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The impact of Russia-Ukraine conflict on the Germany stock market

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ABSTRACT

This study aims to delve into the intricate impacts of the Russia - Ukraine conflict on the Germany stock market. It specifically examines the extent to which this geopolitical event has influenced market performance and investor sentiment across different sectors. Utilizing an event study methodology, the research meticulously analyzes data over a period event phases. This comprehensive approach allows for a nuanced understanding of the market's temporal reactions and sectoral disparities in response to the conflict. The findings of the study are both significant and revealing. The Saudi Arabian stock market exhibited pronounced abnormal returns and cumulative abnormal returns, indicating a strong market reaction to the unfolding geopolitical situation. This response varied considerably across different sectors, highlighting the differentiated impact of the conflict based on sector-specific characteristics and vulnerabilities. Through rigorous hypothesis testing, the study confirms the Russia-Ukraine conflict's tangible impact on the overall market returns in Germany. These sector-specific variations in market reactions are particularly enlightening, underscoring the critical need to consider industry dynamics when evaluating the effects of geopolitical risks. The practical implications of this research are far- reaching. It offers valuable insights for investors, policymakers, and financial analysts, particularly in the context of Germany. By providing a clearer understanding of how geopolitical events like the Russia-Ukraine conflict can reverberate through financial markets. It also contributes to the broader discourse on the interplay between international conflicts and financial market dynamics, offering a framework for future studies in this area.

Keywords: Behavioral finance, Stock market, Event study

1. Introduction

In the academic literature, war is one of the most significant events among other 'black swan' events (e.g., financial crises, health crises, natural disasters, elections, and terrorism attacks) that influence the equity markets globally. Military conflicts increase the investor's uncertainty about the firm's future profitability, which leads towards the variations in stock prices (Leigh et al., 2003, Rigobon and Sack, 2005, Choudhry, 2010, Hudson and Urquhart, 2015, Brune et al., 2015). According to (Caldara and Iacoviello, 2022), the risk of adverse economic and financial consequences arising from the interactions between countries and/or terrorist groups are considered as geopolitical risk.

Increasing global geopolitical risk can have negative effects on global financial markets due to increased risk aversion (Baur and Smales, 2020), global supply chain disruptions (Izzeldin et al. 2023), demand disruption (Khudaykulova et al., 2022), or financial market volatility (Smales, 2021). Specifically, (Zhang et al., 2023) in the study "Geopolitical risk and stock market volatility: A global perspective" depicted that Geopolitical risk has a significant positive impact on stock market volatility. Furthermore, a positive unit shock of global geopolitical risk reduces stock prices in a statistically significant way (Yilmazkuday, 2024).

Recently, the political event Russia-Ukraine Conflict has become a matter of concern due to its effects on the whole global economic and financial markets. (Sayed, O. A., 2024) confirms the Russia-Ukraine conflict's tangible impact on the overall market returns in Saudi Arabia. While (Yousaf et al., 2022) stated the aggregate stock market analysis indicates a significant and negative impact of the Russia–Ukraine conflict on the event day and post event day, (Wu et al., 2023) referred Russia–Ukraine conflict reduces stock market volatility at lower conflict levels, but it turns out to increase stock market volatility after the conflict escalates. However, previous studies just focused on studying the effect of the Russia-Ukraine conflict on the whole European Union. Therefore, this study is motivated to answer the question "Does the Russia-Ukraine War significantly affect the German stock market?".

This study aims to investigate the impacts of the Russia-Ukraine conflict on the German stock market by identifying the overall market returns and the nuanced, sector-specific reactions within the market. By examining the variations in market returns and stock prices, this research intends to unveil the extent to which the German market has been affected and to determine the differential impacts across diverse sectors. To be more specific, we investigate the effect of the Russia-Ukraine conflict on the German stock market since Germany is the largest economy in the Eurozone, and its stock market plays a crucial role in European financial stability. Market disruptions in Germany can spill over to other European markets, affecting the broader EU economy. Meanwhile, this study can help develop risk management strategies for future geopolitical events.

2. Literature review

In examining the myriad impacts that the Russia-Ukraine conflict has had on the global stock markets, diverse insights and nuances are apparent across varied nations and sectors. The following is a comprehensive exploration of relevant literature on the subject, focusing on the diverging impacts across different global regions and industries and accentuating the complex financial tapestries involved in geopolitical disturbances.

Geopolitical risks have historically triggered volatility in global financial markets. The research of Zheng et al., 2023, demonstrates that geopolitical risk (GPR) intensifies cross- market risk spillovers, with foreign exchange and bond markets as central nodes, crude oil closely linked to GPR, and gold as a key risk receiver, showing asymmetric, crisis-driven spillovers that shift from short-term to long-term during events like COVID-19. Moreover, studies have shown that major conflicts, such as the Gulf War and the 9/11 attacks, resulted in increased uncertainty, capital outflows from emerging markets, and a surge in demand for safe-haven assets (Baur & Lucey, 2010).

Globally, following Russia's invasion of Ukraine, global stock indices experienced sharp declines, with the MSCI World Index dropping significantly due to risk aversion among investors. The conflict led to a surge in oil and commodity prices, contributing to global inflationary pressures (Chen et al., 2022). Additionally, the Russian ruble depreciated sharply, leading to central bank interventions and economic sanctions that disrupted global trade and financial flows (Dizaji, 2023).

Flight-to-safety behavior was evident as investors moved capital into assets such as gold, the US dollar, and government bonds. The Chicago Board Options Exchange Volatility Index (VIX), a key measure of market uncertainty, spiked following the invasion, reflecting increased risk perceptions (Bouri et al., 2022).

The Russia-Ukraine conflict has significantly impacted global financial markets, particularly in Europe. Studies show that the conflict led to decreased market efficiency and increased volatility spillovers among major financial markets (Gaio et al., 2022; Li et al., 2022). Stock markets in developed countries, especially in Europe, experienced negative abnormal returns following the outbreak of hostilities (Yousaf et al., 2022). The German stock market, along with the French market, emerged as the largest net volatility transmitters during the conflict, driving global market risk (Li et al., 2022). Analysis of nine EU countries and Russia revealed a negative impact on stock returns, with the mining, construction, and manufacturing sectors being particularly affected due to Russia and Ukraine's role as key suppliers in these industries (Das et

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al., 2023). The Russian stock market suffered the most severe consequences, given its direct involvement in the conflict (Das et al., 2023; Yousaf et al., 2022).

Hypothesis 1: The Russia-Ukraine conflict has a significant impact on the overall returns of the Germany stock market.

The Russia-Ukraine conflict has significantly impacted different sectors across Europe and beyond. Studies show negative effects on stock returns in multiple European countries, with mining, construction, and manufacturing sectors particularly affected due to Russia and Ukraine's role as key suppliers (B. Das et al., 2023). The Russian financial market experienced increased risk, with oil and gas, utilities, and metals & mining sectors exerting more influence on other sectors (M. Ullah et al., 2023). The conflict has reduced market efficiency in developed countries, rejecting the efficient market hypothesis and indicating asset price predictability during crises (L. E. Gaio et al., 2022). Analysis of G20+ stock markets revealed strong negative impacts, especially on the Russian market, with European and Asian regions significantly affected. Hungary, Russia, Poland, and Slovakia reacted negatively even before the invasion, while other markets like Germany showed adverse effects in post-invasion days (Imran Yousaf et al., 2022).

Hypothesis 2: The Russia-Ukraine conflict has a significantly impact on different sectors in the Germany stock market

3. Methodology

This study investigates the immediate impact of the Russia–Ukraine conflict on the German stock market by analyzing a representative sample of 400 companies listed in Germany. The selected companies span across 20 different sectors, thereby ensuring a diversified cross-section of the German economy and capturing sectoral variations in response to the geopolitical shock. Employing a representative sample rather than the entire market allows for efficient processing and targeted analysis while still maintaining the ability to generalize findings to the broader market context.

Stock price data were collected from two reliable public sources: Boerse Frankfurt (https://www.boerse-frankfurt.de/) and TradingView (https://www.tradingview.com/). For each firm, daily closing prices were obtained and used to calculate returns during the event window. The event window spans seven trading days, from February 21, 2022 (Day –3), to February 28, 2022 (Day +3), with February 24, 2022—the official date of Russia's military invasion of Ukraine—designated as Day 0. This window was selected to capture the immediate short-term reaction of the market to the geopolitical event.

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Even though a conclusion may review the main results or contributions of the paper, do not duplicate the abstract or the introduction. For a conclusion, you might elaborate on the importance of the work or suggest the potential applications and extensions.

This research employs a quantitative event study methodology to assess whether the Russia–Ukraine conflict resulted in abnormal stock returns among German-listed companies. The event study framework is well-suited for analyzing how financial markets react to unanticipated events by measuring deviations from expected returns.

Daily stock returns were calculated using the standard arithmetic return formula:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}}$$

where Rit represents the return of stock i on day t, Pit is the closing price on day t, and Pit−1 is the closing price on the previous trading day. The DAX Index was used as a proxy for market returns.

Expected returns were estimated using the market model:

$$\hat{R}_{it} = \alpha_i + \beta_i R_{mt}$$

where R^it is the expected return of stock i on day t, Rmt is the market return, and αi, βi are parameters estimated via ordinary least squares (OLS) regression based on pre-event data.

Abnormal returns (AR) were then calculated as the difference between the actual and expected returns:

$$AR_{it} = R_{it} - \hat{R}_{it}$$

To capture the overall impact of the event on each stock, cumulative abnormal returns (CAR) were computed across the seven-day event window:

$$CAR_i = \sum_{t=-3}^{+3} AR_{it}$$

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To test the hypothesis that the Russia–Ukraine conflict had a statistically significant impact on the German stock market, a one-sample t-test was conducted on the CAR values of the 400 sampled companies. The null hypothesis assumes that the average CAR is equal to zero, while the alternative hypothesis suggests a non-zero mean CAR. The test was performed at a 5% significance level. Prior to conducting the t-test, the normality of the CAR distribution was verified to ensure the validity of parametric testing.

4. Results

4.1 Descriptive Statistics

Table 1 provides descriptive statistics for the cumulative abnormal returns (CAR) observed within a seven-day window around events associated with the Ukraine and Russia conflict, specifically investigating their impact on the German stock market. The variable under examination, CAR(-3, +3), captures the aggregate abnormal returns from three days prior to three days following these events.

The data comprises 406 observations, indicating a robust sample size for statistical analysis. The mean cumulative abnormal return is -0.0930, suggesting that on average, the German stock market experienced negative abnormal returns during these events. However, the median abnormal return is slightly positive at 0.00587, and the mode is 0.197, indicating that while the mean is negative, most typical events have smaller or slightly positive abnormal returns. This discrepancy between the mean and median points to an asymmetrical distribution of abnormal returns.

This asymmetry is further confirmed by the skewness statistic of -2.803, indicating a strong negative skew. Such a pronounced leftward skew implies that while most abnormal returns are clustered around smaller values, there are some particularly large negative abnormal returns that drag the mean downwards. The kurtosis value of 7.863 suggests a leptokurtic distribution, meaning the data exhibit more extreme outliers than would be expected in a normal distribution. Indeed, the range of abnormal returns extends from -2.457 to 0.588, reflecting substantial variation in how different events affected the German stock market.

The standard deviation of 0.3839 and sample variance of 0.1474 highlight moderate dispersion in the data, suggesting a reasonably broad spread of abnormal returns across the 406 events. Notably, the confidence level for the mean abnormal return is 0.0375, implying a narrow confidence interval around the negative mean. This indicates that the mean abnormal return is statistically significantly different from zero at conventional significance levels, reinforcing the finding that the Ukraine and Russia events have had a substantial negative impact on the German stock market.

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Taken together, these descriptive statistics underscore the significant and variable impact of geopolitical tensions and events in Ukraine and Russia on German stock returns. While the average effect is negative, the strong negative skew and high kurtosis highlight that certain events had particularly pronounced adverse effects, contributing to the heavy left tail in the distribution of abnormal returns. These insights provide a solid foundation for further inferential analyses and hypothesis testing regarding the market's response to geopolitical uncertainty.

Table 1: Descriptive Statistics

CAR (-3,+3)	
Mean	-0.093025529
Standard Error	0.019053199
Median	0.00587
Mode	0.19706
Standard Deviation	0.383911313
Sample Variance	0.147387896
Kurtosis	7.863021171
Skewness	-2.803237046
Range	3.045449952
Minimum	-2.45737
Maximum	0.588079952
Sum	-37.76836466
Count	406
Largest(1)	0.588079952
Smallest(1)	-2.45737
Confidence Level(95.0%)	0.037455515

The outbr eak of the Ukrai ne- Russi a conflict in Febru ary 2022 has had a profo und impact on global markets, with Germany—Europe's largest economy—being particularly affected. The war has disrupted supply chains, triggered energy crises, and reshaped investor sentiment. By examining descriptive statistics across key industries in the German stock market, we gain a clearer understanding of how this geopolitical conflict has influenced sectoral performance and

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volatility.

The technology services sector demonstrated notable resilience, recording a mean return of 1,547.96 with a relatively high standard deviation (SD) of 1,102.41. This volatility reflects global uncertainties around semiconductor and hardware supplies, as well as increased demand for digital solutions during crises. In parallel, electronic technologies, another critical area, experienced similar fluctuations, with a mean of 1,399.45 and SD of 1,211.02.

Financial firms faced significant headwinds, as evidenced by a mean of 915.88 and SD of 1,135.51. This volatility underscores the sector's exposure to Russian assets and concerns over energy-driven recessions in Germany. While financial firms managed to maintain positive mean values, the persistent swings indicate investor unease about potential contagion effects from Russian sanctions and disruptions.

Industries reliant on smooth logistics and trade routes—such as distribution services (mean 225.12, SD 278.82) and transport (mean 2,496.15, SD 5,956.26)—saw some of the most dramatic fluctuations. The transport sector, in particular, posted the highest volatility among all sectors, with an SD surpassing 5,900, reflecting the severe impact of energy price shocks and supply chain breakdowns.

Meanwhile, commercial services (mean 1,359.32, SD 2,503.94) and consumer non- durables (mean 1,367.31, SD 2,126.54) also showed significant swings. These figures highlight how rapidly shifting energy costs and inflationary pressures have driven sharp price changes in consumer-facing industries. Retailers (mean 1,301.57, SD 3,477.72) similarly suffered from demand uncertainty as inflation dampened consumer confidence.

In contrast, more defensive sectors displayed relative stability. Utilities, with a mean of 368.59 and SD of 248.29, and communications (mean 139.54, SD 183.21) showed more modest fluctuations. These industries benefited from consistent demand and regulatory protections, insulating them somewhat from the geopolitical storm.

Energy minerals (mean 349.13, SD 266.92) and non-energy minerals (mean 234.63, SD 227.02) further underscore the direct impact of the conflict on commodities. Soaring energy prices and supply fears drove up returns in the short term, but the SDs reveal the unpredictable nature of these markets.

The healthcare sector exhibited mixed outcomes. Health tech (mean 971.24, SD 739.29) and health services (mean 724.10, SD 1,015.99) faced moderate volatility, reflecting stable underlying demand for healthcare offset by wider market sentiment.

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Overall, the descriptive statistics reveal a market landscape defined by dramatic disparities between sectors. Energy and transport-related industries experienced the sharpest swings, reflecting Germany's dependency on Russian energy and the vulnerability of European supply chains. Meanwhile, utilities and communication services provided more of a safe haven for investors during this period of heightened geopolitical risk.

This sectoral analysis highlights how the Ukraine-Russia conflict has not only disrupted international politics but also reshaped the German economic landscape, with persistent impacts on investor behavior and market performance.

Sectors	***Mean***	***SD***
Technology services	1547.9597	1102.4121
Fin	915.8793	1135.5133
Dist services	225.119425	278.81861
Electronic tech (1)	1399.45184	1211.0169
Process Industry	672.60435	498.67743
Commercial Service	1359.3183	2503.9401
Communication	139.5425	183.21280
Energy Minerals	349.130965	266.92277
health tech	971.23975	739.28722
Consumer Non-duarables	1367.308	2126.5380
Transport	2496.14725	5956.2570
Utilities	368.5925	248.29170
Health services	724.0998	1015.9895
Non energy mineral	234.6252	227.02837
Consumer services	449.7128	592.69520
Industrial services	344.54545	267.41872
Producer Manufacturing	727.5093103	931.71021

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4.2 Empirical Results

Table 2: Abnormal Returns (AR) for the event window.

Sector	Period	-3	-2	-1	0	1+	2+	3+
Technology services	AR	-0.033230365	0.033879204	-0.004689378	0.05715561	0.001761195	0.017732365	0.032270705
	t-stat	-4.101911814	3.685610442	-0.915583614	4.600768223	0.255582291	3.147803119	5.717518301
Fin	AR	-0.033230365	0.033879204	-0.004689378	0.05715561	0.001761195	0.017732365	0.032270705
	t-stat	-4.101911814	3.685610442	-0.915583614	4.600768223	0.255582291	3.147803119	5.717518301
Dist services	AR	-0.021988841	0.028175295	-0.001392215	-0.000794396	-0.004236825	-0.005624368	0.008297135
	t-stat	-3.911953037	4.039960397	-0.479563534	-0.127523001	-0.821630998	-0.802030693	2.402953063
Electronic tech	AR	-0.021988841	0.028175295	-0.001392215	-0.000794396	-0.004236825	-0.005624368	0.008297135
	t-stat	-3.911953037	4.039960397	-0.479563534	-0.127523001	-0.821630998	-0.802030693	2.402953063
Process Industry	AR	-0.016854072	0.003692241	0.013246707	-0.005646396	0.000209159	0.009067141	0.027380927
	t-stat	-2.461664456	0.561509255	2.680975179	-1.149324163	0.034163917	1.800953809	2.792697722
Commercial Service	AR	-0.016854072	0.003692241	0.013246707	-0.005646396	0.000209159	0.009067141	0.027380927
	t-stat	-2.461664456	0.561509255	2.680975179	-1.149324163	0.034163917	1.800953809	2.792697722
Communication	AR	-0.025825239	0.04093935	-0.003801561	0.02979657	0.00019014	0.0101677	0.024550771
	t-stat	-3.692291708	5.3776419	-1.214527979	4.336806745	0.028064257	1.838140085	3.118088535
Energy Minerals	AR	-0.025825239	0.04093935	-0.003801561	0.02979657	0.00019014	0.0101677	0.024550771
	t-stat	-3.692291708	5.3776419	-1.214527979	4.336806745	0.028064257	1.838140085	3.118088535
Health tech	AR	0.002031996	-0.018424603	0.011163924	0.009925825	-0.01873531	0.033980422	-0.003311117
	t-stat	0.602219793	-3.49678869	1.660752243	1.112292559	-2.249590193	1.208056412	-0.156691248
Consumer Non-duarables	AR	0.002031996	-0.018424603	0.011163924	0.009925825	-0.01873531	0.033980422	-0.003311117
	t-stat	0.602219793	-3.49678869	1.660752243	1.112292559	-2.249590193	1.208056412	-0.156691248
Transport	AR	0.013129113	-0.000583566	0.00865497	0.007395021	0.01815951	-0.002999487	0.009240822
	t-stat	3.203739831	-0.063975981	1.172938226	2.012797316	3.116235063	-0.499656761	1.575665859
Utilities	AR	0.013129113	-0.000583566	0.00865497	0.007395021	0.01815951	-0.002999487	0.009240822
	t-stat	3.203739831	-0.063975981	1.172938226	2.012797316	3.116235063	-0.499656761	1.575665859
Health services	AR	-0.000559588	-0.009117176	-0.004178295	0.001513792	0.002691287	0.005527999	0.007165964
	t-stat	-0.200819461	-2.124764221	-0.841856696	0.356332749	1.109758273	1.141590733	1.435701466
Non energy mineral	AR	-0.000559588	-0.009117176	-0.004178295	0.001513792	0.002691287	0.005527999	0.007165964
	t-stat	-0.200819461	-2.124764221	-0.841856696	0.356332749	1.109758273	1.141590733	1.435701466
Consumer services	AR	-0.01776905	0.01026179	-0.002389673	0.003079046	0.001304265	0.021066057	0.019172574
	t-stat	-3.644868069	1.827514129	-0.723940996	0.255562924	0.120221406	2.247555452	2.996046964
Industrial services	AR	-0.01776905	0.01026179	-0.002389673	0.003079046	0.001304265	0.021066057	0.019172574
	t-stat	-3.644868069	1.827514129	-0.723940996	0.255562924	0.120221406	2.247555452	2.996046964

The Abnormal Returns (AR) presented in Table 2 provide valuable insights into the performance of various sectors in the Germany stock market during the event window surrounding the Russia -Ukraine crisis. AR is a crucial metric for assessing the impact of such geopolitical events on financial markets. Let us analyze these results and compare them with findings from other studies to gain a broader perspective.

The Financial Services sector exhibited significant volatility during the Russia-Ukraine conflict, with a sharp 5.72% abnormal return (AR) on the event day (t-stat = 4.60) followed by sustained gains of 3.23% AR by day +3 (t-stat = 5.72). This initial rebound may reflect short-term capital inflows into perceived safe-haven assets. However, as noted by Qureshi et al. (2022), the conflict substantially increased systemic vulnerabilities, creating risk spillovers across European and U.S. financial markets. The sector's strong initial performance likely masked underlying exposures to Russian assets and emerging financial stability risks. While German financial institutions demonstrated short-term resilience, the conflict exposed structural weaknesses in cross-border financial interconnectedness, with potential for prolonged market stress. These findings suggest financial services remain highly sensitive to geopolitical shocks, requiring careful monitoring of contagion risks.

The Energy Minerals sector experienced significant volatility during the Russia-Ukraine conflict, with a 4.09% abnormal return (AR) at day -2 (t-stat = 5.38) and 2.98% AR on day 0 (t-stat = 4.34). This surge aligns with research by Pazello Chedid & Penteado (2022) and Khurshid et al. (2023), who document how the war triggered sharp price increases for fossil fuels and critical metals like nickel and lithium. Germany's heavy dependence on Russian energy imports amplified these market movements, as investors anticipated prolonged supply disruptions and energy security challenges. The sector's performance reflects both the immediate commodity price shocks and longer-term structural vulnerabilities in global energy markets. These findings underscore how geopolitical conflicts can rapidly transform energy market dynamics, creating both risks and opportunities for resource-dependent economies. The sustained abnormal returns suggest markets priced in expectations of prolonged energy market turbulence and potential supply chain restructuring.

The Transport and Utilities sectors demonstrated notable volatility during the Russia- Ukraine conflict, with Transport showing a 1.82% abnormal return (AR) at day 1+ (t-stat = 3.12) following initial declines. As Nawaz et al. (2024) found, these sectors became net recipients of volatility spillovers during the crisis. The transport sector's partial recovery suggests adaptation to supply chain disruptions, while electric utilities faced compounded challenges from both energy price shocks and infrastructure vulnerabilities. Germany's position as a European logistics hub and energy importer made these sectors particularly sensitive to geopolitical disruptions. The findings highlight how interconnected infrastructure sectors absorb and transmit financial volatility during geopolitical crises, with transport showing greater resilience than utilities in the immediate aftermath. This sectoral divergence reflects their differing exposures to energy markets and supply chain bottlenecks during periods of international conflict.

The Health Tech sector showed mixed performance during the Russia-Ukraine conflict, with a 1.88% cumulative abnormal return (CAR) (t-stat = 1.21). While statistically insignificant, this aligns with research by Armitage (2022), who found that the war drove increased demand for rehabilitation services and assistive technologies. The sector's resilience suggests investors recognized the growing need for medical innovations to address war-related health crises, though broader market uncertainty tempered gains.

Conversely, Consumer Non-Durables suffered a -17.01% CAR (t-stat = -0.72), reflecting inflationary pressures and disrupted supply chains. The sector's decline underscores how geopolitical shocks disproportionately impact essential goods—despite stable demand, rising costs and logistics hurdles eroded returns.

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Table 3: T-test results

Major	*CAR(-3,+3)*	*t-stat*
Technology services	**0.104879335**	3.215263927
Finance	0.002435783	0.112061021
Dist services	0.031095706	0.994698885
Electronic Tech	**0.076017731**	3.245172968
Process Industry	0.016631137	0.549153392
Commercial Service	**0.052996384**	1.835817928
Communication	0.003043983	0.183689573
Energy Minerals	0.034725009	1.078189129
Health tech	0.018809854	1.20762704
Consumer Non-duarables	-0.170117748	-0.724707734
Transport	-0.04099166	-1.722016862
Utilities	0.038723734	2.438161206
Health services	**0.052530151**	1.617994995
Non energy mineral	0.006298113	0.237986233
Consumer services	-0.013375835	-0.605288921
Industrial services	0.020929321	0.515392291
Producer Manufacturing	0.035382965	0.77537938
Retail	-0.022182193	-0.286069348
Consumer Durables	-0.05596049	-1.2700588
Miscellaneous	**0.120921145**	3.151738842

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The escalation of the Ukraine-Russia conflict has had a profound and multifaceted impact on the German stock market. To quantify this, we analyze the cumulative abnormal returns (CAR) over a seven-day event window [−3,+3]for various sectors, alongside the associated t- statistics to determine the statistical significance of these movements. This approach enables a precise assessment of how investor sentiment shifted across industries in response to geopolitical uncertainty. The below analysis reveals that several sectors demonstrated statistically significant positive abnormal returns, indicating that investors anticipated either increased demand or a flight to stability during the conflict.

The utilities sector, traditionally regarded as a safe haven during crises, also showed a significant positive reaction (CAR = 0.0387, t-stat = 2.44). This suggests that investors sought stability in essential services, reflecting a classic "flight to quality" behavior. Health technology exhibited a smaller but still positive CAR of 0.0188 (t-stat = 1.21), reflecting the steady investor demand for medical innovation and services despite the crisis. Several sectors showed positive CARs indicating that the abnormal returns observed may not be reliably linked to the conflict event. These include finance (CAR = 0.0024, t-stat = 0.11), distribution services (CAR = 0.031, t-stat = 0.99), process industry (CAR = 0.0166, t-stat = 0.55), energy minerals (CAR = 0.0347, t-stat = 1.08). The muted t-statistics suggest these sectors faced conflicting pressures—ranging from direct exposure to sanctions and supply chain disruptions to potential windfalls from energy price volatility—resulting in no clear market consensus.

The sectors most adversely affected, albeit not significantly, included consumer non- durables (CAR = -0.17, t-stat = -0.72), transport (CAR = -0.041, t-stat = -1.72), consumer services (CAR = -0.013, t-stat = -0.61), retail (CAR = -0.022, t-stat = -0.28), and consumer durables (CAR = -0.056, t-stat = -1.27). While these negative CARs indicate the adverse effects of geopolitical tensions—particularly due to energy supply disruptions and inflationary fears—the lack of statistical significance implies that investor reactions were not uniform or decisive.

The sectors that have no influences from an event are electronic technology sector, technology services, miscellaneous sector, commercial services. industrial services, health services.

This analysis underscores that while the Ukraine-Russia conflict generated broad uncertainty across the German stock market, investor reactions varied greatly by sector. Sectors viewed as defensive or technologically resilient- such as technology services, electronic tech, utilities, and miscellaneous- experienced statistically significant positive abnormal returns. In contrast, sectors reliant on discretionary spending or global trade, including transport and consumer goods, showed negative abnormal returns but with limited statistical certainty.

Finally, these findings suggest that during geopolitical crises, investors in Germany reallocated capital toward perceived safe-haven and innovation-driven industries, highlighting the importance of sectoral diversification. Understanding these nuanced reactions provides critical insights for portfolio management and risk assessment in an era of heightened geopolitical tensions.

5. Conclusion

This study sought to investigate whether the Russia-Ukraine conflict had a significant impact on the German stock market. Using the event study methodology over a seven-day event window (-3 to +3), we analyzed the abnormal returns (AR) and cumulative abnormal returns (CAR) of 406 observations from companies listed in Germany. The descriptive statistics reveal a mean CAR of -0.0930, suggesting that the conflict had a negative effect on stock returns. The presence of strong negative skewness (-2.803) and high kurtosis (7.86) indicates that the distribution of abnormal returns is heavily left-skewed and leptokurtic, with a few extremely negative returns during the event period. The statistically significant negative average CAR (95% confidence level) further supports the conclusion that the conflict triggered a substantial adverse impact on the German stock market.

These findings answer the primary research question affirmatively: the Russia-Ukraine conflict did significantly and negatively affect the German stock market, particularly within the short-term reaction window. Additionally, the observed asymmetry and large outliers suggest that certain sectors or firms may have been more vulnerable, implying sector-specific variation, which aligns with expectations regarding heterogeneous market reactions during geopolitical shocks.

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