of the movement of stock prices

In general, an exchange rate can be interpreted as the price of a foreign currency or the price of a foreign currency relative to a domestic currency. Exchange rates represent the number of currency units that can be bought and exchanged and are therefore determined by the level of supply and demand in the foreign exchange market. The value of a currency changes as the level of supply and demand changes (Saputro & Gust yana, 2020)

The measure of the exchange rate used is the intermediate exchange rate. A common method used to calculate the median interest rate used by Bank Indonesia is to add the sales rate and the purchase rate and divide by 2. The calculation of the median ratio is as follows: (Bank of Indonesia, 2022)

Table 2. Rupiah Exchange Rate Measurement Scale

Variable	Measurement Scale	Operational Definition
Exchange Rate	$(\text{sales rate} + \text{purchase rate}) / 2$	The exchange rate used is from US Dollars to Rupiahs.

Tandellin (2010:342) refers to inflation as the tendency to increase the price of commodities circulating throughout society. The occurrence of inflation has several effects on the economy, one of which is investing in stocks. Inflation is affecting the JCI movement by reducing investor interest in companies listed on the Indonesian Stock Exchange (Harsono & Wonokinasih, 2018).

Table 3. JCI Measurement Scale

Variable	Measurement Scale	Operational Definition
inflation	Inflation calculated by the Indonesian stock exchange	An indicator that a currency is depreciating

According to Bank Indonesia, "interest rate or BI interest rate is a policy rate of interest that reflects the tone or tone of monetary policy established by Bank Indonesia and disclosed to the public". Interest rates also affect the movement of stock prices on stock exchanges. The rupiah may strengthen if interest rates rise significantly, but the JCI should fall as investors prefer to save in the bank. When interest rates rise, stock prices fall, and when interest rates fall, stock prices rise. Rupiah weakens due to high-interest rates (Harsono & Wonokinashi, 2018).

Table 4. JCI Measurement Scale

Variable	Measurement Scale	Operational Definition
interest rate	Indonesian bank interest rates	Bank Indonesia's Monetary Policy Indicators

Based on Fahmi (2012) Signaling theory is a theory that discusses the rise and fall of market prices that will affect investors. This theory explains how investors have the same information about the company's managers and the company's prospects, but in practice, managers often have better information than external investors. It can be concluded that signal theory is a theory that discusses the rise and fall of market prices and provides investors with asymmetric market information about a company's prospects the same as company managers. Signal theory is developing in the labor market, but it is a general phenomenon that can be applied to all markets with information asymmetry, including the capital market.

A review of relevant previous studies includes an analysis of previously conducted studies. This association can be seen in the variables involved, and the results reinforce theoretical studies. Kiky (2020) A study on risk management was conducted at the 2020 Black Swan event in Indonesia (Covid-19 Impact Case Study). This study has many important implications for Indonesian companies. The pandemic was first announced by the government in March 2020, and as a result, JCI has been on a downtrend. To investigate this issue, we applied an event study and a nonparametric test (Wilcoxon Signed Rank Test) for the observed JCI from December 2019 to March 2020. The results showed that the JCI decreased significantly after publication to the initial value. The study also shows that this event cannot be considered a black swan event, as the JCI is moving downwards gradually from February 2020. Rifa'i et al., (2020) Looking at the impact of the COVID-19 pandemic on the Jakarta Composite Index, it can be concluded that there is a difference in the Composite Stock Index before and after the 2020 COVID-19 pandemic.

There are several hypotheses used in this study. H1: There is a difference in the average JCI before and after the COVID-19 pandemic in Indonesia on March 2, 2020. H2: There is a difference in the average exchange rate of the Rupiah before and after COVID-19. A pandemic occurred in Indonesia on March 2, 2020. H3: Differences in inflation before, during, and after the COVID-19 pandemic in Indonesia on March 2, 2020. H4: There is a difference in interest rates. Between the post-war period of the COVID-19 pandemic in Indonesia on March 2, 2020. The purpose of this study is to formulate the background and issues of the JCI, rupiah exchange rate, inflation, and interest rates before and after the pandemic.

The anticipated benefit of the researchers conducting this study is that investors make decisions to achieve the expected results from their investments. For businesses, this can be input and information for businesses that need it. For governments, the JCI, Rupiah exchange rate, inflation, and interest rates can be taken into account or entered when creating a policy on the country's progress related to the domestic COVID-19 pandemic.

METHODS

This type of study uses an event study (event study). An event study is a study of the market reaction to an event notified by a notice (Hartono, 2010). The subjects of this study are the Composite Equity Index (JCI), the Rupiah exchange rate, inflation, and the interest rate.

The population used in this study is the Composite Equity Index (JCI), the Rupiah exchange rate, inflation, and interest rates. The method of selecting or collecting a sample in this study uses an objective sampling technique, that is, a technique that selects or extracts a sample according to specific considerations and criteria. The company's sampling criteria are as follows: 1. JCI is closed daily for seven days before the event and seven days after the event. 2. Rupiah exchange rate for seven days before the event and seven days after the event. 3. Seven months before and after the inflation event. 4. 7-month interest rates before and after the event.

We collect data from this study using data collection techniques for documents. A document is a record of past events. Documents may be in the form of written, pictorial, numerical, or monumental works of individuals, individuals, or groups. The full event duration is 14 days from February 20, 2020, to March 11, 2020, excluding T-7 to T+7 Indonesian Stock Exchange holidays, which is 14 months. The study period of the Covid-19 pandemic event is March 2, 2020.

Data analysis was performed using two-way ANOVA tests with SPSS. Two-way ANOVA is the most basic factorial design and uses different combinations of treatments and factors. A two-way ANOVA test makes several assumptions that the test populations are normally distributed, that the test populations have the same variance or variance and that the samples are unrelated. Two-way ANOVA simultaneously tested the effect of two factors on the dependent variable and the interaction effect of two factors on the dependent variable. Interactions show that each factor tested is different. Interaction of two-way ANOVA between row and column variables. Two-way ANOVA without interactions is a two-way ANOVA hypothesis. A two-way ANOVA hypothesis test with interactions is another test of three or more means with two influence factors (taking into account the interaction effects of the two factors). There are several steps when performing two-way ANOVA calculations without interaction (Kurnia, 2018):

Determining the formulation of a hypothesis

$H_0: a_i = 0$ (zero row effect), $H_1: \text{at least one } a_i \text{ is non-zero.}$

$H_0: b_j = 0$ (effect column is 0), $H_1: \text{at least one } b_j \text{ is non-zero.}$

$H_0: (ab)_{ij} = 0$ (the interaction effect between rows and columns is zero), $H_1: \text{at least one } (ab)_{ij} \text{ is non-zero.}$

Determination of significance level (α) using Table F

Row ($n_1 = b - 1$) ($n_2 = (kb)(n - 1)$), Column ($n_1 = k - 1$) ($n_2 = (kb)(n - 1)$), for interaction: ($n_1 = (k - 1)(b - 1)$) ($n_2 = (kb)(n - 1)$). Define the test criteria $F_0 \leq F_\alpha (n_1; n_2)$ for rows, columns, and interactions. If $F_0 > F_\alpha (n_1; n_2)$ then H_0 is rejected.

RESULTS AND DISCUSSION

This study aims to test the JCI, rupiah exchange rate, inflation, and interest rates before and after COVID-19. This study uses samples 7 days/month before and after the announcement of COVID-19. Analysis of study data using descriptive statistics, variance similarity tests, and ANOVA tests. Descriptive statistics using minimum, maximum, mean, and standard deviation values. We also performed variance similarity (homogeneity test) and ANOVA analysis.

Table 5. Descriptive Statistical Test Results

Variable	N	Mean	Standard Deviation	standard error	95% confidence interval for mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Before JCI	7	8,6529	0,03251	0,01229	8,6228	8,6829	8,60	8,69
After JCI	7	8,5943	0,04315	0,01631	8,5544	8,6342	8,54	8,64
Before Rp	7	9,9486	0,01345	0,00508	9,9361	9,9610	9,93	9,97
After Rp	7	9,7400	0,16693	0,06309	9,5856	9,8944	9,50	9,98
Before inflation	7	1,7914	0,50101	0,18937	1,3281	2,2548	1,32	2,67
After Inflation	7	3,0557	0,30783	0,11635	2,7710	3,3404	2,68	3,49
Before Interest Rates	7	4,1786	0,23780	0,08988	3,9586	4,3985	4,00	4,50
After Interest Rate	7	5,0714	0,23780	0,08988	4,8515	5,2914	4,75	5,50
Amount	56	6,3791	3,05180	0,40781	5,5618	7,1964	1,32	9,98

Source: Data processed, 2022

Table 5 shows the maximum number of days/months before and after the announcement of the Corona 19 outbreak in Indonesia (N). Average difference before JCI 8,6529, after JCI 8,5943, before inflation 9,9486 Rp 9,7400 before inflation 1,7914 Rp, after inflation 3,0557, before interest rate 4,1786, after interest rate 5,0714. This average reached the technical conclusion that the pre-pandemic peak average of the rupiah was 9,9486.

Table 6. ANOVA tests

Variable	Number of Squares	DF	Square Mean	F	Sig.
Between Groups	509,304	7	72,758	1188,274	0,000
In The Group	2,939	48	0,061		
Amount	512,243	55			

Source: Data processed, 2022

According to Table 6 of the One-Way ANOVA test, the value of Sig is as follows. $0,000 < 0,05$. Since this value is less than 000, it can be concluded that there is a difference before and after the announcement of the COVID-19 pandemic.

Table 7. Multiple comparison tests

(B) before and after	(J) before and after	Mean difference (IJ)	standard error	sig.	95% confidence interval	
					lower limit	best
Before JCI	After JCI	0,05857	0,13227	1,000	-0,3605	0,4776
	Before RP	-1,29571*	0,13227	0,000	-1,7148	-0,8767
	after RP	-1,08714*	0,13227	0,000	-1,5062	-0,6681
	Before inflation	6,86143*	0,13227	0,000	6,4424	7,2805
	after inflation	5,59714*	0,13227	0,000	5,1781	6,0162
	Before interest rates	4,47429*	0,13227	0,000	4,0552	4,8933
	interest rate	3,58143*	0,13227	0,000	3,1624	40005
After JCI	Before JCI	-,05857	0,13227	1,000	-0,4776	0,3605
	Before RP	-1,35429*	0,13227	0,000	-1,7733	-0,9352
	after RP	-1,14571*	0,13227	0,000	-1,5648	-0,7267
	Before inflation	6,80286*	0,13227	0,000	6,3838	7,2219
	after inflation	5,53857*	0,13227	0,000	5,1195	5,9576
	Before interest rates	4,41571*	0,13227	0,000	3,9967	4,8348
	interest rate	3,52286*	0,13227	0,000	3,1038	3,9419

(B) before and after	(J) before and after	Mean difference (IJ)	standard error	sig.	95% confidence interval	
					lower limit	best
Before Rp	Before JCI	1,29571*	0,13227	0,000	0,8767	1,7148
	after JCI	1,35429*	0,13227	0,000	0,9352	1,7733
	after RP	0,20857	0,13227	0,761	-0,2105	0,6276
	Before inflation	8,15714*	0,13227	0,000	7,7381	8,5762
	after inflation	6,89286*	0,13227	0,000	6,4738	7,3119
	Before interest rates	577000*	0,13227	0,000	5,3509	6,1891
	interest rate	4,87714*	0,13227	0,000	4,4581	5,2962
After Rp	Before JCI	1,08714*	0,13227	0,000	0,6681	1,5062
	after JCI	1,14571*	0,13227	0,000	0,7267	1,5648
	Before RP	-0,20857	0,13227	0,761	-0,6276	0,2105
	Before inflation	7,94857*	0,13227	0,000	7,5295	8,3676
	after inflation	6,68429*	0,13227	0,000	6,2652	7,1033
	Before interest rates	5,56143*	0,13227	0,000	5,1424	5,9805
	interest rate	4,66857*	0,13227	0,000	4,2495	5,0876
Before Inflation	Before JCI	-6,86143*	0,13227	0,000	-7,2805	-6,4424
	after JCI	-6,80286*	0,13227	0,000	-7,2219	-6,3838
	Before RP	-8,15714*	0,13227	0,000	-8,5762	-7,7381
	after RP	-7,94857*	0,13227	0,000	-8,3676	-7,5295
	after inflation	-1,26429*	0,13227	0,000	-1,6833	-0,8452
	Before interest rates	-2,38714*	0,13227	0,000	-2,8062	-1,9681
	interest rate	-3,28000*	0,13227	0,000	-3,6991	-2,8609
After Inflation	Before JCI	-5,59714*	0,13227	0,000	-6,0162	-5,1781
	after JCI	-5,53857*	0,13227	0,000	-5,9576	-5,1195
	Before RP	-6,89286*	0,13227	0,000	-7,3119	-6,4738
	after RP	-6,68429*	0,13227	0,000	-7,1033	-6,2652
	Before inflation	1,26429*	0,13227	0,000	0,8452	1,6833
	Before interest rates	-1,12286*	0,13227	0,000	-1,5419	-0,7038
	interest rate	-2,01571*	0,13227	0,000	-2,4348	-1,5967
Before Interest Rates	Before JCI	-4,47429*	0,13227	0,000	-4,8933	-4,0552
	after JCI	-4,41571*	0,13227	0,000	-4,8348	-3,9967
	Before RP	-577000*	0,13227	0,000	-6,1891	-5,3509
	after RP	-5,56143*	0,13227	0,000	-5,9805	-5,1424
	Before inflation	2,38714*	0,13227	0,000	1,9681	2,8062
	after inflation	1,12286*	0,13227	0,000	0,7038	1,5419
	interest rate	-,89286*	0,13227	0,000	-1,3119	-0,4738
After Interest Rate	Before JCI	-3,58143*	0,13227	0,000	-4,0005	-3,1624
	after JCI	-3,52286*	0,13227	0,000	-3,9419	-3,1038
	Before RP	-4,87714*	0,13227	0,000	-5,2962	-4,4581
	after RP	-4,66857*	0,13227	0,000	-5,0876	-4,2495
	Before inflation	3,28000*	0,13227	0,000	2,8609	3,6991
	after inflation	2,01571*	0,13227	0,000	1,5967	2,4348
	Before interest rates	0,89286*	0,13227	0,000	0,4738	1,3119

*. The mean difference was significant at the 0.05 level.

Source: Data processed, 2022

A multiple comparison test based on Table 7 determines whether the means are significantly different in the amounts of ANOVA. The mean difference for the pre-pandemic JCI was 0,05857. This figure is the JCI before 8,6529 minus the JCI mean after 8,5943. On the other hand, the mean difference in JCI (lower bound) ranges from -0,3605 to 0,4776 (upper bound) at the 95% confidence level. Given the value of Sig. If $1,000 > 0,05$, it can be concluded that before and after the JCI is the same and the technical average of the JCI difference between the JCIs is not significantly different from the rupiah exchange rate, while the inflation rate and the average interest rate are the same. It's different than before. And after. And after the announcement. A global pandemic of COVID-19 pandemic.

Table 8. Tukey HSDa. test

Before and After	N	Subset for Alpha = 0.05					
		1	2	3	4	5	6
Before inflation	7	1,7914					
After inflation	7		3,0557				
Before interest rates	7			4,1786			
Interest rate	7				5,0714		
After JCI	7					8,5943	
Before JCI	7					8,6529	
After RP	7						9,7400
Before RP	7						9,9486
sig.		1,000	1,000	1,000	1,000	1,000	0,761

Means for homogeneous subset groups are shown.
all. Use the harmonic mean sample size = 7,000.

Source: Data processed, 2022

Judging by the average similarity, there is a significant difference from columns 1 to 4. Columns 5 and 6 are not significantly different.

CONCLUSION

This study aims to understand the difference between the JCI, Rupiah exchange rate, inflation, and interest rates before and after the March 2, 2020 pandemic. Based on the data analysis and discussion, the following conclusions can be drawn: There is no difference between the JCI and Rupiah exchange rates. b) There is a significant difference in inflation and interest rates in pre-pandemic situations. The existence of COVID-19 pandemic poses a threat not only to health but also to the country's economic growth. The impact of the spread of the coronavirus (Covid-19) cannot be calculated with certainty. However, a slowdown in the economic system is still being detected, especially in industry, tourism, trade, transport, and investment.

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