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MARKET REACTIONS TO THE RUSSIAN INVASION: A STUDY OF LQ-45 AND JII STOCKS

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Abstract
Investors who consider making an investment consider economic and non-economic market information. Information circulating can send signals that cause market reactions, such as the invasion of Ukraine by Russia. Investors may anticipate receiving bad news from this event. The aim of this research is to determine the impact of the Russian invasion of Ukraine on Trading Volume Activity (TVA), Average Abnormal Returns (AAR), and Abnormal Returns (AR). The presence of AR on the day of the event, as well as variations in AAR and TVA before and after the event, are indicators of impact. This study uses a quantitative approach. The population of this research is all companies registered in LQ-45 and the Jakarta Islamic Index (JII). An important finding from this research is that shares of companies included in the LQ-45 index have AR on Day 3; The AAR of companies listed in the LQ-45 and JII indices was less affected by the Russian invasion of Ukraine; and TVA shares of companies listed on the LQ-45 and JII indices were significantly impacted by Russia's invasion of Ukraine. The findings of this research indicate that investors must be more careful and vigilant when interacting with non-economic events that may contain information.

Keywords: Abnormal Return; Average Abnormal Return; Trading Volume Activity.

Abstrak
Investor yang mempertimbangkan untuk melakukan investasi mempertimbangkan informasi pasar ekonomi dan non-ekonomi. Informasi yang beredar dapat mengirimkan sinyal yang menimbulkan reaksi pasar, seperti invasi Ukraina oleh Rusia. Investor mungkin mengantisipasi menerima berita buruk dari kejadian ini. Tujuan dari penelitian ini adalah untuk mengetahui dampak invasi Rusia ke Ukraina terhadap trading volume activity (TVA), average abnormal returns (AAR), and abnormal returns (AR). Keberadaan AR pada hari kejadian, serta variasi AAR dan TVA sebelum dan sesudah kejadian, merupakan indikator dampak. Penelitian ini menggunakan pendekatan kuantitatif. Populasi penelitian ini adalah seluruh perusahaan yang terdaftar di LQ-45 dan Jakarta Islamic Index (JII). Temuan penting

dari penelitian ini adalah saham perusahaan yang masuk dalam indeks LQ-45 mempunyai AR pada Hari ke-3; AAR perusahaan terdaftar di indeks LQ-45 dan JII tidak terlalu terpengaruh oleh invasi Rusia ke Ukraina; dan saham TVA perusahaan tercatat di indeks LQ-45 dan JII terkena dampak signifikan dari invasi Rusia ke Ukraina. Temuan penelitian ini menunjukkan bahwa investor harus lebih berhati-hati dan waspada ketika berinteraksi dengan kejadian non-ekonomi yang mungkin mengandung informasi.

Kata kunci: Abnormal Return; Average Abnormal Return; Trading Volume Activity.

1 Introduction

The capital market serves as a venue for issuers and investors to interact. This is based on issuers who want finance, and investors take advantage of this by purchasing the instruments issued by issuers on the capital market both directly and through mutual funds. According to (Widioatmodjo, 2015). The need for the capital market arises from the fact that a company cannot expand with the restricted bank credit available to it. But, in the capital market, businesses may look for and obtain cash from a larger range of sources. As a result, one of the crucial factors supporting the development and strength of a nation's economy is the capital market. The capital market is also a tool for rigorous and ongoing public education to shift society's paradigm from one of saving to investment (Rahmawati, 2018). A saving society is viewed as less than ideal because, if it is not balanced with an investment culture, inflation might devalue their riches in the future. The banking industry, as an organization with the power to manage and process people's savings accounts, has suffered greatly, particularly after the Covid-19 outbreak (Hidayatullah & Maharani, 2022).

Investors in making investment decisions are usually influenced by many things, one of which is paying attention to information circulating in the environment, not only information related to the economy but non-economic information that can have an impact on the economy can also be considered. Investment decision-making can be significantly impacted by behavioral biases like conservatism, availability, herding, overconfidence, heuristic bias, cognitive illusions, and the herd mentality (Marheni, 2021; Weixiang et al., 2022; Thevaruban, 2022). Investment decisions in the stock market can be influenced by the extent of financial literacy. Individuals with a greater understanding of financial concepts are more adept at making informed and intelligent investment choices (Weixiang et al., 2022).

Investment decisions, particularly in the post-COVID-19 period, can be shaped by psychological factors like overconfidence, representative bias, anchoring bias, and information availability (Jan et al., 2022). The decision-making processes related to stock investments can be influenced by the intrinsic motivation of investors, which encompasses aspects like competence, meaningfulness, and progress (Husnatarina et al., 2022). Usually, with new information, investors will respond quickly to the market in a very short time, if the information is considered important or has value. A market is deemed efficient if all of the prices of assets exchanged reflect all of the available information. Events like these demonstrate an efficient market. This data might take the shape of financial reports from businesses, dividend payments, stock splits, reports from capital market experts, and other data that affects the economy. A process of changing security prices toward a new

equilibrium price in response to perfect new knowledge is implied by the idea of an efficient capital market (Nasution, 2017).

One of the events that became the main topic of world conversation was the Russian invasion of Ukraine. This event started when Ukraine wanted to join the European Union (EU) and the North Atlantic Treaty Organization (NATO). This made Vladimir Putin, President of Russia angry because of the prospect of establishing a NATO base next to its border. Putin considers everything that happened between Russia and Ukraine to be targeted to divert issues from the state security of the Russian Federation. Putin sees the expansion of NATO which has been running for more than 30 years and now NATO's infrastructure is getting closer to Russia's borders. This makes Russia feel threatened. Putin also considers that Ukraine is only used as a tool to inflame information about war against Russia. While the Russian side is pursuing diplomacy, the west continues to inflame war information and create tension on the Russian-Ukrainian border (Sorongan & Sef, 2022).

This event is expected to give a bad signal or bad news for capital market players or investors. This was due to the tension in the feud between the two countries which was able to have an economic impact on both countries and also other countries that have economic ties and trade relations with Russia and Ukraine. For some days, political analysts had been predicting Russia would invade Ukraine, but they were unable to accurately forecast the invasion's plan and timetable (Diaconaşu et al., 2023). For some days, political analysts had been predicting Russia would invade Ukraine, but they were unable to accurately forecast the invasion's plan and timetable (Diaconaşu et al., 2023).

Based on research conducted by Bakrie et al in 2022, the war that occurred between Russia and Ukraine had an impact on the ASEAN economic sector and of course the conflict led to the restructuring of international trade and countries that had relations with Russia and Ukraine would have a major influence on their country's national interest (Bakrie et al., 2022). An economist from the University of Jember named Wardhono claimed that the invasion of Ukraine by Russia had an effect on both the global and Indonesian economies, slowing the post-covid-19 economic recovery. In addition, the sanctions imposed by the European Union on Russia could result in spikes in energy prices, spikes in commodity prices, and supply chain shocks (Newswire, 2022).

The response of the markets to the Russian invasion of Ukraine was diverse in terms of countries and sectors. However, a study on the financial market's response to the Russia-Ukraine war found that markets did not fully predict the war, and asset price reactions strengthened from the first week to the second week, as market exposure to trade with Russia and Ukraine shaped their perceptions of the risk of equity and foreign exchange assets (Neely, 2022). The trade effect differences in trade exposure to warring nations has a significant and detrimental influence on equities markets outside of Europe but has no bearing on markets inside Europe (Silva et al., 2023). A different investigation analyzed how the Indonesian stock market responded to the Russian invasion of Ukraine, with a specific focus on the food and beverage industry. The study concluded that the invasion did not convey any information leading to abnormal changes in market return or capitalization.

However, it did observe a notable impact on stock trading among market participants, evident through significant fluctuations in trading volume (Pakederan et al., 2023). Furthermore, an analysis of how the ASEAN energy industry's capital markets responded to Russia's invasion of Ukraine revealed that, although the invasion had little effect on

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Indonesia's stock prices, it had a major impact on Malaysia and Singapore's energy sector's share prices (Wartindas et al., 2023). The market reacted negatively to the invasion both before and after it was announced, with developed and emerging markets suffering a negative impact and frontier markets only slightly so, according to a study on the banking sector's reaction during the Russian invasion of Ukraine. Additionally, the analysis discovered that both before and after the invasion was declared, the banking markets of NATO nations saw a considerable and unfavorable reaction (Yudaruddin & Lesmana, 2023). Another study looked at how trade relations affected how stock markets responded to Russia's invasion of Ukraine. It discovered that trade relations between Russia and Ukraine greatly varied how stock market indices responded, with the nations with the strongest economic ties seeing the biggest drops in indexes (Czech et al., 2023).

Kusuma et al., (2022) conducted tests on 30 companies listed on the Indonesia Stock Exchange (IDX) on the LQ-45 index. From this test, the results obtained were that in the early events of the Russian-Ukrainian war and the events of imposing sanctions against Russia, most of the days around the events showed no significant abnormal returns. In addition, between before and after the occurrence of the two events, there is no difference in the average abnormal return. (Surnyani & Wiarta, 2022) conducted research with the aim of knowing and analyzing the return volatility of the Jakarta Islamic Index (JII) on the phenomenon of the Russian military invasion of Ukraine. The research method used is analysis of different returns before and after the military invasion in the form of data 5 days before and 5 days after the invasion using data sourced from the Indonesian stock exchange in the form of data on 17 companies that are members of the MESBUMN index. The research results showed a significant value of 0.478, so there was a significant difference in the return on the IDXMESBUMN Index before and after the Russian military invasion.

Nathaniel Kurniawan & Sudirman (2023) conducted research with the aim of determining the impact of the Russian invasion of Ukraine on the abnormal returns of shares from oil and gas issuers on the Indonesian Stock Exchange in 2022. The results indicated significant differences in the days before and after the Russian invasion of Ukraine in 2022. Therefore, this event is considered to contain information that triggers a reaction in the capital market, as evidenced by abnormal changes in stock prices. The same research was also conducted by (Machfudi & Isynuwardhana, 2023), the results showed that there was a significant difference in abnormal returns before and after the Russian and Ukrainian war events, and there was a significant difference in trading volume activity before and after the Russian and Ukrainian war events in shares of energy sector companies listed on the Indonesian Stock Exchange.

According to the previous studies, the Russian invasion of Ukraine is another example of how non-economic events can affect economic activity. Previous study has revealed discrepancies in findings about the existence or absence of a capital market response to the Russian invasion of Ukraine. In addition, previous studies only analyzed the sensitivity of the capital market reaction in 17 companies that are members of JII and 30 companies that are members of LQ45, previous research only proxied abnormal return reactions. Based on the phenomenon that occurred, and the results of previous studies regarding the impact of the Russian Invasion on Ukraine, this topic is increasingly interesting to study. In this study, researchers will analyze by proxy the abnormal return reaction and trading volume activity of the company's shares listed on LQ-45 and JII. The two indices were chosen for this study because they were considered to be sufficiently capable of reflecting the

performance of the Indonesian capital market and Islamic capital market. This can be illustrated by the large capitalization contribution of these companies to the total market capitalization of 72% and the transaction value owned by these companies is 72.5% of the total market transaction value (Gumanti, 2011).

In light of the aforementioned context, the writers are motivated to investigate this occurrence. by referring to findings and arguments from previous research, especially that conducted by Kusuma. The research shows that the geopolitical event of Russia's invasion of Ukraine did not have any impact on financial markets and trading activities. However, three other researchers stated that geopolitical events, such as Russia's invasion of Ukraine, could influence financial markets and trading activities. The differences in the findings of this study make researchers increasingly interested in re-examining and seeing the results, whether the geopolitical event of Russia's invasion of Ukraine really had an effect on financial markets and trading activities or not. This study's objective was to investigate and evaluate the impact of Russia's invasion of Ukraine on abnormal returns, average abnormal returns, and trading volume activity in company that are listed on the LQ-45 and JII indices. The impact may be determined by the existence or absence of abnormal returns on the day of the occurrence, as well as by comparing average abnormal returns and trading volume activity before and after the incident to see whether there are any variations.

Then the hypothesis is a presumption from research regarding the researcher's thinking about the problem. The hypothesis in this research is:

H1: There is abnormal returns on LQ-45 and JII stocks before and after the Russian invasion of Ukraine

H2: There is a different in average abnormal returns on LQ-45 and JII stocks before and after the Russian invasion of Ukraine

H3: There is a different in trading volume activity on LQ-45 and JII stocks before and after the Russian invasion of Ukraine

2 Methods

The research method used by researchers is quantitative research. The type of research used in this study is an event study. The peak of the Russian invasion of Ukraine occurred on February 24 2022, for this reason researchers used a time span of 10 days, namely five days before the Russian invasion of Ukraine (t-5) and five days after the event (t+5). In determining the event windows, it is hoped that the market will react fully to the events that occur and we can see the speed of the market reaction to these events. If the period taken is too long, it is feared that there will be the influence of other events that are quite significant and can later affect the results of the study.

The population in this study is 45 companies listed on the LQ-45 index and 30 companies listed on JII, because there are similarities in the company members included in the two indexes, the total population is 46 companies. The sample selection in this study used a saturated sample technique using the entire population as the research sample. The dependent variables in this study are abnormal returns, average abnormal returns and trading volume activity of LQ-45 and JII stocks. Meanwhile The independent variable namely the Russian invasion of Ukraine which is considered a factor that can affect changes in abnormal returns, average abnormal returns and trading volume activity in LQ-45 and JII stocks.

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3 Results and Discussion

In this section, statistical tests will be carried out on the data that has been collected. So a discussion of the Russian Invasion of Ukraine on abnormal returns, average abnormal return, trading volume activity will be included in the final section of these results and discussion.

3.1. Normality Test

In this study, the normality test is the classic assumption test. The Kolmogorov-Smirnov test is used to determine if data is normal, and it may be performed by assessing the importance of the data under investigation. The objective of the information's normality test is to determine whether or not the given data is regularly distributed in order to identify the analytic tool when the hypothesis is tested. The data is considered normally distributed if the *sig* value is larger than 0.05, and it is not considered normally distributed if the *sig* value is less than 0.05. The findings of the abnormal return normality test, average abnormal return, and trading volume activity from the LQ-45 and JII indexes are as follows.

a. LQ-45 index

The LQ-45 index contains 45 stocks from 45 companies which are considered to meet several criteria such as the highest market capitalization, liquidity, the company's fundamental condition and the company's growth prospects. The normality test results for the LQ-45 index are as follows:

Table 1 Normality Test for Abnormal Return and Average Abnormal Return LQ-45 index

Data	Sig.	Conclusions
H-5	0.026	Not normal
H-4	0.017	Not normal
H-3	0.000	Not normal
H-2	0.200	Normal
H-1	0.200	Normal
H-0	0.000	Not normal
H+1	0.200	Normal
H+2	0.200	Normal
H+3	0.200	Normal
H+4	0.000	Not normal
H+5	0.000	Not normal
AAR before	0.078	Not normal
AAR after	0.002	Not normal

Source: SPSS for windows output

Based on the results of the normality test for abnormal returns above, it shows that the sig value for abnormal returns H-5, H-4, H-3, H-0, H+4 and H+5 is less than 0.05, so the data is not normally distributed. So the hypothesis test for the data uses the non-parametric one sample Wilcoxon signed rank test. Then the abnormal return data on H-2, H-1, H+1, H+2 and H+3 are said to be normally distributed because the sig value is more than 0.05, so the hypothesis test for these data uses the one sample t-test test. For the

average abnormal return data before the event has a sig value of more than 0.05, the data is normally distributed, while the average abnormal return data after the event has a sig value of less than 0.05, so the data is not normally distributed. Because one of the data is abnormal, the hypothesis test used to test the average abnormal return is a non-parametric paired samples Wilcoxon signed rank test.

Table 2 Normality Test for *Trading Volume Activity* LQ-45 Indeks

Data	Sig.	Conclusions
ATVA before	0.121	Normal
ATVA after	0.084	Normal

Source: SPSS for windows output

The hypothesis test used to assess trading volume activity is the parametric paired samples t-test. Based on the findings of the normality test above, trading volume activity before and after the event has a sig value of higher than 0.05, so the data is normally distributed.

b. Jakarta Islamic Index (JII)

The Jakarta Islamic Index (JII) offers 30 stocks from 30 companies that have been approved based on a number of shariah-compliant criteria and have above-average market capitalizations. The results of the normality assessment for the Jakarta Islamic Index (JII) are as follows:

Table 3 Normality Test for Abnormal Return and Average Abnormal Return Jakarta Islamic Index (JII)

Data	Sig.	Conclusions
H-5	0.037	Not normal
H-4	0.092	Normal
H-3	0.000	Not normal
H-2	0.107	Normal
H-1	0.200	Normal
H-0	0.000	Not normal
H+1	0.075	Normal
H+2	0.200	Normal
H+3	0.200	Normal
H+4	0.013	Not normal
H+5	0.002	Not normal
AAR before	0.200	Normal
AAR after	0.016	Not normal

Source: SPSS for windows output

According to the findings of the above test of normality for abnormal returns, the data is not normally distributed because the sig value for the abnormal returns H-5, H-3, H-0, H+4 and H+5 is less than 0.05. Thus, the non-parametric one sample Wilcoxon signed rank test is used for the data hypothesis test. Because the sig value is greater than 0.05, the abnormal return data on H-4, H-2, H-1, H+1, H+2, and H+3 are therefore

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considered to be regularly distributed, and the one sample t-test is used to test this hypothesis. The data is normally distributed for the average abnormal return data prior to the incident, which has a sig value of greater than 0.05, while the data is not normally distributed for the average abnormal return data following the event, which has a sig value of less than 0.05. A non-parametric paired samples Wilcoxon signed rank test is used to assess the average aberrant return because one of the data is abnormal.

Table 4 Jakarta Islamic Index (JII) Trading Volume Activity Normality Test

Data	Sig.	Conclusions
ATVA before	0.087	Normal
ATVA after	0.200	Normal

Source: SPSS for windows output

The trade volume activity before and after the occurrence has a sig value of higher than 0.05, according to the findings of the aforementioned normality test, indicating that the data is normally distributed. Therefore, the parametric paired samples t-test is the hypothesis test utilized to evaluate trade volume activity

3.2. Statistics Descriptive

This study uses an analytical test tool with the SPSS application version 25 and Microsoft Excel. Descriptive statistics are used to get an idea of the mean or average value, standard deviation, minimum value and maximum value of each variable in the study. The variables to be tested statistically descriptive are as follows:

1. Abnormal return H-5 to H+5 event of the Russian invasion of Ukraine
2. Average abnormal return before and after the Russian invasion of Ukraine, and
3. Trading volume activity before and after the events of the Russian invasion of Ukraine

Table 5 LQ-45 Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
AR H-5	-0,038089	0,042930	0,00210382	0,016583680
AR H-4	-0,036692	0,064807	0,00113725	0,018973459
AR H-3	-0,034449	0,079719	0,00229084	0,020916551
AR H-2	-0,021280	0,045497	0,00273996	0,015142144
AR H-1	-0,044872	0,038524	0,00016433	0,016982452
AR H-0	-0,043207	0,136322	0,01486511	0,043447471
AR H+1	-0,058776	0,049561	-0,00605178	0,023035872
AR H+2	-0,046357	0,057304	-0,00428462	0,023417155
AR H+3	-0,038133	0,074449	0,00396022	0,021221977
AR H+4	-0,058431	0,149783	0,00414109	0,039828795
AR H+5	-0,052150	0,169948	0,01386485	0,053492653
AAR Before	-0,017718	0,036075	0,00039326	0,010621075
AAR After	-0,027346	0,052350	0,00090465	0,016479120
TVA Before	0,001892	0,002562	0,00232882	0,000299864
TVA SSDH	0,003194	0,005378	0,00390334	0,000945406

Source: SPSS for windows output

Based on the results of the descriptive statistical analysis above, it shows the results of the observation period before and after the Russian invasion of Ukraine. Based on these data, the abnormal return before the event, from D-5 to D-1, the lowest minimum value is on H-1, which is -0.044872. The highest maximum value from the H-5 to D-1 range is on D-3, which is 0.079719. Meanwhile, the abnormal return value after the event, from H+1 to H+5, the lowest minimum value is on H+1, which is -0.058776. The highest maximum value from the range H+1 to H+5 is on H+5 which is 0.169948. The lowest mean abnormal return value between the H-5 to H+5 timeframe is on H+1 which is -0.00605178 with a standard deviation of 0.023035872. Meanwhile, the highest mean abnormal return value between H-5 to H+5 is on H-0, which is 0.01486511 with a standard deviation of 0.043447471.

The results of the descriptive statistical analysis on the average abnormal return, the minimum value before the event is -0.017718, then after the event the minimum value drops to -0.027346. The maximum value before the event is 0.036075, then after the event the maximum value increases to 0.052350, the mean average abnormal return value before the event is 0.00039326 with a standard deviation of 0.010621075, after the event the mean value increases by 0.00090465 with a standard deviation 0.016479120.

The results of the descriptive statistical analysis on trading volume activity are shown by the minimum value before the event of 0.001892, then after the event the minimum value increases to 0.003194. The maximum value before the event is 0.002562, then after the event the maximum value increases to 0.005378. The mean value of trading volume activity before the event was 0.00232882 with a standard deviation of 0.000299864, after the event the mean value increased by 0.00390334 with a standard deviation of 0.000945406.

Table 6 Jakarta Islamic Index (JII) Descriptive Statistics Test

	Minimum	Maximum	Mean	Std. Deviation
AR H-5	-0,038089	0,042930	0,00188494	0,016341563
AR H-4	-0,036692	0,064807	0,00298125	0,022179867
AR H-3	-0,026075	0,079719	-0,00039473	0,022664750
AR H-2	-0,020073	0,045497	0,00447391	0,015915469
AR H-1	-0,044872	0,038524	0,00107142	0,018694936
AR H-0	-0,050807	0,132331	0,00929498	0,046113388
AR H+1	-0,057831	0,049561	-0,00469585	0,023733215
AR H+2	-0,043275	0,077987	0,00149955	0,029522669
AR H+3	-0,038133	0,035893	0,00198045	0,019908593
AR H+4	-0,058431	0,149783	0,00382841	0,043581482
AR H+5	-0,052150	0,169948	0,01408591	0,058923057
AAR SBLM	-0,017718	0,036075	0,00200336	0,011967612
AAR SSDH	-0,027346	0,052350	0,00333969	0,020485891
TVA SBLM	0,001423	0,002254	0,00197138	0,000327470
TVA SSDH	0,002950	0,005382	0,00378219	0,001037770

Source: SPSS for windows output

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Based on the results of the descriptive statistical analysis above, it shows the results of the observation period before and after the Russian invasion of Ukraine. Based on these data, the abnormal return before the event, from D-5 to D-1, the lowest minimum value is on H-1, which is -0.044872. The highest maximum value from the H-5 to D-1 range is on D-3, which is 0.079719. Meanwhile, the abnormal return value after the event, from H+1 to H+5, the lowest minimum value is on H+4, which is -0.058431. The highest maximum value from the range H+1 to H+5 is on H+5 which is 0.169948. The lowest mean abnormal return value between the H-5 to H+5 timeframe is on H+1 which is -0.00469585 with a standard deviation of 0.023733215. Meanwhile, the highest mean abnormal return value between the H-5 to H+5 timeframe is on H+5 which is 0.01408591 with a standard deviation of 0.058923057.

According to descriptive statistical analysis, the average abnormal return's minimum value is -0.017718 before an event, and it is -0.027346 after the event. The highest value is 0.036075 before the event, and it rises to 0.052350 after it. The mean average abnormal return value is 0.00200336 with a standard deviation of 0.011967612, and it rises by 0.00333969 with a standard deviation of 0.020485891 after it. The minimum value prior to the event was 0.001423, and after the event, the minimum value increased to 0.002950, while the maximum value prior to the event was 0.002254, and after the event, the maximum value increased to 0, 005382. These values illustrate the results of the descriptive statistical analysis on trading volume activity. Trading volume activity had a mean value of 0.00197138 with a standard deviation of 0.000327470 prior to the incident, and a mean value of 0.00378219 with a standard deviation of 0.001037770 following the event.

3.3. The Effect of the Russian Invasion of Ukraine on Abnormal Returns in Companies Listed on the LQ-45 Index and the Jakarta Islamic Index (JII)

The minimum value prior to the event was 0.001423, and after the event, the minimum value increased to 0.002950, while the maximum value prior to the event was 0.002254, and after the event, the maximum value increased to 0, 005382. These values illustrate the results of the descriptive statistical analysis on trading volume activity. Trading volume activity had a mean value of 0.00197138 with a standard deviation of 0.000327470 prior to the incident, and a mean value of 0.00378219 with a standard deviation of 0.001037770 following the event.

Table 7 LQ-45 Index Abnormal Return Test

Data	Sig.	Conclusions	Test
H-5	0.879	No significance AR	One sample wilcoxon
H-4	0.615	No significance AR	One sample wilcoxon
H-3	0.033	Significance AR	One sample wilcoxon
H-2	0.371	No significance AR	One sample t test
H-1	0.874	No significance AR	One sample t test
H-0	0.318	No significance AR	One sample wilcoxon
H+1	0.097	No significance AR	One sample t test
H+2	0.204	No significance AR	One sample t test
H+3	0.202	No significance AR	One sample t test

H+4	0.576	No significance AR	One sample wilcoxon
H+5	0.592	No significance AR	One sample wilcoxon

Source: SPSS for windows output

Based on the data normality test H-2, H-1, H+1, H+2, H+3 are normally distributed, so it is continued with hypothesis testing using the one sample t-test. The results of the one sample t-test on abnormal returns H-2, H-1, H+1, H+2 and H+3 show a sig value. (2-tailed) above 0.05 means that there is no significant difference in abnormal returns on H-2, H-1, H+1, H+2, H+3. Then the results of the study stated that Ho was accepted and Ha was rejected.

Based on the normality test the data H-5, H-4, H-3, H-0, H+4, H+5 were not normally distributed, so it was continued with hypothesis testing using the one sample Wilcoxon signed rank test. The results of the one sample Wilcoxon signed rank test on abnormal returns H-5, H-4, H-0, H+4 and H+5 show a sig. (2-tailed) above 0.05 means that there is no significant difference in abnormal returns on H-5, H-4, H-0, H+4 and H+5. Then the results of the study stated that Ho was accepted and Ha was rejected. While on H-3 the value of sig. (2-tailed) 0.03 and this value is smaller than 0.05, meaning that there is a significant difference in the D-3 abnormal return. Then the results of the study stated that Ha was accepted and Ho was rejected.

The market is expected to react to announcements containing information when the announcement has been received by the market. Hartono Jogiyanto, Portfolio Theory and Investment Analysis, BPFE (Yogyakarta: BPFE, 2010), 586. This market reaction can be measured by abnormal returns, average abnormal returns and trading volume activity. From the results obtained for stocks listed in the LQ-45 index, it is known that in the D-5 to D+5 period, there were significant abnormal returns only in D-3 before the Russian invasion of Ukraine. The presence of abnormal returns on H-3 of the LQ-45 Index before the event indicates a market reaction related to this event, but not such a big reaction. From this explanation it can be seen that the LQ-45 index around the time of the incident reflects the semi-strong form of the efficient market hypothesis.

These results are in line with research conducted by (Liargovas & Repousis, 2010), who conducted research on the influence of three international terrorist events on banking sector companies on the Athens Stock Exchange. The research found that of the three international terrorist events only on September 11, there were significant abnormal returns. The same result was shown by research conducted by (Mellaci et al., 2012) who conducted a study on the impact of sponsorship announcements for the professional sport clube Corinthians Paulista football team on commercial bank shares in Brazil. Research has also found significant abnormal returns. The results of this study contradict research conducted (Anita et al., 2020). Their research discusses the effect of the simultaneous elections which took place on April 17 2019 on stocks listed on the Kompas 100 index. The results of this study indicate that there were no significant differences in abnormal returns for these non-economic events.

Table 8 Abnormal return Indeks Jakarta Islamic Index (JII) Difference Test

Data	Sig.	Conclusions	Test
H-5	0.719	No significance AR	One sample wilcoxon
H-4	0.736	No significance AR	One sample t test

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H-3	0.229	No significance AR	One sample wilcoxon
H-2	1.54	No significance AR	One sample t test
H-1	0.314	No significance AR	One sample t test
H-0	0.943	No significance AR	One sample wilcoxon
H+1	-1.084	Significance AR	One sample t test
H+2	0.278	No significance AR	One sample t test
H+3	0.545	No significance AR	One sample t test
H+4	0.845	No significance AR	One sample wilcoxon
H+5	0.766	No significance AR	One sample wilcoxon

Source: SPSS for windows output

Based on the data normality test H-4, H-2, H-1, H+1, H+2, H+3 are normally distributed, so it is continued with hypothesis testing using the one sample t-test. The results of the one sample t-test on abnormal returns H-4, H-2, H-1, H+1, H+2 and H+3 show a sig. (2-tailed) above 0.05 means that there is no significant difference in abnormal returns on H-4, H-2, H-1, H+1, H+2, H+3. Then the results of the study stated that Ho was accepted and Ha was rejected.

Based on the normality test the data H-5, H-3, H-0, H+4, H+5 were not normally distributed, so it was continued with hypothesis testing using the one sample Wilcoxon signed rank test. The results of the one sample Wilcoxon signed rank test on abnormal returns H-5, H-3, H-0, H+4 and H+5 show a sig. (2-tailed) above 0.05 means that there is no significant difference in abnormal returns on H-5, H-3, H-0, H+4 and H+5.

The findings for equities listed on JII demonstrate that there are no appreciable anomalous returns in the H-5 to H+5 timeframe. The lack of anomalous returns within the JII Index study's time frame before and after the occurrence suggests that there was no market response to it. This justification shows how the JII Index during the event reflects the weak version of the efficient market theory. These findings are consistent with study by (Gumanti et al., 2018), which examined the impact of the AirAsia plane accident on the shares of firms in the travel and tourist sector listed on the Malaysian stock exchange. As a result, no abnormal returns were found for these events.

The same results were shown by research conducted (Pratama et al., 2015) which conducted research on the reaction of the Indonesian capital market to Joko Widodo's inauguration as the 7th President of the Republic of Indonesia. As a result, no abnormal returns were found for these events. Research conducted by (Cheng & Christiawan, 2011) has different results from the results of the research above, this study examines the effect of disclosure of corporate social responsibility (CSR) on abnormal returns. The results of this study indicate that CSR disclosure has a significant effect on abnormal returns indicating that investors consider CSR information to make decisions.

3.4. The Effect of the Russian Invasion of Ukraine on the Average Abnormal Return of Companies Listed on the LQ-45 Index and the Jakarta Islamic Index (JII)

If there is a difference in the average abnormal return between before and after the occurrence, it may be inferred that the Russian invasion of Ukraine had an impact on the average abnormal return of the firms included on the LQ-45 and JII indexes. Non-parametric testing is

used to test hypotheses. The paired sample Wilcoxon signed rank test is the non-parametric test. The significance threshold for this test is 5%, or 0.05. In this test, there is a significant difference in average abnormal return if the test results have a sig value of less than 0.05, and there is no significant difference in average abnormal return if the sig value is more than 0.05. The following are the outcomes of the SPSS 25 difference test:

Table 9 *Average Abnormal return* Indeks LQ-45 Difference Test

	AAR after – AAR before
Asymp. Sig. (2-tailed)	0.963

Source: SPSS for windows output

The normality test reveals that the average abnormal return data is not normally distributed, hence the Wilcoxon signed-rank test is used to continue evaluating the hypothesis. The average abnormal return on LQ-45 stock before and after the Russian invasion of Ukraine did not differ significantly, according to the findings of the paired samples Wilcoxon signed-rank test on the average abnormal return, which showed an asymp value. sig. (2-tailed) of 0.963 (0.963 > 0.05). According to the study's findings, Ho was accepted while Ha was rejected.

Table 10 Jakarta Islamic Index (JII) Average Abnormal Return Difference Test

	AAR after – AAR before
Asymp. Sig. (2-tailed)	0.910

Source: SPSS for windows output

The normality test reveals that the average abnormal return data is not normally distributed, hence the Wilcoxon signed-rank test is used to continue evaluating the hypothesis. There is no statistically significant difference between the average abnormal return on the Jakarta Islamic Index (JII) stock before and after the Russian invasion of Ukraine, according to the results of the paired samples Wilcoxon signed-rank test on the average abnormal return, which have an asymp value. sig. (2-tailed) of 0.910 (0.910 > 0.05). According to the study's findings, Ho was approved but Ha was denied.

The average abnormal return variable for stocks included in the LQ-45 and JII indexes did not vary before and after the Russian invasion of Ukraine, according to the results of the aforementioned data processing. There is no market reaction associated to this occurrence, as evidenced by the lack of changes in the average abnormal return across the time period of the research on the LQ-45 and JII indices before and after the incident. This justification shows how the LQ-45 and JII indices around the incident represent the weak version of the efficient market hypothesis.

These results are in line with research conducted by (Ramandani et al., 2019) which examined the crash of the Lion Air plane against 35 companies on the Indonesia Stock Exchange (IDX). The results showed that there were no differences before and after the incident. The same results were shown by research conducted (Verawaty et al., 2018), regarding the effect of the 212 peaceful demonstrations on the LQ-45 stock index group. The results of this event study show no difference in the average abnormal return before and after the event. The results of this study contradict the results of research (Fatimah & Maftukhah, 2022), which examines the government's stimulus policy in dealing with the Covid-19 pandemic on abnormal share returns. The findings in his research at the time the announcement of the economic stimulus came out on February 24 2020, there was a difference in the average abnormal return on LQ-45 stocks.

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3.5. The Effect of the Russian Invasion of Ukraine on Trading Volume Activity in Companies Listed on the LQ-45 Index and the Jakarta Islamic Index (JII)

The effect of the Russian invasion of Ukraine on trading volume activity in companies listed on the LQ-45 and JII indexes can be seen from whether there was a difference in trading volume activity before and after the incident. Hypothesis testing is done by parametric and non-parametric tests. The parametric test used was the paired sample t-test, while the non-parametric test used was the paired sample Wilcoxon signed rank test. This test uses a significance level of 5% or $\alpha = 0.05$. In this test, if the test results have a sig value of less than 0.05 then there is a significant difference in trading volume activity and if the sig value is greater than 0.05 then there is no significant difference in trading volume activity. The following are the results of the difference test using SPSS 25.

Table 11 *Trading Volume Activity* Indeks LQ-45 Test Difference

	AAR after – AAR before
Asymp. Sig. (2-tailed)	0.012

Source: SPSS for windows output

Based on the normality test, trading volume activity data is normally distributed, so it is continued with hypothesis testing using paired samples t-test. Test results of paired samples t-test. on trading volume activity shows a sig. (2-tailed) of 0.012 (0.012 <0.05), meaning that there is a significant difference in trading volume activity in LQ-45 shares before and after the Russian invasion of Ukraine. Then the results of the study stated that Ha was accepted and Ho was rejected.

Table 12Trading Volume Activity Jakarta Islamic Index (JII) Test Diffenece

	AAR after – AAR before
Asymp. Sig. (2-tailed)	0.013

Source: SPSS for windows output

Based on the normality test, trading volume activity data is normally distributed, so it is continued with hypothesis testing using paired samples t-test. Test results of paired samples t-test. on trading volume activity shows a sig. (2-tailed) of 0.013 (0.013 <0.05), meaning that there is a significant difference in trading volume activity in the Jakarta Islamic Index (JII) stock before and after the Russian invasion of Ukraine. Then the results of the study stated that Ha was accepted and Ho was rejected.

Hypothesis testing of trading volume activity was carried out by means of different tests before and after the Russian invasion of Ukraine. Based on the results of the above data processing for stocks listed in the LQ-45 index and the Jakarta Islamic Index (JII) there is a significant difference in trading volume activity before and after the Russian invasion of Ukraine. There are significant differences in trading volume activity across the research timeframe on the LQ-45 and JII indexes before and after the event indicating a market reaction related to this event. From this explanation it can be seen that the LQ-45 and JII indexes around the time of the incident reflect the strong form efficient market hypothesis.

This result is consistent with research conducted by Kristiyanto and Hermuningsih (2018) that addresses the impact of Peristiwa Bom Thamrin on securities listed on LQ-45.

Results from this study of the current policy show that there is a difference in the amount of trade that is significant before and after the policy. The same results were also obtained from a study that was conducted (Setiawan, 2019) that examined the impact of the price and volume of saham trading in BEI on the sexy killer movie. Results from this study of the current policy show that there is a difference in the amount of trade that is significant before and after the policy. The results of this study compare favorably to research that is now being done (Putra, 2019), which is focused on the Jakarta-Palembang Asian Games 2018 Peristiwa. The study's findings indicate that there was no significant difference in trading volume activity during the time leading up to or immediately following the 2018 Asian Games.

4 Conclusion

Based on the data analysis and discussion the results of this study it can be concluded as follows: (1) There was an abnormal return on D-3 before the Russian invasion of Ukraine on company shares listed on the LQ-45 index. Meanwhile, the stocks of companies listed on JII did not find any abnormal returns. When viewed from the market abnormal return reflects the weak form efficient market hypothesis; (2) The event of the Russian invasion of Ukraine has no significant effect on the average abnormal return on the stocks of companies listed on the LQ-45 and JII indices. When viewed from the average abnormal market return, it reflects the weak form of the efficient market hypothesis; (3) The Russian invasion of Ukraine has a significant effect on the activity and trading volume of shares of companies listed on the LQ-45 and JII indexes. When viewed from trading volume market activity reflects the strong form efficient market hypothesis.

The results of this research may be used as additional information in taking preventative measures by paying attention to information that is circulating, which is one of the consequences of this research for investors and potential investors. Investors and potential investors should refrain from using the Russian invasion of Ukraine as their sole major guiding principle for investment decisions if an event similar to this occurs again so that investors may make better educated judgments about their assets. Investors are anticipated to approach non-economic events that may offer information with greater skepticism and caution. This research has several limitations, including a limited observation period, a focus on specific variables such as abnormal returns, average abnormal returns, and trading volume activity, which may not encompass all aspects influencing the capital market. Additionally, sample selection is confined to stocks in the LQ-45 index and the Jakarta Islamic Index (JII), along with external factors that cannot be fully identified, such as changes in global economic policies or certain political factors, which may also impact the market. Expanding the observation time span, adding variables, involving a broader sample, and identifying and controlling external factors can enhance the validity of research results.

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