Stock Market Reactions to Corporate Presence in Russia

An analysis of U.S. & EU companies during the early stages of the Ukraine war

Name Student: Stijn Verweij
Student ID number: 589884
Supervisor: Pfeil C.S.
Second assessor: Mueller C.
Erasmus University Rotterdam
Erasmus School of Economics

Sunday 30th June, 2024

Bachelor Thesis Economics and Business Economics

Abstract

In this paper, an event study is conducted to analyze the stock market reactions to EU and U.S. firms leaving Russia, in response to the Ukraine war, especially in the first week. The research uses a Difference-in-Difference analysis to investigate the corporate decision to stay or leave Russia. Data from 246 companies were used in the sample, from these companies market performance, industry, market value and macroeconomic factors were analyzed. We see that companies that exited Russia had a significantly higher stock market return, than companies that chose to stay in Russia. Remarkably, there was no statistically significant difference between investors' reactions to U.S. and EU companies. This study has brought out the element of geopolitical context in corporate decision-making and shows how investor sentiment can lead to a change in stock market results.

Contents

1 Introduction

On 24 February 2022, the landscape of international business underwent a significant shift due to the start of military conflict between Russia and Ukraine. Corporations with investments in Russia faced a difficult decision: to continue their operations in Russia or withdraw all their current assets & investments. In response to the conflict, unparalleled sanctions have been put upon Russia by countries around the world. The European Union (EU), for example, implemented heavy measures, the exports and imports have been restricted by 49% and 58% respectively. Furthermore, goods and services like banking and payment processes are being blocked. Additionally, 1706 highly influential individuals had their assets frozen or seized (European Council, n.d.). Other countries like the United States (US) have introduced similar sanctions, to exert pressure on Russia to stop the aggression against Ukraine (Office of Foreign Asset Control, U.S. Department of the Treasury, n.d.). Schneider and Troeger (2006), Heilmann (2015) and Hudson and Urquhart (2015) demonstrate that war and sanctions never have been favourable for market performance, which is outlined below. The paper by Tosun and Eshraghi (2022) specifically highlights the contrast in market performance between American Companies that chose to stay or leave Russia.

Multiple researchers have been interested in the repercussions of war and sanctions on the market. The study by Hudson and Urquhart (2015) concludes that negative events in the Second World War had a significant negative effect on the stock market for the short term. Schneider and Troeger (2006) concluded that conflicts generally harm the market however, this effect was small and the effect also varied with the nature and the progression of the conflict. The effects of sanctions are studied by Heilmann (2015) who concluded that, for the short term, a boycott negatively impacts the stock values of companies that were affected by the mentioned boycott. The article by Tosun and Eshraghi (2022) shows that companies that stayed in Russia after the conflict started, saw a noticeable decline in stock prices, attributed to global backlash and sanctions, highlighting the geopolitical tensions on corporate strategy and investor behaviour. This conclusion is in line with other studies. The research was done by using a Difference-in-Difference analysis (DiD). The research focused on announcements made by companies concerning Russia during the two weeks after the invasion. They analyzed firms that chose to stay and leave, comparable in industry and size. From these firms, the daily stock performance, trading volume and market value were collected. Control variables that they used were firm size, market risk and macroeconomic factors for robustness. This research is needed to understand how corporate decision-making about geopolitical conflicts can influence the financial market and that thinking about ethical imperatives and investor sentiment is as important as thinking about profitability.

While the former study focused on Companies from the United States, the difference between companies from the European Union (EU) and the U.S.has not been studied yet. This is an interesting context to study the differences in investor behaviour. Given the EU's greater dependence on Russia, the EU has more than 12 times higher imports from Russia than the U.S.(European commission, 2022) (Office of the U.S. Trade Representative, 2022), before re-

stricting sanctions were put in place. Due to this dependency, the stock market may be less inclined to penalize EU companies that choose to stay in Russia. Rationalizing the choice to stay, even while the EU heavily sanctions Russia. Another reason for the difference could be that the general view of Europeans is more positive than the view of Americans on Russia, according to Pew Research Center (n.d.), which could lead to a lower penalty from the investors. Ultimately, as EU citizens feel more threatened by the war's proximity to their borders, they may impose harsher penalties for companies that remain in Russia. Considering that Sercu and Vanpée (2007) shows that investors tend to invest more in companies from their country/region, the sentiment of stock market participants in a specific region could have a bigger impact on the companies from that region. Therefore, this thesis aims to answer the research question: How do investors react to EU and U.S.companies that leave Russia in the week after the invasion?

This study will find companies with the Yale CELI list, this list describes companies that left, are leaving or stayed in Russia (Jeffrey Sonnenfeld and Yale Research Team, n.d.). Using data, from 23-2 2022 until 9-3 2022, this concludes the start of the war and the period where the invasion was consistently headline news. This is a long enough period for companies to make their choice about leaving Russia and give the market time for their response to this news. From these leaving companies and peers that stayed, data will be collected on their market behaviour, trading volume and the daily shift of the stock market, opting for the daily shift due to this being a short and volatile period. This data will be collected from LSEG Data services (2024) and the Wharton Research Data Services (2024), specifically CRSP. This study will conduct a difference-in-differences (DiD) analysis between the companies that stayed in Russia and those that left, with a dummy variable for the EU and U.S.companies. The companies that stayed are the control group and those that left are the treatment group. This analysis will account for industry effects, global economic conditions, company size and other variables that could affect the outcome.

Different from the results from Tosun and Eshraghi (2022), who studied only the effect on companies from the US, this study looks at companies from both the U.S.and EU. Hypothesizing that U.S.companies would have a bigger positive effect on market performance if they chose to leave Russia. Because the sentiment of EU citizens is different and the dependency is bigger. However, it could also lead to a lower positive effect because of the industry exposure and the risk perception of EU companies. This should become clear through a DiD analysis. This would mean that when looking at geopolitical conflicts, companies should be more considerate of their corporate decisions, taking into account aspects like region-specific investor sentiment.

2 Theoretical Framework

2.1 Corporate Decision making

This thesis looks at one corporate decision: the choice to stay or leave Russia after the invasion of Ukraine. This is based on the decision of EU and U.S.companies made in the first week of the invasion. A decision to leave would be an announcement made publicly and picked up by the news to stop investments, stop manufacturing, suspend business, halt shipments or completely sell the subsidiary of said company. A decision to stay in Russia is the lack of news about the aforementioned actions or news that actively concerns remaining operational in Russia.

2.1.1 Prospect Theory

The prospect theory was originally conceived by Kahneman and Tversky (1979). The prospect theory is a framework for behavioural economic thinking. The prospect theory says that people make decisions based on potential losses and gains, instead of looking at the outcome. Additionally, losses are more heavily weighed than gains. The extension to this theory is that organisations are also affected by the same principles.

Companies have a reference point of staying in Russia with working operations that earn income. This is the reference point to which decisions are made. By referencing this, companies are averse to leave Russia due to the significant loss of assets in the short term. Even while, in the long term the company's better decision might be leaving Russia, because of economic instability, sanctions and punishment from the market.

2.1.2 War

The Communist Manifesto written by Engels and Marx (1848), in which they explain the conflict theory, emphasizing the role of socioeconomic inequalities and power disparities in fueling conflicts, viewing society as a battleground for limited resources. This article shows that war is a thought that has kept humanity in grasp for a long time. Additionally, nowadays the game theory of Morgenstern and Von Neumann (1944) is prominent. The game theory models strategic decision-making by analyzing how individuals/entities maximize their payoffs with their actions and considering others' choices. It explains why conflict persists instead of working together by highlighting the interplay between economic grievances, rent-seeking behaviours and the reasons shaping the decisions that are made. The paper by Themnér and Wallenstee (2011) shows that conflict and war are nothing extraordinary, even after two world wars more conflicts arise each year. The book by MacMillan (2020) shows how we waged war for centuries, almost since we started existing, suggesting that we, as humans, might seek conflict.

2.1.3 Sanctions

Sanctions are "Restrictive policy measures that one or more countries take to limit their relationship with a target country in order to persuade that country to change its policies or to address potential violations of international norms and conventions" (Morgan et al., 2023). Sanctions are not new, for example, the first known sanction was in 432 BC, when the Athenian empire banned traders from Megara from its marketplace, thereby strangling the rival city state's economy (Abughris, N., 2021). Sanctions are not aren't always effective. The literature review by Pala (2021) shows that while sanctions on Iran were successful in stopping them from making nuclear weapons, the sanctions on Russia have been largely ineffective. The paper by Morgan et al. (2023) shows that the success of sanctions is higher when the sanctions are multilateral, target a democracy and are specific. Next to this, they show that larger economies are less susceptible to sanctions. This could explain the results found earlier by Pala (2021).

2.2 Investor Reaction

Investor reaction is measured in multiple ways for this thesis we will look at the following: Trading volume and daily stock return.

2.2.1 Trading Volume

Trading volume is the total number of shares traded during a period, this measures the activity of the market. It is a type of indicator of the market to gauge market movements. High volume indicates that there is interest in the stock, while low volume shows lesser interest. The dissertation by Yung-Chou (2005) shows that the volume traded indicates investors sentiment. This relationship is robust across various markets, which makes trading volume a valuable tool for market behaviour. For trading volume you have various time frames, for this thesis, we will be using Daily trading volumes.

2.2.2 Daily Stock Return

Daily stock returns are the percentage change of stock price from one trading day to the next. This shows a gain or loss of the stock. This is used to evaluate short-term performance and volatility. The study by Brown and Warner (1985) shows that even while daily stock returns introduce challenges, like non-normality and increased variance, standard event studies are for the most part robust to these challenges.

2.3 Home Bias

Lewis (1999) described home bias the following way: “The observation that individuals hold too little of their wealth in foreign assets has been called ‘home bias’.” In other words, home bias refers to the tendency that investors have to favor domestic investments, despite the potential gains from diversing internationally. This happens due to factors like familiarity, perceived risk, transaction cost and differences in regulation, which often leads to a portfolio that has a suboptimal performance. While earlier studies already demonstrated how internationally diversified portfolios lead to more optimal results (Levy & Marshall, 1970). Many investors still predominantly hold domestic stocks.

Ardalan (2019) shows that home bias persists even in the current era of increasing globalization. However, home bias is gradually diminishing, albeit slowly, reflecting a shift in investor mindset (Sercu & Vanpée, 2007).

2.4 Relationship between: Corporate Decision Making and Market Behavior

The impact of war on an economy has been extensively studied. Schneider and Troeger (2006) concluded that international stock markets react negatively to the outbreak of wars. But in some cases, the market reacts positively, these are called ”war rallies.” These occur when a conflict resolves uncertainties in the affected area or is viewed positively by investors. According to Schneider and Troeger (2006) ”A case in point is again the Gulf War of 1991, where the main markets lost in value after Iraq’s invasion of Kuwait but recovered some of these losses during the military campaign of the United States and its allies.” Additionally, Schneider and Troeger (2006) saw an increase in market volatility after the start of conflicts.

Hudson and Urquhart (2015) focused more on firm-specific circumstances rather than the entire economy. They concluded that there is a clear negative market reaction when a company operates in a conflict zone or under severe sanctions. However, they showed that this negative market reaction is mostly short-term. They also showed that investors react more strongly to bad news than to good news.

Boungou and Yatie (2022) highlight that the market showed an adverse reaction to the conflict between Ukraine and Russia. Increased uncertainty among investors is attributed to this. They also show that stock markets closer to conflict zones are generally more adversely affected.

2.4.1 Hypothese

Looking back at prospect theory, it is important to understand how the market reacts to companies engaging in unethical behavior. Suppose it is evident from this and other studies that companies are punished for unethical behavior. In that case, companies can incorporate this understanding into their corporate decision-making to reach a fair conclusion.

As stated earlier, the impact on an economy has been studied before; in most cases, companies affected by sanctions and conflicts have been negatively impacted. However, there are instances of war rallies, which occur when a conflict is viewed positively by investors. This has not been the case with the Ukraine war, as seen in the early global reactions. This leads to the following hypothesis.

H_1: *Leaving Russia has a positive effect on the stock market performance of companies*

Secondly, it is expected that American companies are punished more than European companies for staying in Russia, or rewarded more for leaving. This is due to several reasons. First, according to Office of the U.S. Trade Representative (2022) and European commission (2022), the EU has more than 13 times higher imports from and 14 times higher exports to Russia compared to the US. This shows that the economic dependency is much greater in the EU than in the US. Related to this point, the supply chains between Europe and Russia are also much more integrated than those between the U.S.and Russia. This means that EU companies may face more significant operational disruptions when they leave, having a bigger impact on production, logistics and material sourcing, this could result in a more negative market response. Secondly, according to the survey by Pew Research Center (n.d.), the percentage of people who have a negative opinion of Russia is higher in the U.S.than in the EU, and the rate of people with a positive opinion is also lower. Additionally, the sanctions of the U.S. are stricter than the sanctions of the European Union, making U.S. companies being hit harder by sanctions (European Council, n.d.) (Office of Foreign Asset Control, U.S. Department of the Treasury, n.d.). These arguments, combined with the home bias, can explain why U.S.companies would be punished more for staying. On the other hand, the EU is geographically much more in danger from the invasion of Ukraine than the US, with some EU members bordering Russia or Ukraine. This could startle investors and impact their behaviour. This leads to the following hypothesis, with the assumption that the aforementioned effects are greater than the last effect mentioned.

H_2: *The positive effect of leaving Russia is bigger for U.S.companies than for EU companies*

3 Data

3.1 Sample & Data Collection

For this research, data is collected from 246 companies. Of these, 148 are American and 96 are European. The distribution of the European countries can be seen in Fig. 1. To find these countries the data of Jeffrey Sonnenfeld and Yale Research Team (n.d.) was combined with news from CNN, BBC, Reuters and many more. For each leaving company the specific date of the announcement of leaving Russia was found. This research looks at companies that left Russia between 28-2-2022 and 6-3-2022. For these companies, a peer was found who announced that they would remain in Russia. These peers were selected based on sector and market value, with the industry being the primary criterion, as we later account for market value in the analysis. The data was collected from 23-3-2022 till 9-3-2022, this is three days before and after the first and last companies announced their corporate decision. To draw the best possible comparison, we also tried to keep each group's percentage share of the sectors as close as possible. The biggest difference is in the IT and Industrial sectors. This can be seen in Fig. 2. Of the complete dataset, approximately 60% of the companies are American and 40% European.

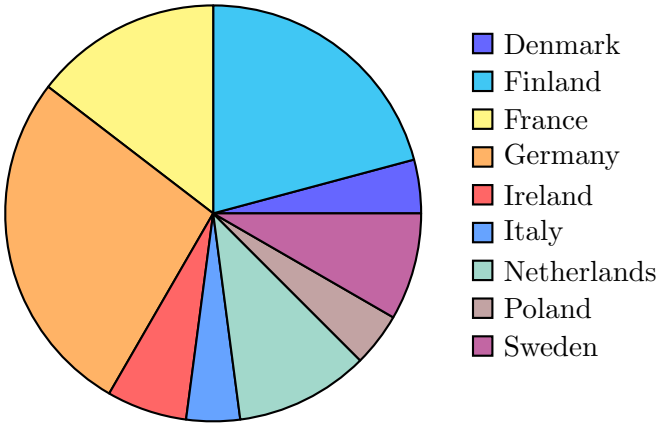
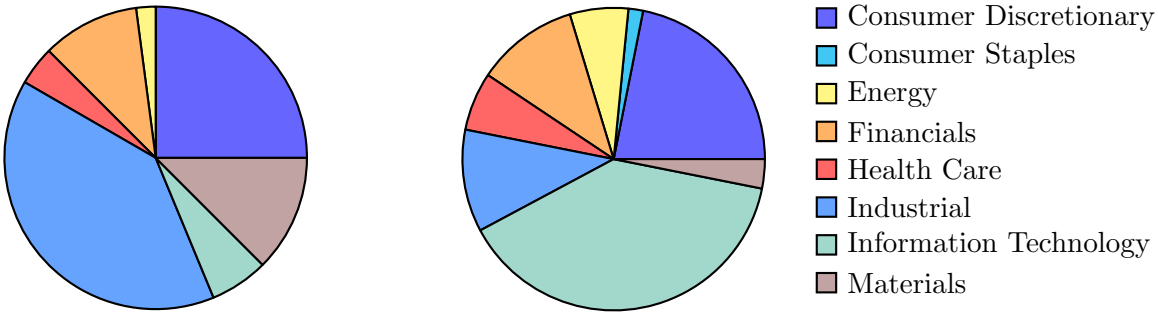


Figure 1: Distribution European Countries



(a) EU (b) US

Figure 2: EU and U.S.Sector representation

3.2 Variables

3.2.1 Stock Price

The stock price was collected from the LSEG Data services (2024) and Wharton Research Data Services (2024). The stock price is the average traded price of the day, with T=11 and N=2684. The variables of CRSP were given in U.S.dollars, and the variables from the Eikon database were transformed into U.S.dollars, as they were given in Euros. To be expected the variable differs a lot, with a maximum of 2,697.82 dollars and a minimum of 1.4472 dollars.

3.2.2 Volume

Volume was again collected from the LSEG Data services (2024) and Wharton Research Data Services (2024), representing the total number of shares traded during a specific period, encompassing all buy and sell transactions. There is a big spread in volume, this is because we have a broad sample with companies worth multiple billions against only millions. The minimum is 1600 shares and the maximum is 143 million shares, because of these high outliers the log is taken from this variable.

3.2.3 Returns

Returns are calculated by taking the difference between the closing prices of two consecutive trading days, divided by the closing price of the previous day. This gives the following equation:

$$\text{Stock Return} = \frac{\text{Ending Price}_N - \text{Ending price}_{N-1}}{\text{Ending price}_{N-1}} \times 100\%$$

This ratio gives the percentage change in the stock price from one day to the next, showing the performance of a stock. A positive return signifies a gain, while a negative return indicates a loss.

3.2.4 Signed Volume

Signed Volume, the signed volume shows the direction of trading, if this is negative the selling pressure is negative and vice versa. This can show if a stock is wanted or if people try to get rid of it. The following formula is used:

$$\text{Signed Volume} = \log(\text{volume}) * \text{returns}$$

3.2.5 Dollar Volume

Dollar volume is the value of the stock traded in a specific period, in this thesis, a day. It shows both the quantity that is traded and the price of the traded stock; this way, it assesses the liquidity and popularity. Dollar volume is calculated, in U.S.dollars, in the following way:

$$\text{Dollar Volume} = \text{Volume} * \text{Stock price}$$

When assessing dollar value we see high skewness and multiple outliers consequently, the log is taken from this variable.

3.2.6 Market value

Market value is calculated by taking the price of a company stock, this is the stock price variable mentioned earlier, and multiplying it with the shares outstanding. Market value is in U.S.dollars This gives the following equation:

$$\text{Market value} = \text{stock price} * \text{shares outstanding}$$

Eikon has market value in their database, for companies that got their data collected from CRSP this calculation was made, by getting the variable shares outstanding from their database. This variable exhibits a substantial spread between its minimum and maximum values due to the diverse range of companies included in the sample. Because of this, a log is taken from this to make this variable normally distributed.

3.2.7 Unemployment

Unemployment, this variable is the seasonally adjusted monthly unemployment rate. This data was collected from Dustatis Statistisches Bundesamt (2022),Statistics Denmark (2022), Statistics Finland (2022), Federal Reserve Bank of ST. Louis (2022), Central statistics office (2022), U.S. Bureau of Labor Statistics (2022), CBS (2022), I.Stat (2022), Statistics Poland (2022), Statistics Sweden (2022). For N=10 different countries and T=2 months (February and March). Seasonally adjusted means that the effects of seasonal variations are removed from the data, this is done to observe underlying trends more easily.

3.2.8 Market excess return

Market excess return (Mer) shows the additional return an investor earns from participating in the market compared to a risk-free investment. For the risk-free rate, the T-bill is commonly used. This is the interest that investors should have gotten with a stock market investment. The excess return of the market is calculated with the following formula:

$$\text{Market Excess return} = \text{Return on the S\&P 500} - \text{T-bill Rate of that Month}$$

The return on the S&P 500 is collected from the CRSP database, the T-bill rates of febraury and march were collected from U.S. Department of the Treasury (2024).

3.2.9 Dummy Variables

U.S.Dummy, this variable takes 1 if the company is from the U.S.and 0 otherwise.

Leaver, this variable takes 1 if the company left Russia, in the given week of 28-2-2022 till 6-3-2022, and 0 otherwise, because a staggered DiD is used the variable leaving Date is added, this gives the date that the company left.

For the announcement date a dummy variable AnnouceDay is created, this is 1 if the specific date is the leaving date of the company. For each of the two days before and after the announcement of leaving dummy variables are created, called Daym2, Daym1, Dayp1 and Dayp2.
The variable post is created, this takes 1 if the date is the announcement date or later.

The interaction terms are the U.S.dummies multiplied by the variables of the announcement day and the days surrounding, these variables are called USAD, USDM1, USDM2, USDP1 and USDP2. Respectively these variables are for the announcement day, the day before that, the two days before, the day after and the two days after.

3.3 Summary Statistics

Table 1: Descriptive Statistics of Variables

variable	**mean**	**std. dev.**	**min**	**max**
Returns	-0.005	0.072	-0.457	2.947
Market value(Billions)	68.7	233	0.039	2720
LN(Market Value)	16.531	1.810	10.588	21.732
Volume(Million)	7.284	15.4	0.002	143
LN(Volume)	14.403	1.865	7.378	18.777
LN(Dollar Volume)	18.406	2.316	8.386	23.856
Signed Volume	-0.068	0.934	-7.372	34.456
Unemployment	0.045	0.0143	0.024	0.084
Market Excess return	-0.081	0.0453	-0.140	-0.008

This table shows the descriptive statistics of the main variables. The mean, standard deviation, minimum and maximum. These are reported for the period between 23/2/2022 and 9/3/2022. Return is the daily stock return for firms. Market value is price multiplied by outstanding shares, LN(Market value) is the log taken from this. Volume is the traded shares of one day, LN(Volume) is the log taken from this. Signed volume is volume multiplied by return. Dollar volume is the volume multiplied by the price of shares, LN(Dollar Volume) is the log taken from this. Unemployment is the seasonally adjusted unemployment rate in the countries of residence from the companies, measured in percentages. Market Excess return is the daily S&P 500 returns minus the t-bill rate of the US.

4 Methodology

This analysis uses a Difference-in-Differences (DiD) regression to analyse the collected data. The DiD is used to estimate the effect of an intervention. This is done by comparing the change in outcome between the treatment and control group. With the assumption that without treatment, the treatment group would not differ from the control group any more than before the treatment. Thus any difference from this is from the treatment effect.

However not all companies leave on the same date, to come to a sample size that is ample enough, companies with different leaving dates are used. This is why a staggered DiD is needed. A staggered DID evaluates the effect of an intervention applied at different times across multiple units. Unlike the normal Did, which uses a single intervention time. It works by comparing the outcome of treated units before and after the given treatment with the units that have not been or never will be treated, at various points in time. Similar to the DiD the parallel trend assumption holds. This means that the treated and control groups would follow a similar trend in the absence of treatment. For this regression, the following equation is used.

$$\begin{aligned} InvestorReaction_{it} = \beta_0 &+ \beta_1 \text{Daym2}_{it} + \beta_2 \text{Daym1}_{it} + \beta_3 \text{AnnounceDay}_{it} \\ &+ \beta_4 \text{Dayp1}_{it} + \beta_5 \text{Dayp2}_{it} + \beta_6 \text{post}_{it} + \beta_7 \text{USAD}_{it} \\ &+ \beta_8 \text{USDM1}_{it} + \beta_9 \text{USDM2}_{it} + \beta_{10} \text{USDP1}_{it} + \beta_{11} \text{USDP2}_{it} \\ &+ \beta_{12} \text{Unemployment}_{it} + \beta_{13} \text{Mer}_{it} + \beta_{14} \log(\text{MarketValue}_{it}) + \epsilon_{it}. \end{aligned}$$

For a DiD regression you need an interaction term, this is needed to isolate the effect of the treatment, this is done by comparing the change of the dependent variable over time between the treatment and control group, in this case, the leaving and staying group. The interaction effect is also needed because this accounts for pre-existing differences that were in the groups before the treatment, ensuring that the observed effect is due to the treatment and not the difference that was started with. Lastly, it adjusts for time trends that both groups might have been affected by, ensuring that the treatment effect is not conflated with these time trends. In this equation, the interaction effect is represented by all the U.S.dummy variables multiplied by the announcement day and the surrounding two days' dummies. Moreover, the dependent variable investor reaction is swapped for returns, volume, dollar volume and signed volume, where i is each company and t is for each day. This is similarly defined for market value, all U.S. dummies, market excess rate, announce day, days before/after and post variables. Unemployment its t are months and i are the operating countries. In this equation, the β_0 is the constant and the ϵ_{it} is the error term.

The random effects model assumes that individual effects are uncorrelated with the explanatory variables, this would allow the inclusion of time-invariant variables and is often more efficient if the assumption holds. For the fixed effects model, you account for individual specific effects allowing each entity to have its intercept. This excludes time-invariant variables. To decide which model is best used the Hausman test is used. This tests if the individual effects are correlated with the independent variable. A significant p-value ($p < 0.05$) shows that

the fixed effects model is the better model. On the other hand, if the result is non-significant ($p \geq 0.05$) the random effects model is the better-used model. In this case, the Hausman test came back with a P-value of 0.000, from now on the fixed effects model is used for the regression.

Autocorrelation is a concept, used to measure the relationship between a time series and a lagged version of this time series, over time intervals. It assesses how values on time t in a data set are related to values before that, like t-1. This is a violation of the OLS assumption that observations are independent. To see if this is the case in my dataset I use the Durbin-Watson test, which indicated a significant first-order autocorrelation. To address this issue, a Generalized Least Squares (GLS) estimation is used. GLS corrects for autocorrelation by transforming the model from the original dataset using a weight matrix, that accounts for the variance and covariance of the errors. With this in mind, the results of Table 2 are produced.

5 Results

The model was estimated using Generalized Least Squares(GLS). Unemployment is in percentages, this means that for every percent change in unemployment, the coefficient changes with the given number. This is the same for market excess return and LN(Market Value). The other variables, days surrounding the announcement, announcement and the US-dummies, are dummy variables, this means that if this is true the coefficient changes with the given amount.

For clarity Table 2 will show the regression without the US-dummies and Table 3 with. This is purely done for readability.

Table 2: Investor reaction Remainer vs Leaver firm, without US-dummies

Independent Variables	**Returns**	**Ln(Volume)**	**Ln(Dollar Volume)**	**Signed Volume**
2 days before (Daym2)	-0.026***	-0.042	-0.056	-0.303**
	(0.009)	(0.080)	(0.079)	(0.127)
1 day before (Daym1)	0.13	-0.178**	-0.187**	0.212
	(0.010)	(0.088)	(0.087)	(0.141)
Announce day	-0.037***	-0.001	0.042	-0.475***
	(0.010)	(0.086)	(0.085)	(0.138)
1 Day After (Dayp1)	-0.029***	-0.049	0.018	-0.407***
	(0.010)	(0.085)	(0.084)	(0.136)
2 days after (Dayp2)	-0.016*	0.019	0.030	-0.206*
	(0.009)	(0.077)	(0.077)	(0.123)
Post (Post)	0.046***	-0.034	-0.065	0.654***
	(0.007)	(0.061)	(0.061)	(0.990)
Unemployment	0.006	14.429**	-7.391	2.339
	(0.627)	(5.663)	(5.626)	(8.950)
Market Excess return (Mer)	0.433***	-1.020***	-0.280	6.303***
	(0.031)	(0.275)	(0.272)	(0.440)
LN(Market Value)	-0.003*	0.851***	1.158***	-0.060**
	(0.002)	(0.275)	(0.017)	(0.027)
Constant	0.089***	-0.354***	-0.368***	1.356***
	(0.007)	(0.064)	(0.064)	(0.100)
FE	YES	YES	YES	YES
Adj. Rsquared	0.069	0.119	0.3610	0.057
Observations	2437	2437	2437	2437

*This table shows the four regression results, with four different dependent variables: return, ln(volume), ln(Dollar Volume) and signed volume. Market value is in dollars. Standard errors are given in parentheses. * p <0.10, ** p <0.05, *** p <0.01*

Table 3: Investor reaction Remainer vs Leaver firm, with US-dummies

Independent Variables	**Returns**	**Ln(Volume)**	**Ln(Dollar Volume)**	**Signed Volume**
2 days before (Daym2)	-0.026***	-0.042	-0.056	-0.303**
	(0.009)	(0.080)	(0.079)	(0.127)
1 day before (Daym1)	0.13	-0.178**	-0.187**	0.212
	(0.010)	(0.088)	(0.087)	(0.141)
Announce day	-0.037***	-0.001	0.042	-0.475***
	(0.010)	(0.086)	(0.085)	(0.138)
1 Day After (Dayp1)	-0.029***	-0.049	0.018	-0.407***
	(0.010)	(0.085)	(0.084)	(0.136)
2 days after (Dayp2)	-0.016*	0.019	0.030	-0.206*
	(0.009)	(0.077)	(0.077)	(0.123)
Post	0.046***	-0.034	-0.065	0.654***
	(0.007)	(0.061)	(0.061)	(0.990)
U.S.2 days before (USDM2)	0.045***	-0.115	-0.099	0.559***
	(0.010)	(0.096)	(0.095)	(0.154)
U.S.1 day before (USDM1)	0.000	-0.046	-0.041	-0.042
	(0.118)	(0.104)	(0.103)	(0.167)
U.S.Announce day (USAD)	-0.001	-0.097	-0.112	-0.092
	(0.0.12)	(0.106)	(0.105)	(0.170)
U.S.1 day after (USDP1)	0.004	-0.010	-0.040	0.039
	(0.012)	(0.105)	(0.104)	(0.168)
U.S.2 days after (USDP2)	0.009	-0.031	-0.035	0.104
	(0.011)	(0.097)	(0.096)	(0.154)
Unemployment	0.006	14.429**	-7.391	2.339
	(0.627)	(5.663)	(5.626)	(8.950)
Market Excess return (Mer)	0.433***	-1.020***	-0.280	6.303***
	(0.031)	(0.275)	(0.272)	(0.440)
LN(Market Value)	-0.003*	0.851***	1.158***	-0.060**
	(0.002)	(0.275)	(0.017)	(0.027)
Constant	0.089***	-0.354***	-0.368***	1.356***
	(0.007)	(0.064)	(0.064)	(0.100)
FE	YES	YES	YES	YES
Adj. Rsquared	0.069	0.119	0.3610	0.057
Observations	2437	2437	2437	2437

*This table shows the four regression results, with four different dependent variables: return, ln(volume), ln(Dollar Volume) and signed volume. Market value is in dollars. Standard errors are given in parentheses. * p <0.10, ** p <0.05, *** p <0.01*

The model's R-squared is on average about 0.1515. This means that approximately 15.15% of the variance of the dependent variables is explained by the independent variables included in the given model

The results from Table 2 and 3 show that, the day of announcement of leaving Russia has a negative effect on companies, for example, it has a -0.037% effect on returns, or -0.475% effect on signed volume. The dummy variables for the following days show a decreasing negative coefficient however, this is not the full story, the variable post can be added to these. The vari-

able post represents the entire treatment, and the corresponding coefficient applies to the entire treatment. This means that the day after the announcement of leaving the coefficient is 0.017% for returns and 0.247% for signed volume. These are all significant with a p-value smaller than 0.1%. This is why the hypothesis is not rejected: Leaving Russia has a positive effect on the stock market performance of companies.

Secondly the results from Table 3 show that the effect of the U.S.dummies on returns is almost zero, except for 2 days before the announcement. The effect on signed volume is negative at first to get more positive in the following days after the announcement. However, the only significant variable is the 2 days before the dummy. That is why the second hypothesis: The positive effect of leaving Russia is bigger for U.S.companies than for EU companies, is rejected based on these results.

Not all control variables have expected signs and magnitude. An increase in market excess return leads to higher returns and positive selling pressure, which is as expected. Identically for higher market value companies, the size effect is a known effect that smaller companies outperform bigger companies on the market. Although, not all these variables are significant at a p-value smaller than 1%. Unemployment on the other hand is not as expected, as an increase in unemployment is expected to give lower returns and negative selling pressure, these coefficients are not significant at any level.

6 Discussion

My results show that there is a positive effect on leaving or a negative effect on staying in Russia after the start of the Ukrainian conflict. This aligns with previous research on the impacts of geopolitical events on corporate performance, such as Heilmann (2015), Hudson and Urquhart (2015), Schneider and Troeger (2006) and Tosun and Eshraghi (2022). This outcome underlines the importance of investor sentiment and geopolitical awareness in corporate decision-making.

Contrary to initial expectations, the obtained results established no statistically significant difference between investors' reactions to companies originating from the U.S.and the EU. Even considering that the level of economic dependence on Russia differs strongly across the regions. Several factors may explain this lack of significant difference.

First, the general perception of the conflict might have been so unfavourable that regional differences did not significantly impact it. The invasion of Ukraine was condemned worldwide, and the resulting geopolitical instability was taken as a threat to the whole Western world. This likely led to a negative sentiment among investors all over the world, overwhelming regional economic dependencies and opinions. Second, the initial shock and extensive media coverage of this invasion likely influences general investment behaviour at the time, leading to similar market reactions for all companies regardless of their operation region. Additionally, the economy is so dependent and interconnected that when one part of the market has a shock this quickly can spread to other markets, like in 2008 when the American housing market collapsed and put the whole world economy in a global recession. This connectedness could have led to a homogenized reaction, as investors worldwide reallocated their portfolios scared of the uncertainty. Moreover, the U.S.and EU have different sanctions put in place, however, the response was coordinated by these Western governments and this might have diminished regional differences in market reaction. Giving the investors more of the idea of West vs East instead of the difference between Western countries.

However, as we see in the results the coefficient is almost zero, this could be a result of sector-specific impacts that balanced each other out across the whole market. Some sectors might have been impacted more severely than others, such as energy and manufacturing companies, on the other hand, sectors like healthcare might have had a minimal impact or even a positive impact. This could result in an overall market reaction difference that seems close to zero.

7 Conclusion

This thesis has examined the stock market reaction of companies remaining in a conflict area. Previous research has shown that sanctions and conflict have a negative impact on companies' stock market performance. Specifically, for the Russia-Ukraine conflict, companies that stayed in Russia were negatively impacted. However, the impact on region-specific companies remains unclear, particularly regarding whether companies originating from countries closer to the conflict are more or less impacted. Before this study, no research had been conducted to examine the differences between EU and U.S.companies affected by different sanctions and sentiments. Therefore, the question addressed in this thesis is: "How do investors react to EU and U.S.companies that stayed in Russia the week after the invasion?"

To answer this research question, data was collected from 246 EU and U.S.companies. This data was sourced from Eikon and CRSP, with additional macroeconomic data collected from government agencies. The analysis of the collected data showed that there is a positive impact on companies leaving Russia, but there is no significant difference between EU and U.S.companies.

Therefore, this study concludes that, in line with existing literature, companies operating in conflict areas are negatively impacted. Additionally, it adds to the existing research by indicating a higher positive effect for companies originating from the U.S.leaving Russia, however, this effect is not significant. This suggests that companies, regardless of their origin, should consider market sentiment and not just their short-term losses, incorporating the positive market effect into their prospect theory calculations. Additionally, this study shows investors that their opinions matter, as they impact companies and can push them in the desired direction.

Unfortunately, data collection was more challenging than expected. Finding companies that left Russia required a significant amount of manual labour, and identifying matching companies still operating in Russia was even more difficult. Due to time constraints and limited availability, only data from 246 companies could be gathered. It is expected that the effect of leaving Russia will be consistent with the results found if a larger dataset is used, however, the difference between EU and U.S.companies might become significant. Future researchers could potentially exploit AI or other means to conduct research with a larger dataset. If the difference effect remains close to zero, a larger dataset could also examine sector differences, something this dataset was too small to achieve.

References

Abughris, N. (2021). *History of economic sanctions*. https://www.carter-ruck.com/insight/a-brief-history-of-economic-sanctions/ (accessed: 26.05.2024).

Ardalan, K. (2019). Equity home bias: A review essay. *Journal of Economic Surveys*, *33*, 949–967. https://doi.org/10.1111/joes.12302

Boungou, W., & Yatie, A. (2022). The impact of the ukraine-russia war on world stock market returns. *Economic Letters*, *110516*. https://ssrn.com/abstract=4059443

Brown, S. J., & Warner, J. B. (1985). Using daily stock returns: The case of event studies. *Journal of financial economics*, *14*, 3–31. 10.2478/nispa-2021-0009

CBS. (2022). *Arbeidsdeelname en werkloosheid per maand*. https://opendata.cbs.nl/StatLine/#/CBS/nl/dataset/80590ned/table?ts=1716489211281 (accessed: 23.05.2024).

Central statistics office. (2022). *Monthly unemployment*. https://www.cso.ie/en/statistics/labourmarket/monthlyunemployment/ (accessed: 23.05.2024).

Dustatis Statistisches Bundesamt. (2022). *Unemployment rate germany*. https://www.destatis.de/EN/Themes/Economy/Short-Term-Indicators/Labour-Market/arb210a.html#fussnote-1-241606 (accessed: 23.05.2024).

Engels, F., & Marx, K. (1848). *Manifest der kommunistischen partei*. Workers' Educational Association, Londens.

European commission. (2022). *Eu trade relations with russia. facts, figures and latest developments.* https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/russia_en (accessed: 13.06.2024).

European Council. (n.d.). *Eu sanctions against russia explained*. https://www.consilium.europa.eu/en/policies/sanctions-against-russia/sanctions-against-russia-explained/ (accessed: 05.04.2024).

Federal Reserve Bank of ST. Louis. (2022). *Infra-annual labor statistics: Monthly unemployment rate total: 15 years or over for france*. https://fred.stlouisfed.org/series/LRHUTTTTFRM156S (accessed: 23.05.2024).

Heilmann, K. (2015). Does political conflict hurt trade? evidence from consumer boycotts. *Journal of International Economics*, *99*, 179–191. https://doi.org/10.1016/j.jinteco.2015.11.008

Hudson, R., & Urquhart, A. (2015). War and stock markets: The effect of world war two on the british stock market. *International Review of Financial Analysis*, *40*, 166–177. https://doi.org/10.1016/j.irfa.2015.05.015

I.Stat. (2022). *Unemployment rate - monthly data*. http://dati.istat.it/Index.aspx?QueryId=25247&lang=en (accessed: 23.05.2024).

Jeffrey Sonnenfeld and Yale Research Team. (n.d.). *Yale celi list of companies*. https://www.yalerussianbusinessretreat.com/ (accessed: 02.04.2024).

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*(2), 263–291. https://doi.org/10.2307/1914185

Levy, H., & Marshall, S. (1970). International diversification of investments portfolios. *The American Economic Review*, *60*(4), 3–31. http://www.jstor.org/stable/1818410

Lewis, K., Karen. (1999). Trying to explain home bias in equities and consumption. *Journal of Economic Literature*, *37*(2), 571–608. 10.1257/jel.37.2.571

LSEG Data services. (2024). Refinitiv eikon, financial analysis. https://www.lseg.com/en/data-analytics/search/eikon-trading-software?utm_content=Product%20Name%20Eikon-Tier%204-G-EN-ALL&utm_source=google&utm_medium=cpc&utm_campaign=748910_WorkspaceEikonBrandProductPaidSearch20&elqCampaignId=20686&utm_term=eikon&gad_source=1&gclid=CjwKCAjwhIS0BhBqEiwADAUhc9aXx1lZ47ESNvpYYiH5Pvd721F-7nKDdRdWpSVEsN8oaatfvqXpvBoCRU4QAvD_BwE&gclsrc=aw.ds

MacMillan, M. (2020). *War: How conflict shaped us*. London: Profile Books.

Morgan, T. C., Syropoulos, C., & Yotov, Y. V. (2023). Economic sanctions: Evolution, consequences, and challenges. *The Journal of Economic Perspectives*, *37*(1), 3–30. https://www.jstor.org/stable/27192407

Morgenstern, O., & Von Neumann, J. (1944). *Theory of games and economic behavior*. Princeton University Press.

Office of Foreign Asset Control, U.S. Department of the Treasury. (n.d.). *Ukraine-/russia-related sanctions*. https://ofac.treasury.gov/sanctions-programs-and-country-information/ukraine-russia-related-sanctions (accessed: 07.04.2024).

Office of the U.S. Trade Representative. (2022). *Russia trade & investment summary*. https://ustr.gov/countries-regions/europe-middle-east/russia-and-eurasia/russia (accessed: 13.06.2024).

Pala, T. (2021). The effectiveness of economic sanctions: A literature review. *Journal of Public Administration and Policy*, *14*, 239–259. 10.2478/nispa-2021-0009

Pew Research Center. (n.d.). *Overall opinion of russia.* https://www.pewresearch.org/global/2023/07/10/overall-opinion-of-russia/ (accessed: 13.06.2024).

Schneider, G., & Troeger, V. E. (2006). War and the world economy. *Journal of Conflict Resolution*, *50*(5), 623–645. https://doi.org/10.1177/0022002706290430

Sercu, P., & Vanpée, R. (2007). Home bias in international equity portfolios: A review. *Social Science Research Network*. https://doi.org/10.2139/ssrn.1025806

Statistics Denmark. (2022). *Unemployed persons (register)*. https://www.dst.dk/en/Statistik/emner/arbejde-og-indkomst/arbejdsloese/arbejdsloese-register (accessed: 23.05.2024).

Statistics Finland. (2022). *Labour force survey*. https://stat.fi/en/statistics/tyti (accessed: 23.05.2024).

Statistics Poland. (2022). *Unemployment rate 1990-2024*. https://stat.gov.pl/en/topics/labour-market/registered-unemployment/unemployment-rate-1990-2024,3,1.html (accessed: 23.05.2024).

Statistics Sweden. (2022). *Unemployment rate*. https://www.scb.se/en/finding-statistics/statistics-by-subject-area/labour-market/labour-force-surveys/labour-force-surveys-lfs/pong/tables-and-graphs/seasonally-adjusted-data/time-series-on-the-unemployment-rate-persons-15-74-years/ (accessed: 23.05.2024).

Themnér, L., & Wallenstee, P. (2011). Armed conflict, 1946-2010. *Journal of peace research*, *48*(4), 525–536. https://doi.org/10.1177/0022343311415302

Tosun, O. K., & Eshraghi, A. (2022). Corporate decisions in times of war: Evidence from the russia-ukraine conflict. *Finance Research Letters*, *48*(102920). https://doi.org/10.1016/j.frl.2022.102920

U.S. Bureau of Labor Statistics. (2022). *Labor force statistics from the current us population survey*. https://www.bls.gov/cps/ (accessed: 23.05.2024).

U.S. Department of the Treasury. (2024). *Daily treasury bill rates*. https://home.treasury.gov/resource-center/data-chart-center/interest-rates/TextView?type=daily_treasury_bill_rates&field_tdr_date_value=2024 (accessed: 30.05.2024).

Wharton Research Data Services. (2024). Center for research in security prices. https://wrds-www.wharton.upenn.edu/

Yung-Chou, L. (2005). The trading volume trend, investor sentiment and stock returns. *Louisiana State University*. https://repository.lsu.edu/cgi/viewcontent.cgi?article=3011&context=gradschool_dissertations