

## **EVENT STUDY: THE IMPACT OF THE RUSSIA-UKRAINE INVASION ON STOCK PRICES AND ABNORMAL RETURNS**

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### **Abstract**

**Background of The Study:** The capital market is able to react quickly to issues that arise around it. In February 2022, Russia conducted military operations against Ukraine. Of course, this stole global attention. Investors need to pay attention to any information that may affect trading in the capital market.

**Purpose of The Study:** Empirically analyze how the news of Russia's invasion of Ukraine affects the stock prices and abnormal returns of energy industry companies listed on the Indonesia Stock Exchange (IDX).

**Research Method:** The research uses the event study method, with an observation period of 30 days before and after the announcement to measure the public reaction to the news of the invasion by Russia.

**Research Result:** The results showed that there were visible changes in stock prices from before to after the news of the Russia-Ukraine invasion was announced, as shown in this study. Meanwhile, there is no visible difference in abnormal returns either before or after the news announcement of the invasion between Russia and Ukraine is published.

**Research Gap:** Russia's invasion of Ukraine occurred in 2022, and this study examines companies in the energy industry.

**Keywords:** Russia-Ukraine Invasion, Stock Price, Abnormal Return, Event Study.

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## **Introduction**

The feud between Russia and Ukraine actually began in 2013 with the ouster of the third President of Ukraine, Viktor Yanukovich. But this feud really peaked on February 24, 2022, after the deployment by Russian President Vladimir Putin to carry out military operations against Ukraine. After Russia launched its invasion of Ukraine, the allies responded by imposing several sanctions on Russia, one of which was economic sanctions, namely embargo sanctions (Afdhal et al., 2022).

Producing 9.7 million barrels of oil per day, Russia is the second largest country in terms of oil production in the world. This makes Europe highly dependent on exports from Russia, amounting to more than 40%. The embargo sanctions imposed by Western countries on Russia have greatly affected the scarcity of oil supply in the world. This can lead to soaring oil prices around the world (Permana, 2022).

At the end of February 2022, the price of US benchmark crude oil, known as West Texas Intermediate (WTI), increased by 7.56% to reach US\$124.42 per barrel. Similarly, Brent crude oil, which is used as a

price reference in Europe, surged by 10.62% to \$128.73 per barrel. Due to its high contribution to meeting global energy demand, crude oil or petroleum is one of the main energy sources. If oil supplies are running low, it will lead to energy scarcity in the world. This also has an impact on energy sector companies (*International Energy Agency, 2022*).

Along with the rise in energy commodity prices around the world, the energy sector stock index in Indonesia is expected to perform very well between January and May 2022. The energy sector stock index has increased significantly more than other market index. The energy stock index has increased by 43.24% year-to-date. Compared to the growth of the Jakarta Composite Index (JCI) in the Indonesian capital market, this increase is much higher than the previous year (*Kusnandar, 2020*).

Capital markets are able to react quickly to emerging issues. The capital market is very sensitive to any news that may have an impact on trading. Since 2020 until now, the capital market has been vulnerable to external shocks. As a result, the capital market is highly sensitive to both positive and negative news, such as changes in macroeconomics, politics, law, security, and information about related companies (*Hatta et al., 2017*).

In the country's economy, the capital market has a large enough role that it can cause sensitive market reactions to surrounding events. This market reaction is evidenced by the difference in securities prices which can be known by abnormal return. Based on Dewi's (2018) information, an abnormal return is the difference between the actual return that occurs and the expected return. Abnormal return usually occurs when information is published as a market response to the information and is responded to quickly by investors.

There have been many studies that have examined event studies, but there are still few that discuss the events of the Russian invasion of Ukraine. For example, Kevin (2022) studied the abnormal return of mining companies during the Russian invasion. The novelty of this study is to revisit the issue by looking at the capital market response, especially from energy sector companies.

In addition to the facts described above, one of the reasons for conducting this study is the research gap from previous studies. Empirical studies in previous research on the announcement of Russia's invasion of Ukraine have shown different results. For example, Darmayanti's (2020) research examines how Covid-19 can affect changes in stock prices and returns. In this study, it was found that stock prices changed significantly, while stock returns remained stable both before and after the event. Hadi's research (2020) examines the effect of the trade war between the United States and China on Islamic stocks. It can be seen that the average abnormal return (AAR) and bid-ask spread (BAS) did not change, although the average trading volume activity (ATVA) before and after the event fluctuated.

The events that occur provide data or information as signals to consumers, as shown by a number of studies conducted in the past. Information users, especially investors, can get both positive and negative signals from these events. Capital market participants use these signals as benchmarks to guide their choices about where to invest and how much return they can expect from their investments. Stock price changes, abnormal returns, and trading volume are just some of the capital market indicators that can trigger reactions from such signals (Pangumpia, 2021).

Zaremba (2022) argues that evaluating new information that has the potential to affect market response is an example of testing using the event study approach. Initially, annual reports, dividend announcements, stock splits, etc., were the events most closely associated with these event research tests. However, in recent years, the event study approach has broadened its scope to test not only business events but also macroeconomic factors from financial to political. This study examines the market response by comparing stock prices and abnormal returns pre-post Russia's military invasion of Ukraine.

Based on previous research, there is an urgency to review the capital market reaction to information from non-economic events. The energy sector was chosen because Russia is the second largest oil producer in the world and was sanctioned due to the military invasion, hindering the distribution of oil in various countries. Therefore, this study is needed to examine the correlation between the Russia-Ukraine invasion announcement and various abnormal stock market returns and stock price movements.

## **Literatur Review**

"The Market for Lemons" is George Akerlof's 1970 work that established the concept of information asymmetry and is known as the beginning of "signaling theory". Akerlof (1970) studied the phenomenon of information imbalance between buyers and sellers in terms of product quality. Based on signaling theory, companies have a reason when disclosing their financial statement information to outsiders. The reason for the disclosure is to provide news or news because there is information asymmetry between the company and outsiders (Chatrin, 2018).

The securities market is said to be efficient if security prices fully reflect the information available (Fama, 1970). The market is called efficient if the market reacts quickly and accurately to reach a new equilibrium price that fully reflects the available information, then this kind of market condition is called an efficient market (Hartono, 2017: 605). The concept of market efficiency was introduced to consider the role of information in price formation. The faster information is spread, this will be reflected in the reaction of a security's price when responding to information.

According to Robert G. Bowman's "Understanding And Conducting Event Studies" (1983), an "event study" is research that analyzes how security prices behave in a market reaction to news or other announcements. All companies in the capital market, systemically or non-systemically, can be affected by the information contained in the announcement or event, thus changing the value of the company. Non-economic events such as wars, invasions, politics, terrorism, and mergers are as likely to make headlines as any economic development (dividends, stock splits, mergers, etc.) (Firmansyah, 2022).

According to Irianto (2021), the stock price is the sacrifice of an investor to obtain proof of ownership or equity involvement in a company, investors must pay a price as a measure of the company's financial performance. Since the stock price reflects investors' perception of the company's value, it can influence their decision to buy or sell the stocks. An increase in stock price will encourage more people to invest in the stock, which will lead to higher prices overall.

The difference between the actual return and the expected return is the definition of abnormal return, as defined by Hartono (2017: 667). Investors rely on returns that compensate them for the risks they take in accordance with the sacrifices made. Abnormal return is often used to measure the valuation work of securities. Market efficiency can also be checked by examining the abnormal return.

### **Hypothesis Development**

The stock price is the closing price when the stocks are traded on the capital market by investors. The stock price of each company, of course, always fluctuates, both up and down. Ikhriyah (2017) points out a number of factors, including macroeconomic conditions and other external factors. Russia's invasion of Ukraine can be a global threat because it has attacked various sectors, one of which is the economic sector including the capital market.

The weakening of the IDX (Indonesian Stock Exchange) was triggered by investor uncertainty amidst the rising prices of various commodities. As in times of crisis, this resulted in investors being less interested in holding volatile assets such as stocks and currencies, and more interested in keeping their money in safer and more stable investments. The stock market didn't respond badly at first, but when many casualties were confirmed, it did. (Khan et al., 2020).

According to Darmayanti's research (2020), the stock price of PT. Indosat Tbk fluctuated significantly before and after the announcement of the first Covid-19 event in Indonesia. This supports the views of Jecuinna and Zielma (2021), who argue that significant price differences in stocks around the time of non-economic events prove that the Indonesian capital market has become more sensitive. This suggests that the announcement of Russia's invasion of Ukraine is a non-economic event that can affect the capital market (Priyambodo, 2022).

**H<sub>1</sub>:** There is a significant difference in stock prices in the energy industry in the 30 days before and 30 days after the announcement of the Russia-Ukraine invasion.

According to Hartono (2017: 667), abnormal return is the difference between the actual profit level and the expected profit level. As a result of the conflict between Russia and Ukraine, many companies have experienced a decline in stock value. This is a warning sign that investors may get a small or even negative stock return (Nurcahyono et al., 2021). Diansari (2021) explains that the war between Russia and Ukraine is an international emergency disaster and has an impact on various companies, especially energy industry companies.

The big events may have a significant influence on stock market returns, more so with the Russian President's order to invade Ukraine, creating unprecedented uncertainty and affecting stock returns. Pangumpia (2021) and Kezia (2018) showed that abnormal returns fluctuated significantly both before and after the invasion event. Hadi (2020) and Irawan (2021) found no evidence of abnormal return changes before and after the event.

**H<sub>2</sub>:** There is a significant difference in abnormal returns in the energy industry in the 30 days before and 30 days after the announcement of the Russia-Ukraine invasion.

## **Research Method**

Specifically, a quantitative methodology was used for this research using an event study designed to measure the impact of an event using public company stock performance data and to analyze stock price changes and abnormal return movements. A total of 75 energy sector industrial companies listed on the Indonesia Stock Exchange (IDX) in 2022 were selected as the population for this analysis. Purposive sampling was used to select samples with several considerations and 66 companies met the criteria. Secondary data information was taken through the Yahoo Finance website and the Indonesia Stock Exchange (IDX).

Data analysis techniques are divided into three stages, first, descriptive statistics are used to provide a summary of research findings in the form of data frequency. Second, by testing data distribution (normality). Data is not normally distributed if the p-value is less than 0.05, then the test is not accepted. Conversely, if the p-value is greater than 0.05, then the data is normally distributed. The next stage is to conduct statistical hypothesis testing, in the case of normally distributed data, this can be done using the Paired Sample t-test. Conversely, if the data is not normally distributed, then the hypothesis is tested using the Wilcoxon Signed Rank Test.

## Results and Discussion

### Description of Research Objects

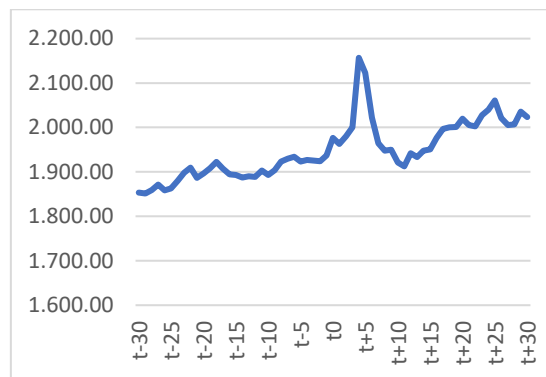
It can be seen that the objects in this study are stock prices and abnormal stock returns in 66 energy sector industrial companies with an event window period of 61 days. The event window starts from January 12, 2022, until April 11, 2022. The data source in this study is secondary data obtained from the Yahoo Finance website.

### Description of Research Variables

#### Stock Prices

Before and after the Russian invasion, the average stock prices of the energy sector tends to fluctuate or be unstable. This is evidenced in the figure below.

**Figure 1. Stock Prices of Energy Industry Before and After the Russian Invasion**



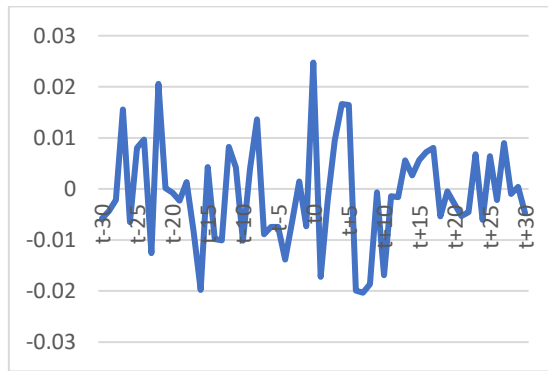
Source: Data Processed (2023)

Based on the figure above, on t-30 or 30 days before the Russian President announced military operations in Ukraine, the average stock price of the energy industry was at 1,853. This occurred until t+4 or 4 days after the announcement of the invasion, the stock prices tended to experience a significant increase, reaching a price of 2,157. However, on t+5 or 5 days after the announcement, there was a significant decline in stock prices until t+11 or 11 days after the announcement, with a stock prices of 1,913. Then on t+12 there was another slow increase in stock prices until t+30 which touched a price of 2,023.

#### Abnormal Returns

Before and after the Russian invasion, the average abnormal returns of the energy sector tends to fluctuate. This is evidenced in the figure below.

**Figure 2. Abnormal Returns of Energy Industry Before and After the Russian Invasion**



Source: Data Processed (2023)

Based on the figure above, the average abnormal return tends to fluctuate. In the t-16 or 16 days leading up to the announcement of military action in Ukraine by the Russian president, abnormal returns fell to -0.019775. Abnormal returns continued to fluctuate until at t0 or when the invasion announcement occurred, it increased by 0.024751. However, at t+1 or the day after the invasion announcement, abnormal returns experienced a sharp decline to -0.017238 and continued to fluctuate until t+30.

**Descriptive Statistical Analysis**

Descriptive Statistics of Stock Prices

The results of descriptive statistical analysis testing conducted on stock prices in this study can be seen in the table below.

**Table 1. Descriptive Statistical Analysis of Stock Prices**

	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
<b>Stock Prices Before Invasion</b>	30	1.851,42	1.937,12	1.898,14	2.510,77
<b>Stock Prices After Invasion</b>	30	1.912,27	2.156,84	1.997,93	5.398,72

Source: Data Processed (2023)

In the descriptive statistics table above, we can analyze the stock price data 30 days before the invasion announcement and 30 days after the invasion announcement. The stock prices 30 days before the invasion announcement reached the lowest value (minimum) of 1,851.42 and the highest value (maximum) of 1,937.12. The average value of the overall stock prices is 1,898.14 and the standard deviation is 2,510.77.

The stock prices 30 days after the invasion announcement have the lowest value of 1,912.27 and the highest value of 2,156.84. The average value of the overall stock prices was 1,997.93 and the standard

deviation was 5,398.72. As a result, the 66 energy businesses whose stock prices are tracked experienced a large increase after the news of the Russian invasion was released.

#### Descriptive Statistics of Abnormal Returns

The results of the descriptive statistical analysis test on abnormal returns in this study can be seen in the table below.

**Table 2. Descriptive Statistical Analysis of Abnormal Returns**

	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
Abnormal Returns Before Invasion	30	-0,019775	0,017822	-0,001859	0,009138
Abnormal Returns After Invasion	30	-0,020325	0,016650	-0,001243	0,009909

Source: Data Processed (2023)

Based on the descriptive statistics table above, the abnormal returns data used covers 30 days before and after the announcement of the Russia-Ukraine invasion. Abnormal returns range from a minimum of -0.019775 to a maximum of 0.017822 in the 30 days leading up to the invasion. The overall average abnormal returns value is -0.001859 and the standard deviation is 0.009138.

Abnormal returns 30 days after the Russian-Ukrainian invasion was announced, fell to a low (minimum) of -0.020325 and a high (maximum) of 0.016650. The standard deviation of abnormal returns was 0.009909, while the mean was -0.001243. This decrease in abnormal returns value indicates that investors did not respond to the news.

#### Data Normality Test

##### Normality Test of Stock Prices

The table below is the result of the normality test of the research data on the energy sector of stock prices.

**Table 3. Normality Test of Stock Prices**

<i>One-Sample Kolmogorov-Smirnov Test</i>	<b>Stock Prices Before Invasion</b>	<b>Stock Prices After Invasion</b>
<b>N</b>	30	30
<b>Asymp. Sig. (2-tailed)</b>	0,179	0,200 <sup>e</sup>

Source: Data Processed (2023)



Based on the One-Sample Kolmogorov-Smirnov test results, data is considered normally distributed if the Sig. value is greater than 0.05. According to the data shown above, the Sig. value of the stock prices before the invasion announcement is 0.179, while the Sig. value of the stock prices after the invasion announcement is 0.200<sup>e</sup>. Therefore, the residual data is normally distributed.

**Normality Test of Abnormal Returns**

The table below shows the results of the normality test for abnormal returns in the energy industry.

**Table 4. Normality Test of Abnormal Returns**

<i>One-Sample Kolmogorov-Smirnov</i>	<b>Abnormal Returns Before</b>	<b>Abnormal Returns After</b>
<i>Test</i>	<b>Invasion</b>	<b>Invasion</b>
<b>N</b>	30	30
<i>Asymp. Sig. (2-tailed)</i>	0,177	0,100

Source: Data Processed (2023)

Based on the One-Sample Kolmogorov-Smirnov test results, data is considered normally distributed if the Sig. value is greater than 0.05. According to the data shown above, the abnormal returns before the invasion announcement were 0.177, but then after the invasion announcement was 0.100. Therefore, the residual data is normally distributed.

**Statistical Hypothesis Test**

**Stock Prices Hypothesis Test**

A paired Sample t-Test is used to compare stock prices of energy industry before and after the invasion announcement as shown in the table below.

**Table 5. Paired Sample t-Test of Stock Prices**

	<i>Mean</i>	<i>Std. Deviation</i>	<i>t</i>	<i>Sig.</i>
<b>Stock Prices Before – After</b>	-99.795,56	60.421,84	-9,046	<0,001

Source: Data Processed (2023)

As seen from the Paired Sample t-Test results above, the mean value is -99,795.56. This value shows the difference between the average stock prices before and after the announcement of the Russian invasion on February 24, 2022. Then the significant value is <0.001 which is <0.05. This result confirms that H<sub>1</sub> is accepted, which means that the stock market has responded to the invasion news and there is a significant difference in stock prices.

### Abnormal Returns Hypothesis Test

The results of the Paired Sample t-Test on the abnormal returns of the energy industry before and after the invasion announcement in this study can be seen in the table below.

**Table 6. Paired Sample t-Test of Abnormal Return**

	<i>Mean</i>	<i>Std. Deviation</i>	<i>t</i>	<i>Sig.</i>
<b>Abnormal Returns Before – After</b>	-0,000950132	0,012425138	-0,419	0,678

Source: Data Processed (2023)

Based on the test results using the Paired Sample t-Test method above, it can be seen that the abnormal returns value is -0.000950132. This value shows the difference between the abnormal returns before and after the announcement of the Russian invasion on February 24, 2022. The significant value is 0.678, because it is more than 0.05, hypothesis  $H_2$  is rejected. This is evidenced by the absence of significant differences in abnormal returns before and after the announcement of the invasion.

### **Differences in Stock Price of the Energy Industry Before and After the Russian Invasion Announcement**

Stock prices in the energy sector industry were analyzed using SPSS 28 software. The results of the Paired Sample t-Test before and after the news of the Russian invasion obtained a significant value of 0.001, or less than 0.05. If the correlation coefficient of stock prices is statistically significant, then  $H_1$  is accepted. Stock prices in the energy sector fluctuated significantly before and after the news of Russia's invasion of Ukraine was published.

This can happen because in reality due to the invasion carried out by Russia, several countries impose economic sanctions on Russia. One of them is embargo sanctions, where Russia is prohibited from all forms of economic activities both exports and imports. The impact of these sanctions has led to a shortage of energy sources, so countries are looking for energy supplies from other countries. This high demand causes an increase in stock prices in energy sector companies on the IDX (Markus, 2022).

The findings of this study are consistent with Akerlof's (1970) signaling theory, which states that energy industry companies provide good signs to investors through disclosed information or events. Information regarding the Russian invasion will be used as a decision factor for investors in investing. The findings of this study are reinforced by previous research conducted by Darmayanti (2020) on Covid-19, which found that the value of PT Indosat Tbk's stock fluctuated significantly both before and after the

event. Due to investor pessimism, the stock price of PT. Indosat Tbk fell significantly after reports of an increase in the number of confirmed Covid-19 cases and the high mortality rate due to the virus.

The findings of this study are also in line with Endang (2022) who compared the JCI before and after the government reshuffle. This study proved that there were significant changes before and after the reshuffle. With the political event of cabinet replacement, it makes investors wait and watch, investors tend not to buy stocks which results in decreased demand and stock value.

### **Differences in Abnormal Return of Energy Industry Before and After the Russian Invasion Announcement**

Abnormal returns of the energy sector industry before and after the announcement of the Russian invasion were tested with a Paired Sample t-test using SPSS 28 software. The results of this study show a significant value of 0.678, which is greater than 0.05, so  $H_2$  is rejected. Thus, the abnormal return of the energy sector before and after the announcement of the Russian invasion of Ukraine is not significantly different. The change was more pronounced after the Russian invasion was announced, but the effect was still small.

This tells us that the response of the Indonesian capital market to the Russian invasion was not that big. In addition, the cause of the absence of differences in abnormal returns before and after the Russian invasion is that considering the issue of conflict between Russia and Ukraine occurred a long time ago, investors were ready and anticipated this. The signals from this invasion have been responded to by market participants for a long time so that when this invasion occurred the market had adapted or was efficient (Kevin, 2022).

The findings of this study are in line with the efficient market concept stated by Fama (1970), that the effectiveness of the market for this information, as shown by investor actions, causes the market to form a new equilibrium price. The insignificant effect on the abnormal return of the energy industry from this invasion event causes investors to not have the opportunity to get unusually high returns, so the attitude taken by investors is not excessive during the observation period. Investors are expected to be more careful in making decisions due to the invasion, even though this effect is temporary (Elga, 2022).

A similar study by Kevin (2022), which looked at the impact of the Russian invasion on abnormal returns for mining companies, supports this research. The results of this study found no significant difference in abnormal returns both before and after the event. Investors in mining companies did not respond much to the news because the market reaction to the invasion event was not large or the information was not strong enough.

This study is consistent not only with Kevin (2022) but also with Hadi (2020), who studied the impact of the China-America trade war on the abnormal return of Islamic stocks on the IDX. This study showed that there was no visible change in abnormal returns significantly both before and after its occurrence. This phenomenon occurs because investors do not really think about the trade war when making decisions, so it does not really affect the choices of domestic investors.

## **Conclusion**

Information on stock price data from 66 companies listed on the Indonesia Stock Exchange and operating in the energy sector. It was found that there is a significant difference in stock prices between 30 days before and 30 days after the announcement. Based on the calculation and testing of abnormal returns analysis of 66 energy companies, there is no significant difference between 30 days before and 30 days after the announcement of the Russian invasion.

The author offers some advice to investors in the hope that investors will be more observant in processing and responding to news about the capital market that has not all been verified as accurate. As a result, stock market participants are advised to use more discretion and caution when gathering information to avoid undue influence from potentially adverse factors. To prevent investors from reacting irrationally or panicking to events that could negatively impact the economy, capital market regulators are tasked with planning and preparing capital market maneuvers, particularly in the purchase and sale of securities. For future researchers, it is expect to use other variables such as trading volume activity and change the population to food companies because the invasion effect is felt not only in the form of an increase in energy commodity costs but also in the form of an increase in food commodity prices.

The researchers agree that the study was conducted as well as it could be, but they also note that the study has some weaknesses, including the fact that the market reaction to an event is only determined by two variables (stock price and abnormal return). The study indicators only used daily closing prices and the Jakarta Composite Index (JCI). Also, only 61 days of data were collected for this investigation.

This research has implications, including the need to increase awareness of an event among capital market players. Because these events can either directly or indirectly affect stock prices. An increasing stock market index, as shown by this study, bodes well for the future of the Indonesian economy.

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