Geopolitical Risk and Investor Reaction in Indonesia: Evidence from Russia-Ukraine's Conflict

Wiku Suryomurti

Institut Agama Islam Tazkia
Corresponding author(s). E-mail(s): wiku.suryomurti@tazkia.ac.id

Abstract

Purpose - This study investigates the impact of Russia-Ukraine's conflict on stock market performance in emerging countries, specifically the stock market in Indonesia

Methodology - We use event study to examine the market reaction towards the conflict and the military action of Russia.

Finding/Results - The market react negatively after the military action by Russia on 24 February 2022.

Conclusion - Overall, the result suggest that the Indonesia stock market respond immediately to the political conflict between Russia and Ukraine. Furthermore, the scale of the reaction varies across different stocks and industries.

Implications - The policy makers need to implement strategic action to mitigate the political risk of the on-going conflict

Contributions - This study is one of the first study to do in-depth investigation of potential impact of Russia-Ukraine conflict on Indonesia Stock market

Keywords: Stock Return, Capital market, Russia-Ukraine, Geopolitical Risk, War

Introduction

Major events such as geopolitical-related event may significantly affect stock market returns (Smales, 2021; Yang et al., 2021). The growing tension between Russia and Ukraine followed by the military action shocked the world, including the capital market. Similar with the case of market turmoil following recent Flu Pandemic in 2020, market has seen its sensitivity to global geopolitics event. Global consultants such as KPMG, McKinsey, and Accenture had warned about the potential impact of the ongoing conflict on the global businesses (Brueckner et al., 2015; Stefano Moritsch, 2022). Supply chain disruption, food supply disturbance, and the energy crisis look inevitable.

This study examines the effect of the conflict between Russia and Ukraine on stock market performance, specifically the effect of the war on the Indonesia stock market. We

investigate the market reaction using event studies on Jakarta Islamic Index and LQ45 index.

We document a negative respond by market participant the day after the military operations by Russia on 24th of February 2022. The multivariate regression shows that ROA has positive impact and statistically significant on stock performance during the event, based on several windows of measurement. By contrast, Market-to-Book ratio and Leverage have negative effect on the stock return and economically significant. These results can be seen on both stock index in our sample suggesting that both Islamic investor and Conventional investors reacted in a similar fashion. Furthermore, the undistinguished result may also because stocks on both indexes are mostly alike, except that the JII do not include conventional banks and tobacco companies on its constituent.

This study contributes to a few literatures on event studies that examine the impact of conflict between Russia and Ukraine on the financial markets.

The remainder of this study is structured as follows. Section 2 discusses the literature review. Section 3 presents the data and methodology. Section 4 analyzes and discusses the result. Section 5 concludes.

Literature Review

On 21 February 2022, Russia announced that they recognized the Donetsk People's Republic and the Luhansk People's Republic, as independent countries, separated from Ukraine. On 22 February 2022, Russia authorized the use of military force to enter both territories. Finally, the invasion to Ukraine began on 24 February 2022.

The followings are the main event related to Russia-Ukraine conflict.

1. Feb. 17, 2022   : Tension Escalation in Donbass region
2. Feb. 18, 2022   : Donetsk and Luhansk people's republics ordered all civilians to leave their capitals
3. Feb. 19, 2022   : Donetsk and Luhansk republics declared full mobilization
4. Feb. 20, 2022   :
5. Feb. 21-23, 2022   : Russia Recognizes Breakaway Ukrainian Regions as Sovereign
6. Feb. 24, 2022   : Russia invaded Ukraine

Previous studies have documented numerous reports related to geopolitical risk and stock market performance. However, for the recent conflict between Russia and Ukraine, it can be considered only few studies.

Boungou & Yatié (2022) document a significant negative effect of the Ukraine– Russia war on global stock indices. They argue that the results are important because the ongoing conflict so will impact on investors and portfolio managers investment strategies.

Umar et al. (2022) investigate the impact of geopolitical risk (GPR) generated by the Russian-Ukrainian conflict on European and Russian bonds, stocks, and global commodity markets. They report that asset prices are in a mix of negative and positive relationship with GPR index. In addition, they argue that the military action caused an uncertainty situation on global economy and urged that two country should start negotiation to solve the conflict.

Yang et al. (2021) employ GARCH-MIDAS model and the model confidence set (MCS) to investigate the mechanism of GPR's impact on the China stock market. They document that the global and most of the regional GPR have a significant impact on China's stock market and in other emerging countries, except for Mexico, Argentina, Russia, India, South Africa, Thailand, Israel, and Ukraine.

Yousaf et al. (2022) examine the impact of the breakout of Ukraine-Russia conflict on the G20 countries and other selected stock markets. They found that the announcement of the 'special military operation' (event day) has significant and negative impact on the majority of the markets, including Russia itself.

Tosun & Eshraghi (2022) investigate the market reaction to announcements of companies who decided to keep operating in Russia during the invasion. The find that firms that stay opening the business in Russia were outperformed by companies left the country and also by the market benchmark. They suggest that Investors impose a significant market penalty on those companies.

Sample and Data Description
Data

This study covers the two blue chip indexes in Indonesia stock market. The first one is Jakarta Islamic index which categorized as Islamic stock index. The second one is LQ45 index which categorized as conventional blue chip stock index. We collected data of stock prices and firms' characteristics from Yahoo Finance and Reuters website.

Table 1 Sample of Index

Name	Stock Index	No. of Constituent
JII	Indonesia	30
LQ45	Indonesia	45

We start the event window from the date of first issue of the conflict between the two countries until two weeks after the first strike by Russia. In the market efficiency theory, price reflect all available information (Lo, 2007; Merton, 1987). Therefore, to understand the price movement during the event, we present the volatility of stock price.

Figure 2 shows the volatility of stock prices for JII and LQ45 before and after the military action by Russia.
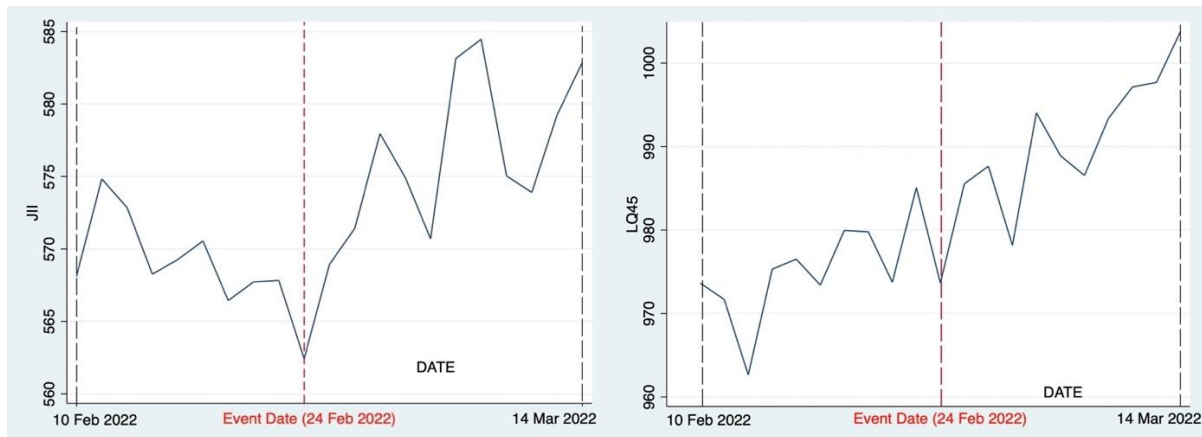

Figure 3. Volatility Around the Event Date for JII and LQ45

The left side is the graph of price volatility surrounding the event date for stocks belongs to JII. Whereas the right side depict the graph of LQ45 index.

We can witness that the stock price drop on the day Russia assaulted Ukraine on 24 February 2022. However, market then corrected the reaction and the price return to its previous value. After that, market operated as usual as seen on the normal fluctuation up to ten days after the invasion.

Other Variables

To investigate the determinant of stock return during the period, we employ several firm characteristic tests. Based on a thorough review of prior research, we hypothesize that several firm-specific factors, such as ROA, ROE, Company Size, Market-to-Book ratio, and Leverage may influence firm performances during the event windows. The followings are the explanations of each firm variable we investigated.

1- **ROA** or Return on Asset is defined as total return divided by the total amount of Assets. Return on Assets shows the firm's ability to generate profits from its total assets. The higher the ROA value, the better the company's performance.

2- **ROE** or Return on Equity is defined as total return divided by the total amount of equity. This financial parameter shows a corporation's profitability and how efficiently it generates those profits.

3- **Sales** is the total revenue by the end of the fiscal year.

4- **M/B** is the market value divided by the book value of a company. This variable represents whether the firm is undervalued or overvalued on its intrinsic value. An M/B ratio is useful for investor when they seek for investment which has potential to grow.

5- **Firm size** is the log of total asset by the end of the fiscal year. Depend on the nature of its effect, Firm size can be both positively and negatively affect the stock return.

6- **Leverage** measured as the ratio of Debt to Equity. The debt to equity ratio measures the Long Term Debt + Current Portion of Long Term Debt divided by Total Shareholders' Equity. This metric is useful when analyzing the health of a company.

Methodology

There are several models to calculate the abnormal return. In this study, the abnormal Return is calculated using Market model following (Brown & Warner, 1980, 1985) as follows

$$AR_{i,t} = R_{i,t} - Rm_{i,t} \tag{1}$$

Where $AR_{i,t}$ is Abnormal Return of stock i at day t, $R_{i,t}$ is the stock return, $Rm_{i,t}$ is the benchmark index which is IHSG (Jakarta Composite Index).

Next, we calculate the Average Abnormal Return as follows

$$AAR_{i,t} = \frac{1}{N}\sum_{i=1}^{N} AR_{i,t} \tag{2}$$

Where N is the number of stocks in the sample

Finally, we calculate Cumulative Average Abnormal Return as follow

$$CAAR_{i,t} = \sum_{t1}^{t2} AAR_{i,t} \tag{3}$$

Result and Discussion

Descriptive Statistics

Table 2 shows the descriptive statistic of the sample in this study. Panel A on Table 2 presents the descriptive variables from Jakarta Islamic Index. Whereas Panel B shows the descriptive statistics for LQ45.

Table 2 Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
Panel A. JII							
(1) ROA	30	8.399	9.063	-6.8	41.01	1.739	7.034
(2) ROE	30	21.478	27.323	0.69	143.18	3.228	14.451
(3) SALES	30	9.313	1.854	5.979	11.156	-0.943	2.077
(4) M/B	30	3.294	6.769	0.54	38.27	4.823	25.438
(5) SIZE	30	9.584	1.819	6.222	11.441	-0.942	2.116
(6) LEVERAGE	30	50.992	54.62	0	196.03	1.195	3.608
Panel B. LQ45							
(1) ROA	45	7.736	7.964	-6.8	41.01	-6.8	41.01
(2) ROE	45	20.387	23.013	-9.52	143.18	-9.52	143.18
(3) SALES	45	9.435	1.927	5.527	11.368	5.527	11.368

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(4) M/B	45	3.351	5.707	0.54	38.27	0.54	38.27
(5) SIZE	45	9.81	1.947	5.942	12.237	5.942	12.237
(6) LEVERAGE	45	66.126	77.073	0	309.52	0	309.52

Correlation Matrix

Table 3 presents the correlation matrix of the variables in the sample. We employ the pairwise correlation to measure of the strength of association between two related variables. The left side shows the correlation of variable for stocks in Jakarta Islamic Index. While the right side shows the correlation of variables for stocks in LQ45 index.

Table 3. Correlation Matrix

Variables	JII						LQ45					
	-1	-2	-3	-4	-5	-6	-1	-2	-3	-4	-5	-6
(1) ROA	1						1					
(2) ROE	0.621	1					0.63	1				
(3) SALES	-0.1	0.02	1				-0.2	-0	1			
(4) M/B	0.355	0.82	0.13	1			0.32	0.78	0.08	1		
(5) SIZE	-0.21	-0	0.98	0.07	1		-0.3	-0.1	0.97	0.01	1	
(6) LEV.	-0.38	-0.4	0.08	-0.2	0.1	1	-0.4	-0.3	-0	-0.1	0.08	1

Empirical Result

In this section, we present our empirical result and analysis. We examine how the stock market in Indonesia, in particular the Jakarta Islamic Index and LQ45 index respond to the Russia - Ukraine conflict. We first calculate Abnormal Return and Cumulative Abnormal Return Before and After the day Russia launched a strike at Ukraine on 24 February 2022.

Figure 4 depicts the Average abnormal return and Cumulative Average Abnormal Return ten days before and after the event date, which was 24 February 2022, represented by 0 on the X axis. It clearly shows that the Average Abnormal Return was negative from Day 0 to Day 1 on both JII and LQ45. A similar pattern was also obtained for the CAAR during the period.

We then calculate the CAAR before and after the event date. The aim is to investigate whether there was an immediate respond by the investors in the build up period when the issues of the conflicts started.

Figure 4 presents the CAAR for JII and LQ45 before and after the event. We also test the differences to distinguish the responds of market between the two indexes.

Table 4 shows the Cumulative Abnormal Return during two events of conflict between Russia and Ukraine. The significancy test is obtained using Welch unequal variance t-statistic test. The value of T-stat is shown on parentheses.
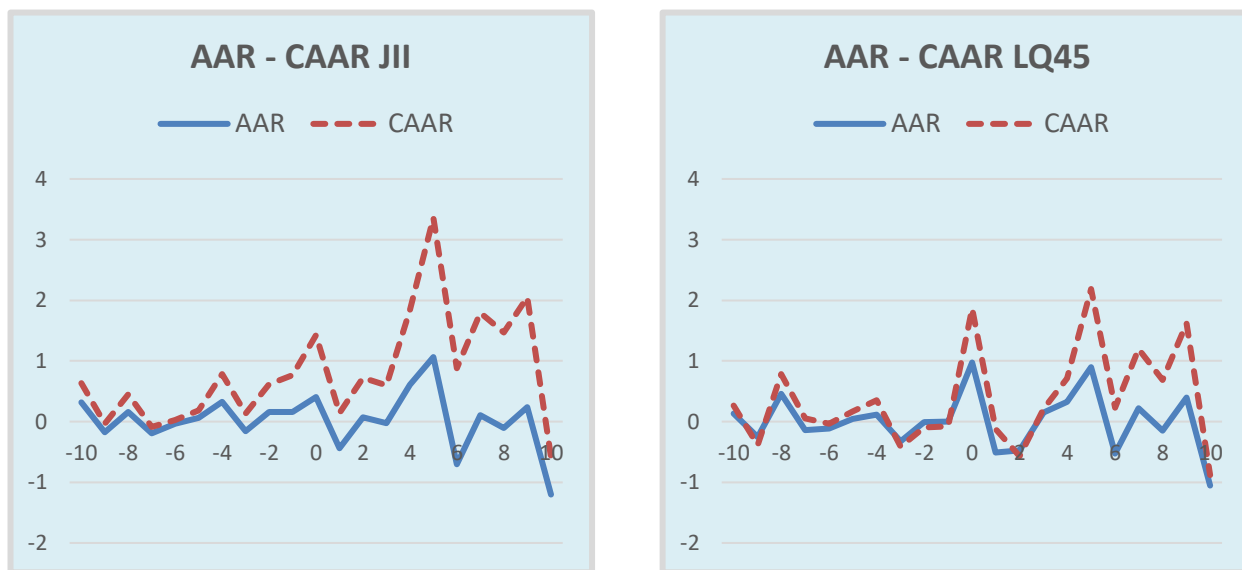
Figure 4. AAR and CAAR (in term of Percentage) around the Event Date

Table 4. CAAR (Cumulative Average Abnormal Return)

Pre-Military Action	JII	LQ45	Diff.	Post- Military Action	JII	LQ45	Diff.
CAR (-4, 0)	0.888	0.765	0.122 -0.066	CAR (0, 1)	-0.03	0.468 -0.786	-0.497 (-0.488)
CAR (-3, 0)	0.561	0.651	-0.089 (-0.057)	CAR (0, 2)	0.044	-0.009	0.054 -0.045
CAR (-2, 0)	0.723	0.974	-0.251 (-0.176)	CAR (0, 3)	0.018	0.142	-0.124 (-0.085)
CAR (-1, 0)	0.562	0.978	-0.416 (-0.323)	CAR (0, 4)	0.625	0.472	0.152 -0.067

*, **, *** denotes the significancy at 0.1, 0.05 and 0.01 level respectively

From the table 4, we can see that there is no significant difference of market respond between JII and LQ45 during the period before the day of military action by Russia. Similarly, after the invasion, there is no significant difference as well between JII and LQ45. This suggests that investor on both stock react in a similar way before and after the event. This probably also because the constituents of the two indexes are mostly similar.

In this section, we perform the univariate analysis of cumulative abnormal return. Specifically, we choose the cumulative period of seven days (-3,3), five days (-2,2), three days (-1,1) and two days (0,1) respectively. We investigate the CAAR based on industry type to investigate the respond of each industry on the event in both indexes in our sample.

Table 5 shows the univariate analysis of the sample.

Panel A in Table 5 shows the univariate result of JII, whereas Panel B presents the results of LQ45. The materials industry which includes companies in energy sector enjoy a

positive effect of the conflict between Russia and Ukraine. The possible reason is that the increasing tension followed by military action disrupt the supply of energy product which subsequently increase the price. Thus, investors expect that the demand of energy such as oil and coal will jump. As a result, the revenue of firms in this sector will positively affected.

By contrast, the firms in consumer goods sector react negatively to the ongoing conflicts. the potential reason is that Ukraine is one of major producer for wheat grain[1]. Hence company like ICBP and INDF whose products made from wheat flour will be impacted by the shortage of supply of wheat.

Following, for example, Al-Awadhi et al. (2020), we estimate the regression model as follows:

$$CAAR_{i,t} = \alpha_i + \beta_1 ROA_{i,t} + \beta_2 ROE_{i,t} + \beta_3 SALES_{i,t} + \beta_4 M/B_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 LEV_{i,t} + \epsilon \quad (4)$$

where $CAAR_{i,t}$ is the return of stock i at day t_1 to t_2. ROA is return on Asset, ROE is Return on Equity, SALES is Log of Total revenue at the end of fiscal year 2021, M/B is Market to Book ratio, SIZE is the Log of Total Asset, and LEV is Leverage defined as Debt-to-Equity Ratio.

The result is presented on Table 6.

This table shows the regression estimates of
$$CAAR_{i,t} = \alpha_i + \beta_1 ROA_{i,t} + \beta_2 ROE_{i,t} + \beta_3 SALES_{i,t} + \beta_4 M/B_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 LEV_{i,t} + \epsilon$$

where $CAAR_{i,t}$ is the cumulative abnormal return of stock i at day t to day t1.

For JII, ROA is positive in every period and highly significant at 0.01 level, especially for five-days CAR and two-day CAR.

Conversely, the market to book ratio negatively affected the return during the period. For example, it was highly significant at -0.619 during (-2,2) windows, economically significant at -0.43 during (-1,1) windows, and marginally significant at -0.261 during (0,1) windows. This is consistent with Sarwendhi & Samekto (2014) who argue that Market-to-book has been known in general to have negative impact on stock returns. Similarly, the Leverage, represented by debt to equity shows a negative influence on stock return in all windows tested in the sample.

For LQ45 index, a similar result can be found in most variables examined in the sample. The ROA is positive in every window and highly significant at 0.01 level for three-days window (-1,1) and two-days windows (0,1) amounting 0.326, 0.398 and 0.358 respectively. Interestingly, the M/B ratio also shows a negative relationship with the stock return and

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[1] https://www.world-grain.com/articles/16997-ukraine-grain-exports-reach-472-million-tonnes-so-far-for-2021-22 (accessed on 1 September 2022)

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mostly significant in the sample. This suggests that the higher the value of M/B, investor think that it was overvalued and negatively affect the stock return in the coming days. This is in line with for instance, Al-Awadhi et al. (2020), Boungou & Yatié (2022), and Yang et al. (2021).

Table 5. Univariate Analysis

The value of T-statistic are shown on parentheses.

	-1	-2	-3	-4	-5	-6	-7	-8	-9
	Materials	Finance	Chemical Industry	IT	Trade, Serv, Invest	Infra	Consumer Goods	Property & Transport	Misc.
Panel A. JII									
CAR (-3, 3)	12.235***	4.672	-4.102***	-9.176	2.029	-2.247	-3.43	-10.305	-
	-6.361	-	(-3.529)	-	-0.524	(-1.063)	(-2.195)	(-5.144)	
CAR (-2, 2)	9.580***	1.986	-2.330*	-1.378	0.216	0.149	-2.702**	-9.68	-
	-4.408	-	(-2.076)	-	-0.088	-0.226	(-3.196)	(-5.336)	
CAR (-1, 1)	7.809***	-3.921	-1.892	-3.869	0.071	0.748	-1.732	-7.922	-
	-4.827	-	(-1.248)	-	-0.043	-1.042	(-1.445)	(-5.471)	
CAR (0, 1)	6.796***	-3.368	-1.893	-5.844	-0.734	0.973	-1.922*	-4.435	-
	-4.712	-	(-1.812)	-	-	-0.989	(-2.558)	(-2.458)	
Panel B. LQ45									
CAR (-3, 3)	10.912***	-0.398	-4.102***	-9.176	-0.521	-1.841	-2.902*	-10.412**	-0.993
	-6.206	(-0.325)	(-3.529)	-	(-0.141)	(-1.329)	(-2.279)	(-8.965)	-
CAR (-2, 2)	7.927***	-0.213	-2.330*	-1.378	-1.053	-0.296	-2.617***	-9.639**	1.95
	-4.382	(-0.197)	(-2.076)	-	(-0.460)	(-0.418)	(-4.056)	(-9.196)	-
CAR (-1, 1)	6.805***	1.03	-1.892	-3.869	-1.062	1.015	-1.49	-6.839**	3.576
	-5.434	-1.318	(-1.248)	-	(-0.659)	-1.707	(-1.739)	(-4.998)	-
CAR (0, 1)	6.065***	0.662	-1.893	-5.844	-1.147	1.042	-1.153	-3.668	3.082
	-5.323	-1.238	(-1.812)		(-0.908)	-1.79	(-1.593)	(-2.837)	

*, **, *** denotes the significancy at 0.1, 0.05 and 0.01 level respectively

Table 6. Multivariate Regression

	JII				LQ45			
	-1	-2	-3	-4	-1	-2	-3	-4
	CAR (-3,3)	CAR (-2,2)	CAR (-1,1)	CAR (0,1)	CAR (-3,3)	CAR (-2,2)	CAR (-1,1)	CAR (0,1)
ROA	0.467*	0.351***	0.335**	0.342***	0.476*	0.326**	0.398***	0.358***
	-0.209	-0.093	-0.101	-0.082	-0.227	-0.103	-0.097	-0.1
ROE	0.066	0.102*	0.05	0.006	0.12	0.120**	0.031	0.005
	-0.109	-0.048	-0.051	-0.038	-0.1	-0.046	-0.048	-0.042
SALES	-0.386	-2.174	-0.529	-0.661	-1.924	-2.247	-3.659***	-2.338**
	-3.152	-2.23	-1.912	-1.667	-1.982	-1.455	-0.903	-0.872
M/B	-0.596*	-0.619***	-0.43**	-0.261*	-0.679**	-0.628***	-0.339**	-0.236*
	-0.287	-0.136	-0.163	-0.128	-0.246	-0.121	-0.133	-0.116
SIZE	-0.01	1.557	-0.235	0.167	1.158	1.574	3.127**	1.994
	-3.317	-2.318	-2.121	-1.902	-2.268	-1.562	-1.04	-1.125
LEVERAGE	-0.051**	-0.026	-0.016	-0.007	-0.004	-0.007	-0.008	-0.001
	-0.018	-0.02	-0.016	-0.011	-0.015	-0.014	-0.009	-0.006
Const	3.065	3.897	5.668	2.745	3.004	3.349	2.276	0.929
	-5.477	-4.997	-4.317	-5.637	-6.961	-4.115	-3.245	-4.569
Observations	30	30	30	30	45	45	45	45
R-squared	0.598	0.646	0.642	0.564	0.511	0.585	0.592	0.506

The Robust Standard errors are in parentheses clustered by

*** p<0.01, ** p<0.05, * p<0.1*

To summarize, we found that both JII and LQ45 produced a similar result in term of market reaction and firm characteristics that influence the stock return during the event.

Conclusion

This study aims to investigate the market reaction to the geopolitical event. We find that the ongoing conflict between Russia and Ukraine negatively affect the stock market, particularly in Indonesia. The use of military action, deepening the casualty of people also adding concerns to investors. However, our results show that the impact was felt only after the strikes on 24 February 2022, suggesting a temporary reaction. Firstly, this is probably because the location of conflict is so far away from Indonesia. Secondly, investors probably assume that the conflict will not impact the general macroeconomics condition in Indonesia, partially because of low national trading transaction with those two countries. Hence it did not cause fears among the local investors in the short term. Future research may attempt to compare the market reaction with other countries in broader region.

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