

IS THERE A MARKET ANOMALY DURING COVID-19 IN INDONESIA, AND HOW WILL THE SHARIA STOCK INDEX REACT TO IT?

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ABSTRACT: *This study aims to examine the existence of the Month of effect during the Covid-19 outbreak and its impact on returns and risk of the Islamic stocks index in Indonesia. The data used to test the presence of anomalies is the JKSE abnormal return during the period December 2019 to December 2021. Meanwhile, the JKII return data is used to test the reaction of the Sharia stock index when an anomaly occurs. In terms of testing the presence of anomalies, the analytical tool is used the average sample t-test test seven days before and after the beginning of each month, while the GARCH analysis model is used to test the sharia stock index. This study's finding is that there is the Month of the effect anomaly in January and February 2021. However, in January, the anomaly's presence only has a slight effect, while in February effect is significant. In addition, testing the relationship between return and risk in JKII during the anomaly also shows positive and significant results*

1. INTRODUCTION

The existence of market anomalies has become a separate discussion in the study of efficient markets. Anomalies are parties who can take profits or reduce profit losses abnormally under conditions that should run normally. This normal condition is a hypothesis of an efficient market that assumes that movements in the market are always random, un-patterned, and unpredictable, so any sudden abnormal return will lead to the assumption that there is asymmetric information among market participants. Therefore, the market will find out about this information and immediately adjust existing prices based on additional information that has begun to spread so that prices return to normal. However, an anomaly is a challenge for the efficient market hypothesis because market participants cannot explain asymmetric information that causes abnormal returns.

Several studies state the occurrence of one form of an anomaly in a market, including the Monthly Effect, namely the abnormal return in certain months that occurs periodically. Several studies that support this finding include the United States, such as studies from [1] showing the January effect on the NYSE both during the up-market and the down-market. In addition, [2] found a February effect in Russia. In China, [3] found a return anomaly in March as a form of the anomaly turn-of-the-year effect or holidays effect from the Chinese New Year. Meanwhile, [4], who conducted research in Australia, gave the results of a significant positive return in April, July, and December for the entire small industry and retail market. Still, if using a small industry sample, the monthly effect occurs in January, August, and December.

The existence of Covid-19 has substantially increased the risk on global stock exchanges, which has caused the market to become unstable and unpredictable [5]. The negative impact on the industry has also been experienced by the stock exchanges of ASEAN countries, with Indonesia and Singapore as the main contributors, the most affected countries [6].

Research on the impact of Covid-19 is not only on stocks that are considered conventional but also on Islamic stock instruments. Islamic stocks are inherently different from traditional stock markets. The sharia portfolio is mainly based on real economic interests, which causes the stock to be considered more stable, low risk, and safe from turmoil [7]. So, it is not expected to have a significant adverse effect during the outbreak. However, the study conducted by [8] on nine sharia indices showed that apart from the

Islamic Australia Index and Islamic GGC Index, which remained stable in the first 15 days since the pandemic was announced in their respective countries, almost all sharia indices: Qatar, Bahrain, UAE, ASEAN, MENA, MENASA, and BRICS, were significantly affected by the existence of the Covid-19 pandemic.

Although globally, the epidemic has had a significant negative effect on both conventional and sharia stock exchanges, several strange phenomena occur in the market. This anomaly causes some investors to take advantage of it to obtain a return or anticipate a loss of profit. This anomaly occurred in the India Stock Exchange, which found an anomaly in the days of the week effect. Where there was a significant decline in stock prices on Monday (Monday effect) and a significant increase in prices on Tuesday (Tuesday effect) on all stock indexes used in research [9]. In ASEAN countries, the study conducted by [10] in Malaysia's Stock Exchange found that the returns on all indices used were significantly negative, thus proving the existence of the day-of-the-week effect.

This study examines the existence of market anomaly month of effects on the Indonesia Stock Exchange during the COVID-19 outbreak, especially in the months when important events occur, such as the discovery of covid-19 in Wuhan, the announcement of the first three covid-19 suffers in Indonesia, the implementation of the first lockdown, and the implementation of the new normal. The existence of an anomaly is expected to explain the presence of asymmetric information, which causes several investors, can take advantage to gain profits or reduce profit losses significantly, which can affect the market. Furthermore, this study also wants to examine how the Islamic stock index (JKII) volatility returns when the Month of effect occurs.

2. METHODS

This study uses a sample of abnormal returns from the Jakarta Composite Index (JKSE) from December 2019 to December 2021 to test the existence of the Month of effect. The test compares the average difference between abnormal returns in the first seven days and the previous seven days at the beginning of each month of JKSE. If there is a significant difference in average, it can be said that the Month of effect anomaly occurs in the month concerned. It was calculated using Statistical Analysis System (SAS). Furthermore, in the months that have an anomaly, an explanation of the return of volatility of the Jakarta Islamic Index (JKII) is carried out using

Generalized Auto-Regressive Conditional Heteroskedasticity.

3. RESULT

3.1 Testing of The Month of effect Anomaly

Tests for the presence of the Month of effect anomaly were carried out to test whether there are anomalies in certain months during the period January 2020 – December 2021 at JKSE. The result of the calculation using the independent sample t-test show the following result :

Table 1. Pooled Value for each month, the period January 2020 – December 2021

No	Month	P-Value	No	Month	P-Value
1	January 2020	0.72	11	January 2021	0.07*
2	February 2020	0.23	12	February 2021	0.00 **
3	March 2020	0.48	13	March 2021	0.75
4	April 2020	0.42	14	April 2021	0.22
5	May 2020	0.10	15	May 2021	0.62
6	June 2020	0.59	16	June 2021	0.84
7	July 2020	0.30	17	July 2021	0.70
8	August 2020	0.98	18	August 2021	0.90
9	September 2020	0.86	19	September 2021	0.32
10	October 2020	0.14	20	October 2021	0.80
11	November 2020	0.15	21	November 2021	0.43
12	December 2020	0.31	22	December 2021	0.17

Note :

* : Have a significant pooled-value at the level $\alpha = 10\%$

** : Have a significant pooled-value at the level $\alpha = 5\%$

There are several important events during the COVID-19 outbreak, including; The first reported case of COVID-19 occurred in Wuhan on December 31, 2019. Patients with COVID-19 were first reported in Indonesia on March 22, 2020. The Indonesian government implemented the implementation of Large Scale Social Distancing on March 31, 2020. Implementing the New Normal phases 1 and 2 allows industries, services, shops, markets, and malls to operate by implementing health protocols on June 8, 2021. Based on table 1, it can be seen that in almost all months during the covid-19 outbreak, the pooled value (P-value) has a value of more than the level of $\alpha = 5\%$ and 10% , which indicates that the Month of effect anomaly does not occur in the following months. However, in January 2021 there is a P-value = 0.0755 which means it has a significance value at $\alpha = 10\%$, and in February 2021 the P-value = 0.0036 which means it is significant at $\alpha = 5\%$. The two P-values indicate that in January 2021, the anomaly's effect began to be felt by the market, but it was not too big, or it could be said that there was a light January effect in that month. Meanwhile, the significant anomaly effect occurred in February 2021.

Although the market index in Indonesia has decreased since it was first announced the presence of COVID-19 in Wuhan, the absence of anomalous effects in these months indicates no asymmetric information before or after important events related to COVID-19 in Indonesia. No investors try to influence the market or obtain significant abnormal returns from these events.

For example, the absence of anomalous effects in January 2020 indicates that some investors have no prior information preference regarding the announcement of the first COVID-19 case in Wuhan. The decline in the market index at the following times was more of a panic reaction

due to the lack of information. Likewise, when the Indonesian government announced the presence of the first COVID-19 patient in Indonesia in March 2020 and the implementation of large-scale social distancing on March 31, 2020, the market still did not show the presence of anomia in March 2020 or in April after that. The market fall to the lowest price point of IDR 3,937.63 on March 24, 2020, does not indicate that the negative market reaction results from a significant abnormal return but rather market panic over the estimated negative impact of COVID-19. Likewise, when the government announced the implementation of New Normal phases 1 and 2 on June 11 and June 8, 2020, the rebound in market prices on those dates did not indicate asymmetric information related to government policies affecting the market. So it can be concluded that in these important events, market movements were only caused by natural market reactions without any facts about asymmetric information.

However, there is a significant P-value in January 2021 and February 2021. In January 2021, a significant P-value at a 90% confidence level indicated a January effect would occur in early and mid-January which may be caused by the presence of the COVID-19 vaccine and an increase in world commodity demand. The Covid-19 vaccination is considered to solve the Covid-19 pandemic in Indonesia to move the economy immediately. In addition, the increase in demand for world commodities, especially palm oil as a result of the La-Nina hurricane, has led to a shortage of basic VCO materials, thus increasing the share price of plantation commodities. Furthermore, the confirmation of Joe Biden's victory in the US presidential election is considered a new hope for the market because of Biden's campaign promise to inject a \$1.9 trillion American Rescue Plan package into the US national vaccination program and the improvement of the US economy. The provision of this stimulus is expected to inject fresh funds for developing countries in line with the improvement in the US economy in the future. However, towards the end of January, there was a significant decline in JKSE returns, possibly due to the implementation of Community Activity Restrictions (PPKM) in seven provinces in Indonesia which were considered to be hampering community economic activities. In addition, the purchase and sale of shares with large capitalization by foreign investors also contributed to a significant decline in JKSE prices. So, overall, the increase in stock prices in early January could not cover the drop in prices in the end.

February 2021 has a significant P-value of 0.0036 at $\alpha = 5\%$, indicating the occurrence of the Month of effect. This month, the factors driving a significant return increase continue the previous month. Besides that, the central policy of Bank Indonesia lowering the benchmark interest rate by 25 basis points which is expected to be able to encourage the movement of the real sector towards improving the national economy, in addition to being able to promote the shift of investment from the money market to the capital market.

3.2 What happened to the risk and return of the Islamic stock index?

After it was discovered that anomalies occurred in January and February 2022, the next step was to find out what happened to the JKII sharia stock index during that period. The data used is JKII data from January to February 2021,

totaling 38 observations. The distribution of data is as follows:

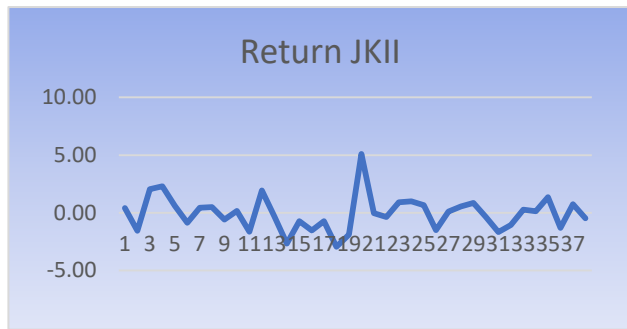


Figure 1. Plot data for return JKII when anomalies exist during the Covid-19 outbreak

Figure 1 explains the return data of JKII in January – February 2021, which indicated an anomaly. Returns tend to fluctuate positively from the first week to the third week of January 2021 (data 1 – 13). However, returns have a negative trend in the last week of January (data for months 14 – 19). The decline in the JKII trend last week caused the anomaly in the January effect, which was predicted to occur in early January but did not occur. Furthermore, in February 2021, the JKII trend showed a fluctuating value with a significant positive trend so that the anomalous phenomenon of the Month of effect occurred in February 2021.

Next, to see the stationarity of the data, an ADF test was carried out, as shown in table 2 :

Table 2. Augmented Dickey-Fuller test (ADF test) for data Return JKII

Dickey-Fuller Unit Root Tests					
Variable	Type	Rho	Pr < Rho	Tau	Pr < Tau
Return JKII	Zero Mean	-52.43	<.0001	-5.03	<.0001
	Single Mean	-52.55	0.0002	-4.96	0.0003
	Trend	-53.46	<.0001	-4.94	0.0016

Based on the results obtained from the ADF test, it is known that the P-value <0.05, indicates that all JKII return data are stationary so that testing can be carried out to the next stage, namely autoregression modeling.

Autoregression Modeling

Akaike Information Criterion Corrected (AICC) is used to check the optimum lag to find the best model for autoregression modeling. Furthermore, based on the results of the AICC analysis, for the AR(p) model, the smallest value is located at p = 0. So there is no need for autoregression modeling, as shown in table 3.

Table 3. AICC criteria

Minimum Information Criterion Based on AICC						
Lag	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	0.840	0.903	0.957	1.033	1.111	1.173
AR 1	0.924	0.966	1.026	1.110	1.197	1.255
AR 2	0.954	0.998	1.067	1.158	1.236	1.274
AR 3	0.990	1.083	1.157	1.247	1.335	1.387
AR 4	1.038	1.171	1.250	1.349	1.425	1.496
AR 5	1.124	1.184	1.242	1.358	1.444	1.381

GARCH (p,q) Modeling

Furthermore, after confirming that there is no autoregression model, the next stage is GARCH modeling to determine the significance value of the variance of the model used. The GARCH modeling that is formed is based on the results of the calculations in table 4 below:

Table 4. Parameter Estimation Model of GARCH (1,1) Using Return JKII

GARCH Model Parameter Estimates				
Parameter	Estimate	Standard Error	t Value	Pr > t
GCHC1_1	0.57361	0.41743	1.37	0.1779
ACH1_1_1	0.63361	0.21818	2.90	0.0063
GCH1_1_1	0.58156	0.23967	2.43	0.0204

Based on the GARCH model parameters, the P-values for ACH and GCH show values of 0.0063 and 0.0204 or below the value of = 0.05, which means that the error value and variance value have significant values. While the prediction model for variance can be seen in the following formula:

$$\sigma_t^2 = 0.57361 + 0.63361 \varepsilon_{t-1}^2 + 0.58156 \sigma_{t-1}^2$$

Next, the condition of the risk or variance of JKII can be seen in figure 2 and figure 3 as follows:

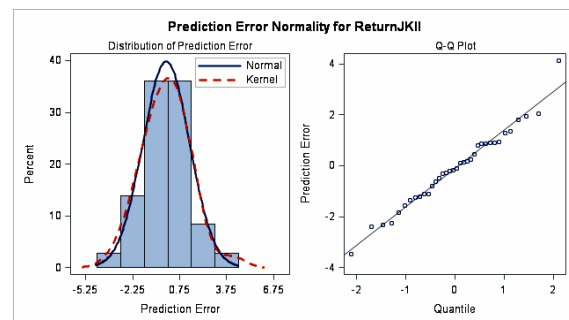


Figure 2. Distribution of error when the Month of effect exits, during Covid-19.

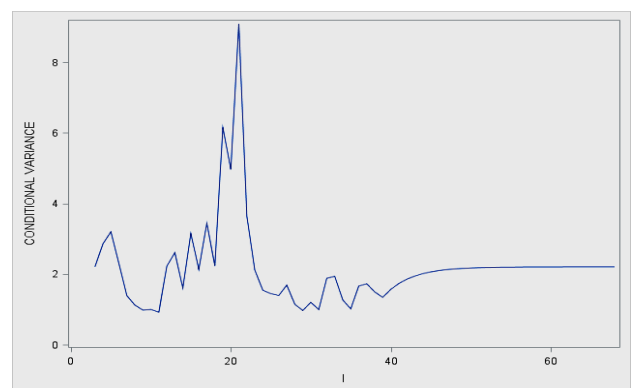


Figure 3. Conditional of variance when the Month of the effect exists, during Covid-19

From Figure 2, the residual value of the JKII data return when the Month of Effect anomaly is present shows a normal distribution as shown in the prediction of error and QQ plots which show that the data distribution is around

the zero line. Meanwhile, based on figure 3, it can be seen that the conditional variance has a fluctuating plot with a tendency to increase in variance January 1 there is a decrease in variance until the middle of the month, which indicates a decrease in the level of risk faced by JKII stocks. Furthermore, variance fluctuations occur with a tendency to increase until the end of the month.

The variance trend in January 2021 is the opposite of the return trend shown in figure 1. At the beginning of the month, the trend return shows a positive trend, but the variance is unfavorable. However, when the trend return tends to fluctuate stable in the middle of the month, the trend variance tends to experience a decline. Furthermore, when there is a downward trend in returns at the end of January 2021, the variance shows an increasing trend. When using Markowitz's theory as an analytical tool, the difference between trend return and variance indicates that in early January 2021, investors tend to have a high return expectation value, which means there is also an estimate of an average high variance risk calculation. However, the actual return formed in early January showed a downward trend, so there was a difference between the real return trend and the average variance trend.

Furthermore, possibly due to prediction errors for the beginning of the month, investors tend to lower their return expectations, which means lowering the risk variance level: contrary to the trend at the beginning of the year. In the following week to the middle of the month, there was an increase in actual returns at JKII, which may be caused by impulses that provide positive signals, such as the clarity of the US\$ 1.9 trillion stimulus package along with the clarity of Joe Biden's inauguration as US president. The success of national vaccine distribution in Indonesia, whose implementation will begin in February. And as an increase in the price of plantation shares, especially oil palm plantations. The positive trend of the actual return of JKII causes a difference between the trend return and the calculation of the variance, which tends to decrease. Towards the end of January, there seems to be confidence that the expected return will continue to increase in line with the optimism that the January effect will continue until the end. The increase in return expectations is in line with the increase in variance calculation. However, what happened was that the opposite actual returns tended to be negative. This decline in returns is likely due to the impulse to exist a community activity restriction (PPKM) policy in seven major cities in Indonesia, which has resulted in concerns about the inhibition of community economic activity. So overall, there is a difference between real return and variance conditions at JKII during January 2021.

Entering February 2021, the extension of the PPKM policy by the government, there is a tendency to increase the calculation of JKII portfolio risk so that the variance trend tends to increase until the middle of the month. On the other hand, along with the start of the national vaccination program in several regions, the decline in the BI benchmark interest rate by 25 basis points led to an increase in returns for the JKII index shares. This policy causes the trend variance and trend return to have the same pattern, namely increasing. Entering the middle to the end of February, along with evidence of the success of the national vaccination program, investors reduced their risk level calculation or variance so that the variance decreased

towards the end of February. Meanwhile, although not as high as in the middle of the month, the trend of real return tends to be positive until the end of the month, so the trend variance and real return still show the same pattern.

4. CONCLUSION

The test using the sample t-test shows that the P-value in the entire test period, except January and February 2021, has a value of more than 0.05, so there is no anomaly in those months. Likewise, no market anomaly occurred during critical moments, such as the announcement of the presence of COVID-19 in Wuhan, the presence of the first three patients in Indonesia, and the imposition of restrictions on community activities. However, in January and February 2021, the P-Value value is significant at 10% and 5%, indicating a light January effect and strong February effect.

Light of the January effect was caused by the high increase in returns in early to mid-January, but towards the end of the month, there was a decline. Also, in January, return volatility and variance showed the opposite pattern when actual returns increased, trend variance decreased, and vice versa. This opposite pattern is probably caused by the difference between the expected return value, which also means the value of the variance calculation with the actual return value that occurs.

On the other hand, in February 2021, returns showed a positive trend with a significant increase at the beginning of the month. They tended to be ordinarily positive from the middle to the end. The trend variance also experiences the same thing. These trend returns and variance show the same pattern, so it can be said that the expected return value and the variance calculation are in line with the actual value that occurs. This finding is supported by the GARCH model when all parameters have a significant P-value. In general, it can be said that there is a positive or unidirectional relationship between return and risk when market anomalies occur during the COVID-19 outbreak.

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