THE IMPACT OF THE RUSSIA-UKRAINE CONFLICT ON STOCK MARKET PERFORMANCE: EVENT STUDY ANALYSIS

Rakesh Kumar Verma[1*],
Rohit Bansal[1],
Nikola Stakić[2],
Dharmendra Singh[3]

[1]Rajiv Gandhi Institute of
 Petroleum Technology,
 Uttar Pradesh, India

[2]Singidunum University,
 Belgrade, Serbia

[3]Modern College of Business
 and Science,
 Muscat, Sultanate of Oman

Abstract:

The objective of this paper is to analyze short-term volatility and the Indian stock market's reaction following the start of the Russia-Ukraine military conflict. In order to assess instantaneous market reaction, the event study method was used for the National Stock Exchange of India (NSE), with a specific emphasis on three dominant sectors – Information Technology (IT), Banking and Energy. Stock market performance one week before and after the event day was taken into consideration for comparison purposes and calculation of cumulative abnormal return rates. Furthermore, two event study methods have been applied: the mean-adjusted return model (MAR) and the market-adjusted return model (MKAR). According to expectations, analysis has shown negative reaction for all sectors on the event day; however there was a positive market recovery in the post-event period for two out of three sectors, exhibiting predominant behavioural overreaction and heightened volatility.

Keywords:

stock market, event study, volatility, India.

1. INTRODUCTION

The stock market is one of the major pillars of any country's financial and economic wellbeing, with its amplified significance for develeped economies. As such, it serves at the same time, as a catalyst and the reflection of economic conditions in a country. In the long run, it tends to move in the upward direction. However, in the short run, it faces many downtrends due to some major financial, economic and geo-political events. Some examples are Dot Com Bubble, the Asian financial crisis, the 2008 financial crisis (Wright, 2014), and the stock market collapse in 2020 as a result of COVID-19. On 24th February, the Russian government announced that it would start a special military operation against Ukraine (Alzazeera, 2022), although many countries treat it as a war over Ukraine. Since the start of military conflict, stock markets of many countries have started reacting negatively due to overall macroeconomic uncertainties and rising systematic risks. The stock market indices of Japan and South Korea fell by 2 percent, markets in Sydney as well Hong Kong fell by 3 percent, while in the case of the Indian market, both indices (Sensex and Nifty) fell by 3 percent (Tyagi, 2022) after the declaration of the military operation by the Russian government.

The conflict between Russia and Ukraine is leading to many negative repercussions in the coming future, such as food shortage, inflation, energy insecurity, oil price turbulences and much more. Those systematic negative events, along with strong dollar appreciation, have even more deteriorating implications for developing countries. India, as one of the leading developing economies, is no exception whatsoever. Thus, this study's objective is to determine this conflict's impact on

Correspondence:
Rakesh Kumar Verma

e-mail:
pm1801@rgipt.ac.in

the India's stock market performance. For the study, three NSE sectoral indices - IT, Banking and Energy have been chosen. The impact on these sectors has been examined using the event study methodology. The techniques of mean and market-adjusted return models have been used. The results indicated that all sectors exert a negative effect on the day when the announcement was made. However, these sectors gained their positions after the event day, except for the banking sector, which remained in a negative position.

2. LITERATURE REVIEW

The prominent statistical technique for assessing the short-run impact effects of any investigation is the event study method. Many academicians and researchers have applied this method in their studies. Zerbib (2019) found out that conventional bonds have a higher yield than green bonds, which demotivates investors toward green investment. Barua & Chiesa (2019) applied this method to find out the variables which affect the issue size of green bonds. This approach has recently been used in numerous studies to determine COVID-19's impact on the finance industry. The reaction of banking sectors has been analyzed using this method for eight countries by Rizwan et al. (2020). They found that for all the samples taken, the systematic risk was increased. Baek et al. (2020) examined the US stock market volatility and found out that whether it was positive or negative news, volatility was sensitive for both news. According to Zhang et al. (2020), who looked into how COVID-19 affected the risk on the world's financial markets, explained that the risk had increased as a result of this occurrence. (Boubaker et al., 2022; Sun et al., 2022) examined that the Russia-Ukraine war affected the global stock market as per their involvement with these countries. There was a huge negative impact on CAR for countries with close boundaries with EU countries. (Ahmed et al., 2022) analysed that the crisis of the Russia-Ukraine war led to a negative stock return for European stocks even after the event period.

3. RESEARCH OBJECTIVE

The following describes the paper's research objective:

i) The primary goal of the study is to determine how the conflict between Russia and Ukraine has affected the performance of the NSE Energy, Banking and Information Technology sectors.

ii) This paper aims to determine the possible cause and factors affecting these sectors during this period.

4. DATA AND METHODOLOGY

Data from secondary sources have been used as the basis for the analysis. The NSE website has been used to get the index values. The event study date has been confirmed using authenticated newspaper and the same has been verified from some other channels. The three sectors of NSE are Information Technology (IT), Banking and Energy.

The data is analysed using the event study method. This approach is based on the premise of a semi-strong form of market efficiency. This method makes a comparison of the performance before and after the event. It includes an event study timeline comprised of an estimation and observation period. The event day is considered as Day 0 which can be any declaration date of the event, such as the announcement of the demonetization of currency.

The 15-day event window has been taken, which includes 7 days before and after the event day. With the help of day 0 as the base, abnormal returns have been calculated. Two event study methods have been applied: the mean-adjusted return (MAR) model and the market-adjusted return (MKAR) model. Index average return has been calculated based on the daily closing index point for the duration of 216 days prior to the observation period. The calculation of the mean return is based on logarithmic return.

Abnormal returns were calculated for -7 days to +7 days from the announcement date of the special military operation. For the index i, abnormal return has been calculated by the below equation for the duration of period t:

$$AR_{it} = R_{it} - ER_{it} \qquad (1)$$

AR_{it} represents abnormal return while R_{it} and ER_{it} represents the actual logarithmic return and expected logarithmic return of a particular sector.

Using the following equation, the daily return of all indices has been calculated:

$$R_{it} = \ln(P_{it}/P_{it-1}) \qquad (2)$$

P_{it} and P_{it-1} represent the daily index value of Nifty 50 and sectoral indices taking time t and t-1. Nifty 50 has been taken here as a proxy to represent the overall market return with respect to sectoral return.

Equation 1 has been used to calculate the mean adjusted abnormal return. The figure of abnormal return is arrived at by the difference between actual return (R_{it}) and expected return (ER_{it}). The expected return has been calculated by averaging the logarithmic return of 216 days before the observation period.

The sectors' performance was measured by comparing the cumulative abnormal return (CAR) values calculated using Equation (3).

$$CAR = \sum_{t=1}^{N} ARit \qquad (3)$$

5. RESULTS AND DISCUSSIONS

Figures 1, 2 and 3 show the abnormal return calculated using the mean and market-adjusted returns model. In Figure 4, the return of the sectoral indices has been shown which indicates the movement of all sectoral indices from days -7 to days +7, before and after the event. The pattern of movement showed the steep fall on the event day. Then steep upwards movement can also be observed in figure 4 the next day after the event. Again, the fall and fluctuation of index value can be seen, which might be the result of the prevailing negative sentiment of the market.

Figure 1. Abnormal return of IT sector
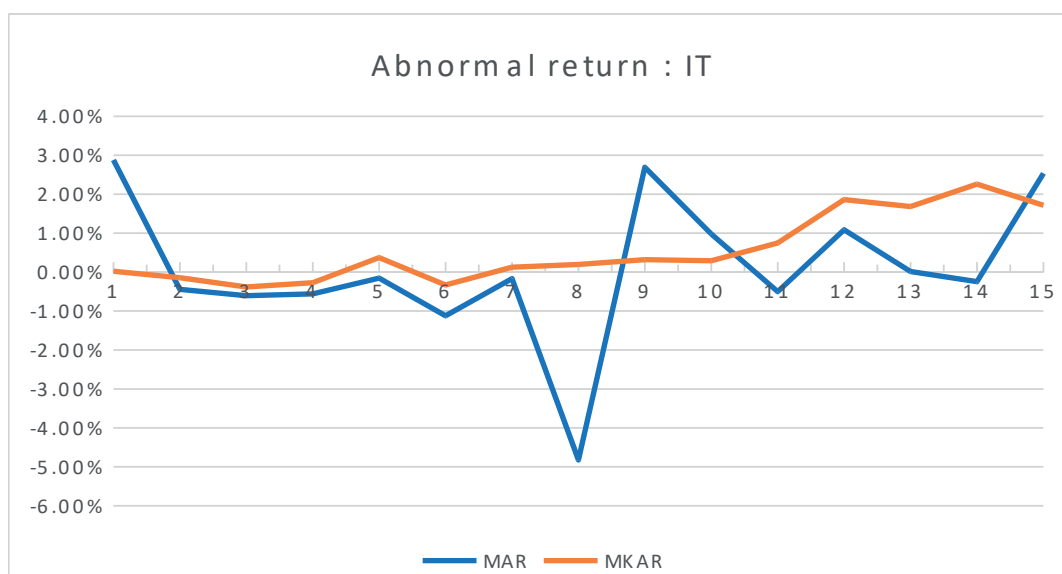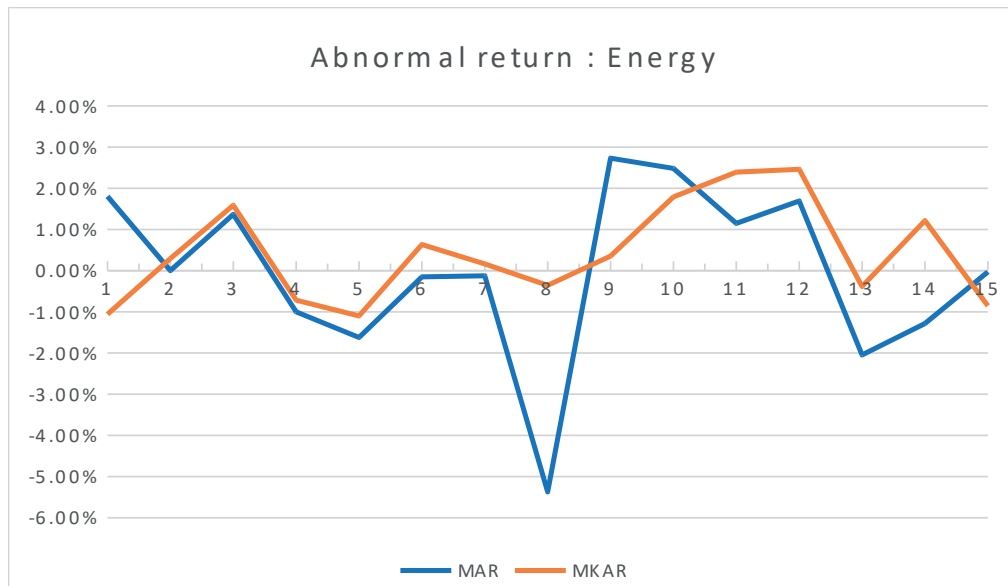

Source: Author's calculation

Figure 2. Abnormal return of Banking sector
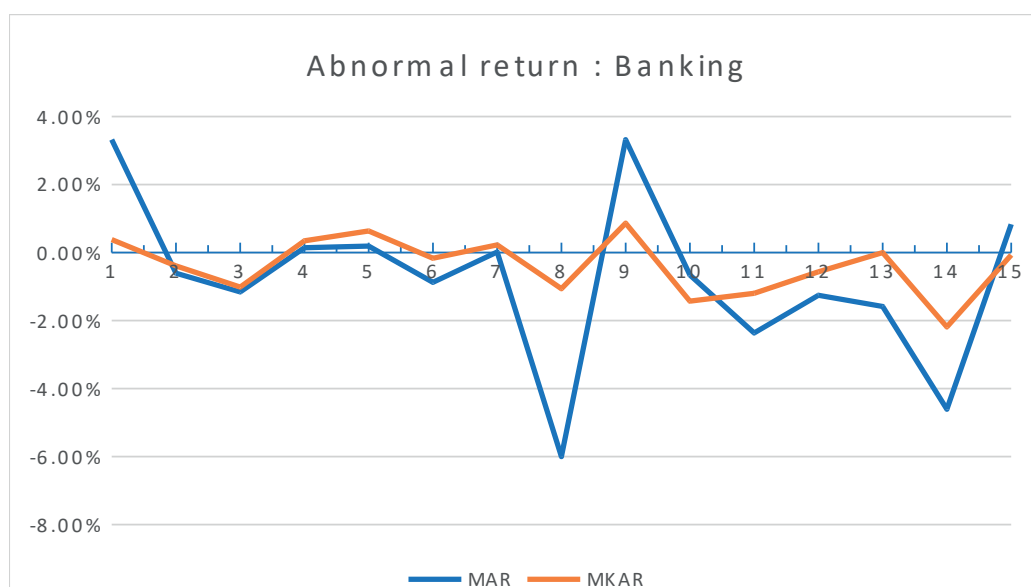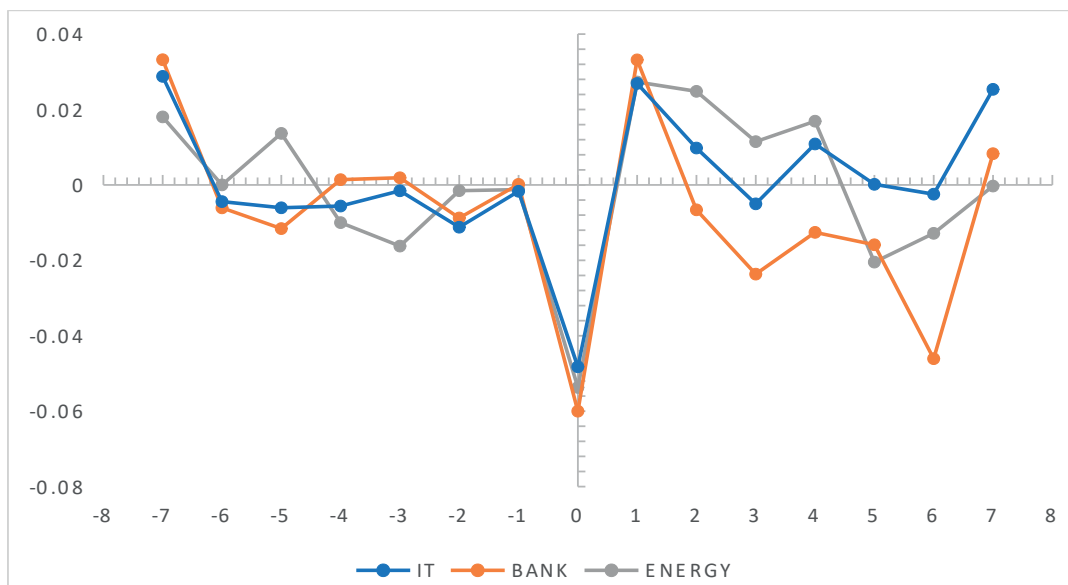

Source: Author's calculation

Figure 3. Abnormal return of Energy sector

Source: Author's calculation

Figure 4. Sectoral return of NSE

Source: Author's calculation

Table 1 represents cumulative abnormal returns (CAR) for the energy, banking, and IT sectors before and after the event, i.e., the day on which Russia declared a special military operation against Ukraine. CAR was calculated for the 7 days prior and the 7 days subsequent to the event. It was clearly indicated that, on the event day, the market has negatively reacted in the case of all the sectors where event day is represented by 0 (zero). This has been confirmed by both methods, i.e., mean-adjusted return as well as market-adjusted return model. When CAR is compared after the event period against before the event, except for the Banking sector, Energy and IT

sectors have gained their position as CAR was found to be positive. Thus, the output of the analysis and figure 4 confirms that the declaration of the military operation has had a negative effect on these sectors. Comparing these sectors' performance, recovery in one-week period was highest in the IT sector after the event and also this was the sector that negatively reacted more than the other sectors one week before the event.

Table 1. Cumulative abnormal return

NSE's Sectors	MAR			MKAR		
	{-1, -7}	0	{+1, +7}	{-1, -7}	0	{+1, +7}
IT	-0.18%	-4.82%	6.56%	-0.61%	0.20%	8.88%
ENERGY	0.27%	-5.37%	4.69%	-0.20%	-0.36%	6.97%
BANKING	1.02%	-6.00%	-6.34%	0.00%	-1.07%	-4.60%

Source: Author's calculation

6. CONCLUSION

The analysis investigated that the declaration of special military operation has exerted impact only on the event day. Sectoral stock indices plunged on the event day. This might be due to the panic created by the situation in the mind of investors and uncertainty regarding the future market. After the event day, too much fluctuation was seen because of negative market sentiment and new information related to many sanctions imposed on the Russian government by the USA and other countries. But the overall market movement seems to be positive with market recovery except for banking which could not gain the position day after the event day and kept its position negative. The constraint on the oil supply has raised the prices of crude oil very high. This might have been giving a positive signal for the investors in this sector and helping the faster recovery of the energy sector. SWIFT ban might be the reason for the low performance of the Banking sector due to the inability of transactions with Russian counterparts.

This study will help investors and the public about the stock market reaction due to this event. This may provide a reference for investment decision-making to the investors. However, certain limitations can be analyzed in future research. We have taken stock market sectors as a proxy for various sectors of the economy; future studies can take agriculture, industry, and service sectors of GDP for better representation of various sectors of the economy, which may give a broader understanding of the effect. This study has only examined the three sectors of the National Stock Exchange of India. Therefore, further study can be extended to other sectors. The event window taken for the study is very short, with only one combination. The researcher might be interested in a longer event study window and using other statistical tools in the event study umbrella, such as the risk-adjusted return model.

7. LITERATURE

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