XXIX International Scientific Conference

Strategic Management
and Decision Support Systems
in Strategic Management

SM2024

Subotica (Serbia), 17-18 May, 2024

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EVENT-DRIVEN ANALYSIS OF THE EFFECTIVENESS OF EUROPEAN ECONOMIC SANCTIONS AGAINST RUSSIA (2022-2024)

Abstract: This paper examines the effectiveness of European economic sanctions against Russia from 2022 to 2023, with a focus on the impact of these measures on the Russian oil & gas sector. Prior to the implementation of large-scale sanctions, the European Union was Russia's principal trading partner. Against this backdrop, this study assesses the impact of European restrictions on Russia. Utilizing the event analysis method, renowned for its reliability in assessing the effects of anti-Iranian sanctions and previous sanctions against Russia during 2014-2021, this research analyzes data from the oil & gas sector of the Russian stock market on the Moscow Exchange. Despite significant attention to oil exports from the sanctions imposers, findings indicate a minimal impact on the oil and gas sector. The study aims to shed light on the economic ramifications of these recent sanctions and seeks to contribute to the broader discourse on the efficacy of economic sanctions as a tool of foreign policy.

Keywords: economic sanctions, stock market, event studies, Russia

1. INTRODUCTION

In the first half of 2022, economic sanctions of unprecedented scale and severity were imposed against Russia. Since these sanctions still have not achieved their declared objectives, the number of anti-Russian sanctions continues to rise. The existing sanctions have been intensified and extended, with the rare occurrence of sanctions against individuals being lifted. The diversity of sanctions, coupled with the persistence of anti-Russian economic policy despite the absence of clear results, inevitably sparks debate about the effectiveness of these sanctions (Egorov, 2023) and the chosen directions of restrictive measures.

It is essential to take into account that sanctions often fail to achieve their intended goals, yet they inflict economic harm on the target country (Hufbauer & Jung, 2021). Therefore, this paper aims to evaluate the effectiveness of sanctions, focusing on the expressive motives behind their imposition (Kaempfer & Lowenberg, 1988). Given the multitude of sanctions and the failure to attain their declared objectives, assessing their effectiveness through the economic damage they cause enables the identification of the most impactful sanctions, as well as the most susceptible targets of their influence.

Building upon prior research, it is argued that the case of Russia over the past two years has not only involved an unprecedented number of comprehensive sanctions but also a multitude of restrictions that have rendered traditional assessment methods impractical (see Chernykh, 2024, for more details). However, only a fraction of these numerous restrictions impacted the stock market (Press Service of the Central Bank of Russia, 2022), which still permits the use of various methods to assess the sanctions' impact on open trading data. One such method is the event study method, utilized in this paper. This approach enables the examination of how the imposition of large-scale, sectoral, or targeted sanctions affects the performance of listed Russian public companies.

2. METHOD OF RESEARCH

The Russian stock market, particularly the equity segment, experienced a significant shock in February-March 2022. The Moscow Exchange Index (IMOEX) fell by more than 1,500 points, losing about 40% of its capitalization since the beginning of February 2022 and reverting to its 2016 values. This decline may reflect investor sentiment on both realized and expected negative events related to the Russian economy. Given the multidimensional nature of significant events affecting Russian investors, it is important to distinguish between military and domestic political events and those specifically related to sanctions to understand the effectiveness of sanctions.

The event study methodcan provide tools for such a task. It is widely used in financial research to assess the impact of individual or sectoral shocks on stock prices. These shocks can include, for example, the publication of quarterly or annual reports by a company, changes in management staff, and technogenic accidents, among others. More recently, the event study method has also been applied to assess the impact of sanctions on public companies' stock prices, as seen in the cases of the Tehran Stock Exchange and anti-Iran sanctions (Ghasseminejad & Jahan-Parvar, 2021), the Moscow Stock Exchange and the 2014-2018 anti-Russian sanctions (Dovbnya, 2020), and the G7 sanctions on African companies (Obi et al., 2023).

In general terms, the event study method consists of considering the abnormal return of a stock during an event window. The abnormal stock return AR_t is calculated as the difference between the actual return r_t and the expected return $E(r_t)$ according to equation (1):

$$AR_t = r_t - E(r_t) \tag{1}$$

The expected return is calculated according to the CAPM model using equation (2):

$$E(r_t) = \beta_0 + r_{ft} + \beta_{m,t-1}(r_{mt} - r_{ft}) + \varepsilon \tag{2}$$

Where r_{ft} is the risk-free return, r_{mt} is the market return, $\beta_{m,t-1}$ is the market beta estimated in the previous period.

The cumulative abnormal return provides an indication of the accumulated anomaly during the event window and is calculated using equation (3):

$$CAR_{t+K} = \sum_{k=1}^{K} AR_{t+K} \tag{3}$$

The event window is a time interval equal to the same number of trading days before and after the analyzed event. The logic behind choosing the interval prior to the event for analysis is that before the announcement of sanctions, some group of insiders may potentially have information about the nature of future sanctions, which may be reflected in trading operations before the event.

Finally, the cumulative average abnormal return (CAAR) is the arithmetic mean of the CAR across all events for one particular sequential day of the event window of one particular security. Thus, the CAAR provides an opportunity to evaluate the firm-specific event study, i.e. to test whether there was a significant response to a typical event (typical sanctions) for a particular security.

The hypothesis of this paper is as follows: the imposition of significant sanctions against the Russian economy is expected to influence investors' decisions, leading to negative CAAR values for certain public companies. Identification of the company exhibiting the negative and maximum modulo CAAR value, according to the firm-specific event study, indicates its heightened susceptibility to such a typical event as the imposition or announcement of economic sanctions.

3. DATA

According to the statistics on Russia's foreign trade balance, in 2021, the European Union ranked first among Russia's trade partners, holding a share of more than 35% (Rosstat, 2022). Therefore, considering the potential difficulty in assessing the entire array of sanctions, this study aims to focus on the sanctions imposed by the EU as potential examples of the most significant sanctions.

According to Bergeijk & Dizaji (2022), the EU imposed five sanctions packages against Russia within six weeks, and the total number of targeted economic sanctions, excluding personal sanctions, reached 100 examples. Despite the attempts to evaluate this period (Sun et al., 2022; Yousaf et al., 2022), the limitations of using the event study method prevent the utilization of this turbulent sanctions period, as the method requires that the event windows do not overlap to avoid the confounding of the observed effects. Additionally, the first five weeks, coinciding with the initial sanctions packages, cannot be used due to the aforementioned lack of stock market trading.

This study utilizes the Peterson Institute for International Economics timeline of sanctions dataset (Bown, 2023) to select the sanctions events. The advantage of this dataset lies in the comprehensiveness of the sanctions cases. Specifically, the timeline includes not only the sanctions themselves in the time range from February 2022 to December 2023 but also their announcements. Given the research design, the announcement of the sanctions is also an important event for the study.

The list of sanctions includes both large-scale sanctions and reputational and image sanctions against individuals or industries representing an insignificant part of the Russian economy, such as sanctions against the luxury goods trade. Studies of the previous period of the anti-Russian sanctions from 2014-2021 indicate that the oil and gas industry was most vulnerable to sanctions pressure (Vladimirov, 2017; Zaytsev & Loshchenkova, 2023). Therefore, this study specifically focuses on Russian oil and gas stocks. It analyzes the companies included in the Oil & Gas Sectoral Index

of the Moscow Exchange (MOEXOG) as a representative sample of the relevant sector of the Russian economy (see Table 1 for details).

Table 1: The MOEXOG index structure

Ticker symbol	Company name	Weight, %
LKOH	PJSC Lukoil Oil Company	15.27
GAZP	Gazprom PJSC	14.87
NVTK	Novatek PJSC	14.83
ROSN	PJSC Rosneft Oil Company	14.64
TATN	PJSC Tatneft	12.32
SNGS	Surgutneftgas	7.67
SNGSP	Surgutneftgas (preferred shares)	7.66
TRNFP	Transneft JSC (preferred shares)	5.05
BANEP	Bashneft (preferred shares)	4.31
TATNP	PJSC Tatneft (preferred shares)	2.28
RNFT	Russneft	1.09

Source: Moscow Exchange, 2024.

Having applied the following criteria to the sanctions list:
- Sanctions imposed by the European Union;
- Sanctions imposed after March 28, 2022;
- Sanctions targeted at the oil & Ggas industry; and
- A minimum interval of seven days between the dates of sanctions;

a sample of sanctions presented in Table 2 has been obtained.

Table 2: The List of sanctions events declared by the EU against Russia's oil and gas industry

	Announcement date	Event description
(1)	30 May, 2022	6th package: announcement of the oil import ban, and the SWIFT ban
(2)	03 June, 2022	6th package: imposition of sanctions
(3)	02 September, 2022	8th package: announcement of the oil price ceiling
(4)	06 October, 2022	8th package: imposition of sanctions
(5)	05 December, 2022	8th package: setting of a price ceiling for Russian crude oil of $60
(6)	04 February, 2023	8th package: setting of the price ceiling for Russian oil products
(7)	23 June, 2023	11th package: ban on servicing Russian oil tankers in third countries
(8)	18 December, 2023	12th package: enforcement of oil price cap

Source: Bown, 2023.

The daily yield obtained from the one year point on the zero-coupon government curve has been used as the risk-free rate r_{ft} in equation (2). The MOEX Russia Index return has been used as the market return r_{mt} in equation (2). The realized stock returns r_t are calculated as normal daily returns based on the closing prices in Russian rubles. All the listed financial variables have been taken from the CBonds information agency (CBonds, 2024). The market beta coefficients β_m from equation (2) have been calculated on a rolling basis based on 250 previous observations.

All calculations have been made using the Python programming language, and the code used for the calculations is available in an open repository (Chernykh, 2024b).

4. RESULTS

Table 3 provides the CAAR calculations for all stocks in the MOEXOG index. The results are presented for the event window limited to 15 days, which enables the comparison of the results with other studies.

Table 3: CAAR for the oil and gas industry stocks, %

	BANEP	GAZP	LKOH	NVTK	RNFT	ROSN	SNGS	SNGSP	TATN	TATNP	TRNFP
-7	0,57	0,87	0,65	1,04	-0,63	0,39	0,56	1,45	1,02	0,61	1,70
-6	0,30	1,64	0,53	0,87	-0,52	0,02	1,11	1,43	1,67	1,35	1,65
-5	2,00	2,77	0,15	0,19	-0,38	-0,11	0,45	0,76	1,01	0,70	1,56
-4	0,61	2,58	-0,24	-0,28	-1,13	-0,40	0,76	1,36	0,44	0,71	1,36
-3	1,85	2,84	-0,36	-0,86	-1,37	0,50	0,75	2,37	1,24	0,83	1,74
-2	0,06	5,84	-0,91	-1,80	-2,29	-0,74	0,26	2,06	0,33	-0,23	1,04
-1	2,67	5,42	-0,23	-2,41	-0,90	-0,11	0,85	3,65	0,16	0,26	1,68
0	2,02	5,91	-1,12	-3,35	-0,06	-0,10	0,92	3,16	0,61	0,25	1,63
1	3,00	5,23	-1,23	-3,50	1,51	0,42	0,76	3,77	1,09	0,19	2,52
2	4,19	3,34	-0,59	-2,76	7,00	0,63	1,24	4,31	0,91	-0,15	3,41
3	4,34	3,48	-0,84	-3,43	5,04	1,04	1,39	4,86	0,88	0,28	4,05
4	4,36	3,80	-1,04	-3,75	5,24	1,76	1,33	4,94	1,33	0,23	4,80
5	4,28	3,67	-0,90	-4,40	4,72	2,07	1,72	5,40	2,35	0,71	5,63
6	4,89	3,76	-0,71	-4,21	5,27	2,09	1,25	4,67	2,97	1,29	4,53
7	4,32	3,51	-0,09	-4,18	4,06	2,22	0,70	4,10	2,96	1,67	4,20

Source: The author's calculation

It is noteworthy that out of eight securities in the oil and gas sector, only two (PJSC Lukoil Oil Company and Novatek PJSC) exhibited a final negative CAAR value. All other shares paradoxically showed positive final CAAR values, with four securities exceeding a 4% positive return.

These findings are in complete contrast to the results of previous studies. In Dovbnya's (2020) study, various portfolio compositions of Russian oil and gas stocks exhibited a final CAAR ranging from -4% to -7.5% in response to a typical sanctions announcement during 2014-2018. Similarly, Iranian equities displayed a CAAR between -1.5% and -5.4% in response to sanctions within a similar event window (Ghasseminejad et al., 2021). Returning back to the study of the 2022 case, Ahmed et al. (2022) find a similar response on the first day of the seven-day event window for nearly 600 European stocks that generate positive AR. There are also estimates of positive AR on the first day after the event for a wider sample of stocks (Mishara et al., 2024).

The situation remains unchanged when the event window width is reduced to seven or eleven days. The descriptive statistics are presented in Table 4, which demonstrates that altering the event window does not affect the final result. The average CAAR for all stocks in the sample remains positive, with Novatek PJSC showing the lowest values. The last row of Table 4 displays the CAAR values for the overall MOEXOG oil and gas index for comparison.

Table 4: Descriptive statictics for oil and gas stocks CAAR, % with different event window

	[-3, 3]	[-5, 5]	[-7, 7]
Count	11	11	11
Mean	1,39	1,39	2,13
Std	2,58	3,08	2,57
Minimum	-3,21 (NVTK)	-5,25 (NVTK)	-4,18 (NVTK)
Maximum	6,39 (RNFT)	5,34 (RNFT)	4,32 (BANEP)
MOEXOG	0,43	0,59	1,09

Source: The author's calculation

The positive result for the mean CAAR of 2.13 percentage points and the MOEXOG CAAR of 1.09 percentage points for the 15-day event window in Table 4 is in complete contrast to the results of Biermann & Leromain (2023) where the common cumulative stock returns of a broad global sample showed negative values of -4.51 percentage points in February-March 2022.

Picture 1 shows the CAAR plots for securities with the minimum and maximum total CAAR, and CAAR for the MOEXOG index for various event windows: figures 1.1-1.3 for the 7-day window, figures 1.4-1.6 for the 9-day window, and figures 1.7-1.9 for the 15-day window. The graphs also show 90% confidence intervals.
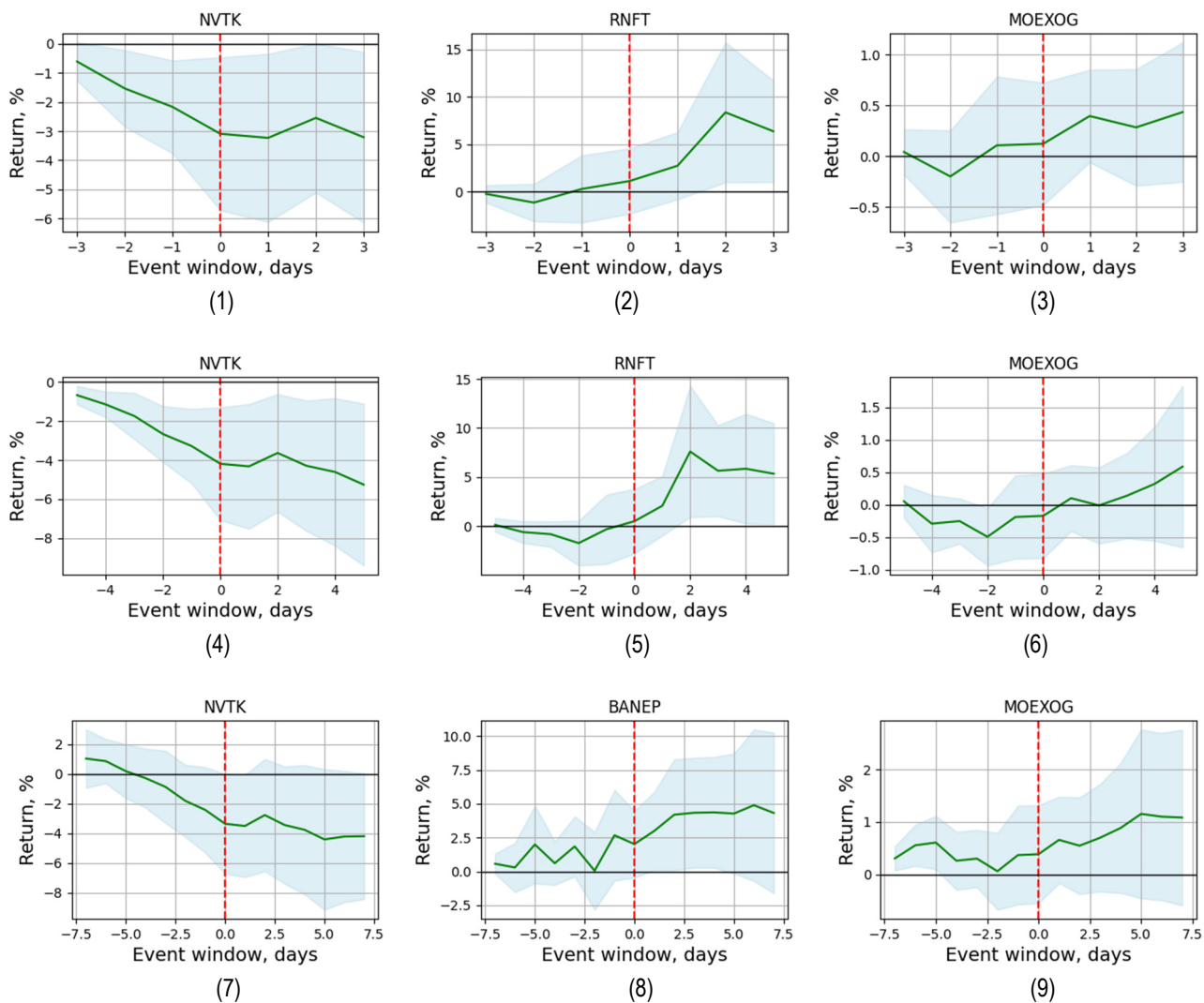
Picture 1: Examples of CAAR performance (stocks with minimum and maximum final values, and MOEXOG index value) for different event windows. 90% asymptotic CI in blue color.
Source: The author's calculation

This abnormal result can be attributed to the fact that, initially in February-March 2022, Russian investors had factored into the prices many more negative scenarios than those that were realized when the sanctions packages were announced. Moreover, positive abnormal returns indicate optimism and insufficient severity of sanctions in the investors' perception.

5. CONCLUSION

This study has analyzed the impact of the European Union economic sanctions on the Russian oil and gas sector, a critical area given the EU's former status as one of Russia's main trading partners. Through the method of a firm-specific event study focusing on eight public companies listed on the Moscow Exchange, the paper has examined the market's reaction to the sanction announcements. Despite the anticipation and the severity of the sanctions imposed, the findings reveal a predominantly negligible impact on the capitalization of the above-mentioned Russian companies. This outcome underscores the limitations of sanctions in exerting immediate financial pressure, as evidenced by the unexpectedly positive CAAR values for the majority of the examined securities.

Furthermore, the analysis extends beyond mere financial metrics to consider the broader implications of sanctions on investor sentiment and market dynamics. The positive abnormal returns observed in several cases suggest a nuanced market perception that may view the sanctions as either insufficiently severe or unlikely to present significant risks to the targeted sectors. This perception, mirrored in the resilience of the Russian stock market, especially in the oil and gas sector, suggests a possible disconnect between the intended punitive effects of sanctions and their actual impact on market confidence. Such insights contribute to the ongoing debate on the effectiveness of sanctions, highlighting the complexity of economic responses and the potential for unintended outcomes in the sanctions' wake.

This study's limitations, particularly the focus on a specific sector and a limited number of companies examined, offer avenues for future research. An expanded analysis could explore the impact of sanctions across different sectors and event dataset from other sanctions imposers to provide a fuller picture of their economic implications.

In conclusion, the findings of this paper contribute to the ongoing debate about the utility and efficacy of economic sanctions. As the international community continues to grapple with the challenges of implementing effective sanctions, the insights from this study on the Russian oil and gas sector offer a critical perspective on the limitations and potential unintended consequences of such measures.

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