

Master Thesis U.S.E

Investor reactions towards morally driven market exits: Researching the impact of an exit radicality on stock returns in the context of the Russo-Ukrainian War

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Abstract: This research investigates stock returns of enterprises that announced their intent to exit the Russian market amid the invasion of Ukraine in February 2022. Distinguishing between radicalities of withdrawals, my study seeks to determine if a typically negative relationship between stock returns and market exits remains valid when an exit is publicly announced as ethics-induced, rather than profit-driven. I predict that cumulative abnormal returns around the day of an announcement will be higher for enterprises intending to withdraw fully, as they send stronger signal of their socially responsible stance. I establish that announcing a complete exit from Russia, in fact, does lead to higher abnormal returns, although market reaction regarding an exit radicality is contingent upon firm-specific characteristics and general economic and political outlooks. Additionally, I find that investors tend to react more actively to the partial withdrawal news, which can signify their concern regarding future growth prospects and profitability when an enterprise maintain its partial presence in Russia. Overall, my paper contributed towards understanding the connection between geopolitical aggression, morally driven market exits and subsequent investor reactions, and provided evidence for reverse correlations. However, given limitations associated with the sample size, I urge to interpret my findings with caution, while also strongly encourage scholars to further explore the topic and broaden the concepts presented in the paper.

JEL classifications: C31, G11, G14

Keywords: Ethics-induced, market exit, Russo-Ukrainian War, abnormal returns, exit radicality, signaling

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1. Introduction

On 24th February 2022 Russian Federation launched a series of unannounced missile attack in Ukraine (hereinafter, ‘**the War**’) violating international human rights, international criminal law and engaging in crimes against humanity. While majority of countries, intergovernmental alliances and International Court of Justice have all condemned the geopolitical aggression and called the Russian President to immediately suspend the invasion, Russia did not abide. Thus, individual and economic sanctions, as well as diplomatic measures were imposed in attempt to “weaken Russia's economic base, depriving it of critical technologies and markets and significantly curtailing its ability to wage war” (para. 2).¹ Inevitably, these sanctions are also applicable to numerous multinational enterprises (hereinafter, ‘**MNEs**’) that established subsidiaries within the Russian border.

While MNEs are only obliged under international human rights to exit the country if their operating activities fall under sanction regimes, many wished to do so due to unwillingness to support the usurper country by accumulating capital within its territory. By June 2023, out of almost 3300 large MNEs operating in Russia, 159 are postponing future investments, 346 are reducing their current operations, 712 are curtailing most operations, but keeping the options to return, 469 are completely exiting Russia and 241 have already exited.²

Inevitably, the decision to exit a country after a multi-million investment was made is complex: abandoning land, warehouses and manufacturing plants or urgently selling immovable assets significantly below the market value would lead to hefty losses for MNEs. Deterioration of fundamental share price determinants (e.g., earnings per share and profit margins), negative cashflows, weak economic outlook and drop in investor confidence in recovery from losses would all lead to share price reduction, and consequently, less capital for a company to recover. Hence, the decision to exit a geographical market usually has negative consequences and result in diminished stock returns, suggesting that enterprises are highly reluctant to divest.

However, the current context creates a degree of uncertainty around investors’ perception towards the concept of a market exit. Given the circumstances of the withdrawal decision, altruistic financiers could instead enhance their investments into foreign enterprises that divested following their democratic views, hence signalling their support for a positive change. The study by Sonnenfeld et al. (2022) into the impact of the decision to withdraw from Russia on average cumulative stock returns, showed that this scenario may, in fact, be plausible. The research found that companies that opted to fully withdraw from the Russian market have outperformed those that were less radical in their decision, which is true for various regions.³

While these findings support the idea of market rewarding for morally driven MNEs, the research did not distinguish between the exit motives. Thus, it is fair to assume that a part of sampled MNEs have fully withdrawn from the Russian market due to obligations by sanctions or unprofitability of the segment, positively biasing average stock returns since expected financial losses would have been otherwise greater. Additionally, returns of companies that maintain a partial presence in Russia could be negatively biased by other fundamental share price determinants,

¹European Council. “EU sanctions in response to Russia’s invasion of Ukraine.” Accessed February 24, 2023. <https://www.consilium.europa.eu/en/infographics/eu-sanctions-russia-ukraine-invasion/>.

² LeaveRussia. “Stop doing Business with Russia.” Accessed June 26, 2023. <https://leave-russia.org/about-project>.

³ Sonnenfeld et al., *It Pays For Companies To Leave Russia*. Working paper (2022), Yale University, New Haven.

including reduced trade and general downturn of the economy. Overall, the combination of these bias can inflate the impact of radicality of an exit on stock returns, where the actual effect could be less significant. Therefore, both theory and empirics behind investor reactions towards *force majeure* exits triggered by the ‘actions of war’, while being not profit-driven, but rather ethically induced, need further academic attention.

This study will therefore examine the degree of investor support, contingent upon the strength of MNE’s signal towards democracy and peace. While the study will be complimentary to that of Sonnenfeld et al. (2022), building upon their findings, my research will focus exclusively on morally driven exits to reduce potential validity bias. I aspire to find whether stock returns, as measure of investor support, will be greater (or reduce to a lesser extent) for companies that communicated their intent to completely withdraw from the country, as opposed to enterprises that intend to exit partially, while controlling for the element of ethicality. Hence, the following two research questions are drawn up: “*Is there a difference between abnormal stock returns of companies that stated their intent to withdraw from the Russian market based on ethical considerations partially and fully?*”⁴ *Which factors significantly contribute to this difference?*”.

The paper is structured as follows. Firstly, the core literature will be introduced to establish a theoretical framework, guiding into expected outcomes and aiding in formulating the hypotheses. Secondly, the methodology will be presented in several subsections. The first subsection will explain sampling and data collection methods, means of calculating abnormal returns and testing the preliminary findings. The second subsection will present bivariate and multivariate regression models, which will be then used to establish the differences between the partial and full exit subgroups. To uncover variables that are determinantal to differences in returns, my research will use several control variables, which will be presented and justified in this section. Thirdly, research results will be presented with regards to both, calculated returns and regression analysis, followed by an assessment of robustness. Fourthly, these findings will be interpreted and discussed in light of the theory, hypotheses and results of the reference paper. This section will also include managerial and academic implications of the findings, alongside evaluation of the study and suggestions for further research. The last section will conclude the research.

2. Theoretical framework

While the topic of geopolitical risks and their impact on stock performance has previously received some academic attention, the connection between geopolitical aggression, morally driven market withdrawals and investor reactions has not been explicitly defined by scholars. Due to the absence of a solid theoretical base, my study will combine relevant economic and behavioural theories to generate research hypotheses and predict the direction of the research. Firstly, the topic of geopolitical risk will be outlined to address investors’ perception of companies operating within geopolitically risky areas to anticipate their reactions to withdrawals from these territories. Then, a point of view of

⁴ For the sake of the research replicability, ‘**full exit**’ will refer to a clearly stated intent to fully withdraw from the country or being already withdrawn, including not having any ongoing operations in Russia and halting Russian engagement after 24th of February 2022. ‘**Partial exit**’ will refer to the intent to curtail most operations, with no intent to withdraw stated, and hence, the options to return are open.

an ethical investor will be considered to assess potential strategies that financiers would adopt when a morally driven market exit is announced. This viewpoint is critical in understanding the findings Sonnenfeld et al. (2022) and what causes the returns of companies withdrawing fully to be higher, as this theoretical concept accounts for an element of altruism, which is not considered in the previous concept. Lastly, a market exit as a signal will be discussed. Since one of the assumptions of the Signalling theory dictates that signals could be of various strengths, exploring this concept could clarify why would investors perceive announcements of partial and full withdrawals differently.

2.1 Geopolitical risk

The classic way of explaining investor behaviour choices is the Modern Portfolio theory, which states that an investor is always rational and will consistently choose to maximise their returns, while minimising the risk to its utmost extent,⁵ building their optimal portfolio mix based on these two considerations. Hence, this concept dictates that rising geopolitical aggression towards a country or within a country will increase the perceived level of risk, which is not diversifiable due to its nature.⁶ Consequently, this may result in divestment of stocks of enterprises operating within the risky area, thereby diminishing the overall returns of these companies. In the context of ‘actions of war’ as a source of geopolitical risk, Choudhry (2010) analysed the impact of the WWII on the volatility of the stocks in the United States, finding that this type of geopolitical pressures indeed lead to significant declines in stock returns.⁷

Federle et al. (2022) found that firm’s proximity to countries that are considered geopolitically risky is negatively correlated to their stock market returns, suggesting that investors’ perception of risk goes beyond geographical borders.⁸ The Distance Decay theory may offer a complementary idea, suggesting that reducing interactions and economic proximity to the source of a risk may reduce the influence of that risk.⁹ Thus, companies curtailing more operations in Russia would be perceived less risky by investors, since both geographical and operational proximity to the source of the risk decreases, where adverse effects on stock performance reduce with more radical withdrawals.

Never-the-less, Sonnenfeld et al. (2022) found an empirical evidence that the relationship between proximity and stock returns is not consistently negative.¹⁰ The research demonstrated that several industries in Russia were experiencing heightened returns despite high levels of geopolitical risks, where the performance of energy and oil companies that maintained partial presence in Russia was exceptional through April 2022.¹¹ However, the interconnection between heightened geopolitical risks and thriving in the defence sector is not novel in the academia. Apergis and Apergis (2016) have previously found positive relationship between geopolitical risks and stock returns

⁵ Markowitz, Harry, "Portfolio Selection." *The Journal of Finance*, Issue No. 7(1) (1952): 77-91.

⁶ Balcilar et al. "Geopolitical Risks and Stock Market Dynamics of the BRICS." *Emerging Markets Finance and Trade*, Issue No. 51(6) (2016):1206-1220.

⁷ Choudhry, Taufiq. "World War II events and the Dow Jones industrial index." *Journal of Banking and Finance*, Issue No. 34(5) 2010:1022–1031.

⁸ Federle et al., *Proximity to War: The stock market response to the Russian invasion of Ukraine*. C.E.P.R Discussion Paper No.17185(2022).

⁹ DiBiase et al. Proximity and distance decay, *The Geographic Information Science & Technology Body of Knowledge*. Washington, DC: Association of American Geographers, 2016.

¹⁰ Higher proximity in this context means smaller economic and operational distance to Russia. Hence, firms withdrawing partially have higher proximity to Russia.

¹¹ Sonnenfeld et al., *It Pays for Companies to leave Russia*, para 21.

of defence-related companies amid the terrorist attack in Paris in 2015.¹² Zhang et al. (2022) also established that since the beginning of the War, investments into defence and aerospace companies have increased substantially.¹³ The reason for this trend, as explained by the authors is “a shared conviction that these companies will capitalise on higher defense spending amid the war in Ukraine” (p. 5),¹⁴ and that “the dramatic change in political attitudes in Western countries vis-a-vis Russia..makes long-term investors optimistic about the valuations of some US and European defense contractors” (p.5).¹⁵

Hence, the academia argues that this trend is typically attributed to rising global security concerns and the subsequent need to strengthen national and local defence systems, which urges countries to increase their defence expenditures in anticipation of a conflict.¹⁶ In context of Russia, since defence-related companies are crucial for the military invasion of Ukraine, the enterprises with a partial presence in the country have even greater chances to grow due to the good odds of receiving contributions and subsidies from the state,¹⁷ which may explain ascending stock returns despite remaining in the high risk area.

The inverse relationship between proximity and returns may also not hold due to possible contagion effects, where operating within a geopolitically high-risk area may create positive spill-over effects between industries. The Contagion theory states that a shock in a particular market may result in a similar shock in related market,¹⁸ which is true for both, negative and positive disruptions. For instance, if companies within the energy sector experience large abnormal returns (hereinafter, ‘AR’) due to growing demand given by heightened geopolitical risk, investors may become more optimistic regarding the overall economic outlook of a country. This could create a contagion effect, where profit-seeking financiers may direct their capital towards related industries, or the economy in general. This theory may be especially relevant since the outlook of the Russian economy is historically closely attached to the performance of the energy industry.¹⁹

Different frameworks on geopolitical risks provided contradicting views regarding possible changes in stock returns brought by an exit announcement, contingent upon both, an industry and a radicality of that exit. None-the-less, each principle assumed a change of the usual pattern. Hence, the first research hypothesis is formulated for average abnormal returns (hereinafter, ‘AAR’) to establish if generally, an announcement of an exit leads to immediate abnormal deviations in stock returns, and results in the end-of-the-day abnormal returns. The second research hypothesis is concerned with cumulative abnormal returns (hereinafter, ‘CAR’) over the whole event

¹² Emmanuel Apergis and Nicholas Apergis, “The 11/13 Paris terrorist attacks and stock prices: The case of the international defense industry,” *Finance Research Letters*, Issue No. 17 (2016): 186-192.

¹³ Zhang et al., “Geopolitical risk and the returns and volatility of global defense companies: A new race to arms?”, *International Review of Financial Analysis*, Issue No. 83 (2022).

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Khan, Khalid and Su, Chi-Wei and Rizvi, Syed Kumail Abbas, “Guns and Blood: A Review of Geopolitical Risk and Defence Expenditures,” *Defence and Peace Economics*, Issue No. 33 (2020): 1-17.

¹⁷ Svetlana Chubova. “A Wide Range of State and Federal Subsidies Help Support Fossil Fuel Production in Russia.” Accessed June 24, 2023. <https://www.climatescorecard.org/2023/05/a-wide-range-of-state-and-federal-subsidies-help-support-fossil-fuel-production-in-russia/>.

¹⁸ Davidescu et al., “Exploring the Contagion Effect from Developed to Emerging CEE Financial Markets,” *Mathematics 11*, Issue No. 3 (2023): 666.

¹⁹ Mitrova, Tatiana. Energy and the Economy in Russia, *The Palgrave Handbook of International Energy Economics*. Palgrave Macmillan, Cham, 2022.

window. Extending the analysis of an impact to several days around the event allows to account for potential information leakages, lagged reactions in a market and to assess the overall total short-term effects.

H0₁: $E(AAR_{day 0}) = 0$. Firm's announcement of an exit does not lead to end-of-the-day abnormal deviations in stock returns.

HA₁: $E(AAR_{day 0}) \neq 0$. Firm's announcement of an exit does lead to end-of-the-day abnormal deviations in stock returns.

H0₂: $E(CAR) = 0$. Firm's announcement of an exit does not lead to accumulation of short-term abnormal returns.

HA₂: $E(CAR) \neq 0$. Firm's announcement of an exit does lead to accumulation of short-term abnormal returns.

2.2 Ethical investment

While several frameworks on geopolitical risk could justify the findings by Sonnenfeld et al. (2022) regarding diminishing returns of companies operating in Russia and reason why enterprises exiting partially experience lesser negative effects, the introduced concepts cannot explain why companies announcing any type of withdrawals yield *positive* returns. Moreover, it fails to justify why companies withdrawing fully are enduring a substantial rise in their stock prices, despite potentially deteriorating their fundamental share price determinants and abandoning hefty investments.

According to the rationality principle within the Modern Portfolio theory, any type of moral consideration can cause inefficiency, restricting investment choices and leading to either smaller returns or higher risks.²⁰ Hence, a rational investor, as stressed by the theory, will not choose their portfolio mix relying on any type of moral prejudices. Never-the-less, past studies established that some financiers are inclined to sacrifice a part of their returns and invest into riskier companies operating in line with their altruistic preferences,²¹ hence engaging in ethical investment. Therefore, instead of fully relying on rationality principles that cannot explain positive returns, one may seek an explanation in a less restrictive concept.

According to the theory of planned behaviour by Ajzen (1991), one's actions are predicted by their intentions, that are in turn shaped by their subjective norms.²² From this perspective, investors that initially have positive attitude towards ethical investing will also approach their portfolio mix with these considerations. Hence, if moral prejudices of an investor align with actions of a company, an ethical financier will likely invest into this enterprise, explaining that sudden positive returns after an exit announcement could have resulted due to ethical investors' support. Hofmann et al. (2009) have identified the Ethical Investments concepts, separating actions and standards by which

²⁰ Michelson et al., "Ethical investment processes and outcomes," *Journal of Business Ethics*, Issue No. 52 (2004): 1–10.

²¹ Webley et al., "Commitment among Ethical Investors: an Experimental Approach," *Journal of Economic Psychology*, Issue No 22 (2001): 27 – 42.

²² Icek Ajzen, "The theory of planned behavior," *Organizational Behavior and Human Decision Processes*, Issue No. 50(2) (1991):179-211.

ethical investors typically approach their portfolio choices into three collectively exhaustive categories, including decisions on exclusion of unethical companies, inclusion of ethical companies and shareholder activism.²³

While an ‘unethical company’ is a relatively vague term, Anand and Cowton (1993) suggested that one of the common attributes of these firms is having no regards for human rights and/or negative political contributions.²⁴ By definition, maintaining business operations in Russia might be perceived by an ethical financier as insensitivity towards human rights and democracy. In response, investors might reduce or withdraw their investments from an unethical company, clarifying why enterprises operating in Russia might experience diminishing returns from the perspective of Ethical Investment concepts.

The second group of investment decisions explain why companies withdrawing from Russia fully are experiencing larger positive stock returns. An ‘ethical company’, as conceptualised by Brunk (2012), is an enterprise that respects moral norms, acts socially responsible and avoids damaging behaviour in their operations.²⁵ According to the definition, if ethical investors reason that a market withdrawal was performed to avoid damaging behaviour and to act socially responsible, these companies will be perceived as ethical, essentially gaining market sentiment, boosting their prospective growth and stock prices.

Shareholder activism, as the third category, clarifies why an enterprise may risk deteriorating their fundamental share price determinants and consequently, what prevents their stock returns from plummeting. Shareholder activism occurs when investors perceive share ownership as an entitlement to actively participate in a company’s activities, frequently pressuring managers to adjust business operations with which they disagree.²⁶ Therefore, activist investors who desire to disassociate themselves from the terrorist state, may exert influence on boards of directors to withdraw from the Russian market, leveraging on their ownership. If the decision is mutually agreed upon, investors would maintain the ownership, or even increase their stake to signal other shareholders that the taken action can bring benefits in the future. Hence, a board of directors could be reassured that share prices would only experience a small negative impact.

However, since an exit could be induced by shareholder activism, rather than by purely altruistic intentions, it is impossible to separate to what extent the decision was impacted by the latter and how much pressure from shareholders, customers and investors an enterprise has endured. This issue highlights potential problems with low construct validity that cannot be avoided, where insider information from each company is needed to understand the true motive of an exit. None-the-less, relying on the Capital Asset Pricing model, which assumes that investors have equal access to the same information regarding a decision to withdraw,²⁷ it should not matter for my research if an exit was truly altruistic.

²³ Hofmann et al., “The 'Whys' and 'Hows' of ethical investment: Understanding an early-stage market through an explorative approach,” *Journal of Financial Services Marketing*, Issue No. 14 (2009): 102-117.

²⁴ Anand, Paul and Cowton, Christopher J., “The ethical investor: Exploring dimensions of investment behaviour,” *Journal of Economic Psychology*, Issue No 14 (1993): 377–385.

²⁵ Brunk, Katja, “Un/ethical Company and Brand Perceptions: Conceptualising and Operationalising Consumer Meanings,” *Journal of Business Ethics*, Issue No. 111 (2012): 551–565.

²⁶ Denes et al., “Thirty years of shareholder activism: A survey of empirical research,” *Journal of Corporate Finance*, Issue No. 44 (2017): 405-424.

²⁷ Fama, Eugene, and Kenneth R. French, "The Capital Asset Pricing Model: Theory and Evidence." *Journal of Economic Perspectives*, Issue No.18 (3) (2004): 25-46.

2.3 Commitment signalling

Prior to investing capital and purchasing common stock, ethics-driven shareholders must firstly determine whether their core values closely align with those of a potential recipient. Since investors are inevitably subject to information asymmetry, where the true values and intentions of a company cannot be directly observed, they often rely on signalling to solve this issue, attempting to assess unobservable enterprise characteristics by interpreting an enterprise's actions.²⁸ For instance, Lasserre (1996) found that companies often relocate their headquarters to a certain region to send a signal of commitment to that region.²⁹ The author suggests that this signal is then picked up by local investors and typically interpreted as readiness to contribute to the local economy and to focus on a certain geographical market. Consequently, an exit from a market might send a similar signal, indicating the willingness to dissociate from a certain region, which in this case, could be an announcement of withdrawal from Russia.

Many studies connect the Signalling Theory to the resource-based view,³⁰ where signals are believed to exhibit different strengths,³¹ subject to costs attached to sending these signals.³² Similar to market entry, market exit entails distinct associated costs. A company fully withdrawing from a market will incur higher costs, losing all connections to trade and existing pool of resources, in contrast to a company opting to maintain partial presence and several business operations.³³

Hence, combining the Signalling theory with the Ethical Investment concepts suggests that ethical financiers are more likely to pick up and respond to the signals sent by companies announcing their full exit, since they demonstrate more determination (cost-wise) to support human rights, state sovereignty, democracy and peace. Therefore, I expect that my research will indicate this phenomenon. The third hypothesis will base on the cumulative average abnormal returns (hereinafter, 'CAAR') to assess an average effect over the entire event window, similarly to the method Sonnenfeld et al. (2022) used to compare the exit radicalities.

H₀₃: $E(\text{CAAR})_{\text{full}} \leq E(\text{CAAR})_{\text{partial}}$. On average, abnormal returns of companies that announced a full exit, accumulated in the short-term, are the same or lesser than the abnormal returns accumulated by companies that intend to exit partially.

H_{A3}: $E(\text{CAAR})_{\text{full}} > E(\text{CAAR})_{\text{partial}}$. On average, abnormal returns of companies that announced a full exit, accumulated in the short-term, are higher than the abnormal returns accumulated by companies that intend to exit partially.

²⁸ Spence, Michael, "Signaling in retrospect and the informational structure of markets," *American Economic Review*, Issue No. 92 (2002): 434-459. Spence, Michael, "Job market signaling. *Quarterly Journal of Economics*," Issue No. 87 (1973): 355-374. Amna, Kirmani and Akshay, Rao, "No pain, no gain: A critical review of the literature on signaling unobservable product quality," *Journal of Marketing*, Issue No. 64(2) (2018): 66-79.

²⁹ Philippe Lasserre, "Regional Headquarters: the spearhead for Asia Pacific Markets," *Long Range Planning*, Issue No. 29(1) (1996): 30-37.

³⁰ Daily et al., "Investment bankers and IPO pricing: does prospectus information matter?" *Journal of Business Venturing*, Issue No. 20 (1) (2005): 93-111.

³¹ Park, Namgyoo and Mezas, John, "Before and after the technology sector crash: The effect of environmental munificence on stock market response to alliances of e-commerce firms," *Strategic Management Journal*, Issue No. 26 (2005): 987-1007. Gulati, Ranjay and Higgins, Monica, "Which ties matter when? The contingent effects of interorganizational partnerships on IPO success," *Strategic Management Journal*, Issue No. 24 (2003): 127-144.

³² Bhattacharya, Utpal and Dittmar, Amy, *Costless versus costly signaling: Theory and evidence from share purchases*. Working paper (2001), Indiana University, Bloomington.

³³ Anderson, Erin and Gatignon, Hubert, "Modes of Foreign Entry: A Transaction Cost Analysis and Propositions," *Journal of International Business Studies*, Issue No. 17 (1986): 1-26.

Table 1 provides with the summary of the theoretical framework to the research, as well as implications of each separate concept on the direction of the research.

Table 1. Summary of the theoretical framework.

<i>Geopolitical risk</i>	<i>Rational investors are profit-seeking and any type of moral consideration in their portfolio choices may cause inefficiency, restricting investment choice and leading to either smaller returns or higher risks.</i>
<i>Distance Decay theory</i>	Proximity to the source of geopolitical risk and stock returns are negatively related.
<i>Theory of Defence Expenditure</i>	Returns of defence-related companies will be higher with higher proximity to Russia due to heightened demand from Russia and given by funding opportunities. Consequently, profit-oriented financiers will invest into the thriving sector, enlarging the effect.
<i>Contagion theory</i>	Returns of companies keeping partial presence in Russia will be higher due to the spill-over effects from sectors that are performing exceptionally well.
<i>Theory of Ethical Investment</i>	<i>One's behaviour is predicted by their intentions, that are in turn shaped by their subjective norms. An internally altruistic investor is willing to sacrifice returns.</i>
<i>Conceptualisations by Hoffman et al.(2009)</i>	Companies exiting Russia partially will endure larger negative effects on their stock returns. Companies exiting Russia fully will experience larger positive effects.
<i>The Signalling theory</i>	<i>An exit announcement is a signal to investors, which they read and to which they respond.</i>
<i>Resource-based view</i>	The strength of a signal is associated with resource costs attached to sending this signal. Companies exiting fully send stronger signals, as it is costlier to completely withdraw from the market.

3. Methodology

To answer the research questions, a two-step analysis will be conducted. The first step requires assessing ARs, AARs, CARs and CAARs, while separating the sample into the two subgroups of partial and full exits. The study will include MNEs that are components to the *STOXX Europe 600* market index and have announced their intent to perform a withdrawal from Russia after 24th February 2022. The study sample will exclusively focus on components to this index, since *STOXX Europe 600* includes companies from seventeen European countries, providing a good representation of how the European market reacts to exit announcements. Controlling for the element of ethicality, the sampled firms must have indicated an ethics-induced exit. Therefore, a manual check of statements, newspaper articles and communications regarding the decision to withdraw will be performed for each company individually to assess the exit motive. Historical data of share prices and the market index performance will be gathered from the

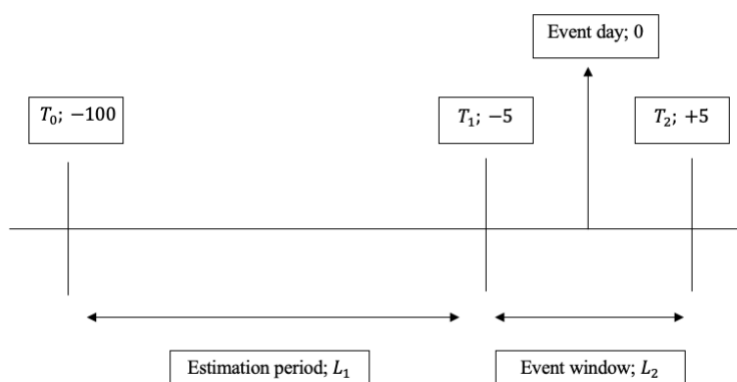
online-source *Yahoo Finance*,³⁴ and the data on radicalities of market exits will be retrieved from the online database created by KSE Institute and Ukrainian IT volunteers, *LeaveRussia*.³⁵

Out of 600 components of the index,³⁶ 101 companies have clearly communicated their intent to withdraw or have already exited.³⁷ After a manual check of the motive was performed,³⁸ the research was carried out with the final sample of 46 companies, including 23 in the partial exit subgroup and 23 in the full exit subgroup. While the sample size is considerably small, normality of the data is typically assumed after 30 datapoints, allowing to perform reliable hypotheses testing and provide with a general idea on interconnection between geopolitical risks, ethics-induced market exits, radicality of these exits and subsequent stock performances.

3.1 Abnormal returns calculation

3.1.1 Time parameters

Figure 1. The methodology of the event study.



Source: own illustration, adapted from Preś-Perepeczo (2007).³⁹

Figure 1 represents the event study timeline, where estimation period and the event window are adapted from Preś-Perepeczo (2007). The event day is individual for each company and indicates the first communication regarding the decision to withdraw from Russia. The estimation period to calculate the beta value of a stock and expected

³⁴ YahooFinance. Accessed June 26, 2023. <https://finance.yahoo.com>.

³⁵ LeaveRussia. "Stop doing Business with Russia." Accessed June 26, 2023. <https://leave-russia.org/about-project>.

³⁶ Note that some of the components did not have any presence in Russia, and hence, could not be considered for the study.

³⁷ Note that some of the companies in the sample operate within the sanctioned industries, providing engineering, IT consulting and legal advice services, where this package of sanctions was announced in the October 2022. The research controls for that, including exclusively companies that fall under sanctions regimes that have stated their intent to exit based on ethical considerations prior to the announcement by the EU. For further information regarding restrictive trade measures, refer to Council Regulation 2022/1904/EU of 6 October 2022 amending Regulation (EU) No 833/2014 concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine.

³⁸ See Appendix B.

³⁹ Agnieszka Preś-Perepeczo, "Event Study in the Evaluation of Effects of Mergers and Acquisitions," *Folia Oeconomica Stetinensia*, Issue No. 6 (2007): 107-122.

returns is 100 calendar days [-100, -5],⁴⁰ where after excluding public holidays and non-trading days, each beta is estimated using 85 trading days on average. The length of an event window was chosen to be 10 days [-5, +5] to capture the possibility of information leakage prior to the announcement and to assess the short-term effect on stock returns.⁴¹

3.1.2 Methodology applied

To calculate the actual stock and market index returns, the following formulas will be used:

$$R_t = \frac{P_t}{P_{t-1}}, \quad (1)$$

$$R_{mt} = \frac{P_{mt}}{P_{m(t-1)}}, \quad (2)$$

where P_t and P_{mt} are the actual stock prices and market points at time t ; P_{t-1} and $P_{m(t-1)}$ are the actual stock prices and market points at a previous day. To calculate expected stock returns in the absence of an event, a simple bivariate regression will be conducted, where parameters will be calculated over the estimation period via OLS regression of the capital asset pricing model (CAPM):

$$E(R_{i,t}) = \alpha_{i,t} + \beta_{i,j}R_{m,t}, \quad (3)$$

where $E(R_{i,t})$ is an expected stock return at time t ; $\alpha_{i,t}$ is an intercept parameter; β_i is the slope and $R_{m,t}$ is the observed daily return on the market index at time t . Then, to begin evaluating the impact of an announcement, ARs will be calculated by subtracting an expected stock return from an actual return of a stock on that day:

$$AR_{i,t} = R_{i,t} - E(R_{i,t}), \quad (4)$$

where $AR_{i,t}$ is an abnormal return on a stock at the time t ; $R_{i,t}$ is the realised return of that stock and $E(R_{i,t})$ is an expected return. To assess common trends and understand an average market reaction, AARs will be calculated (5). Then, to account for different strengths of the efficient market hypothesis, where share prices might not immediately reflect all publicly and privately available information, as well as to account for possible information leakages, CARs will be calculated over the length of the entire event window (6). CARs will be then averaged to find CAAR for each subgroup to compare the differences of an impact across the two subgroups and examine the findings with respect to the reference paper (7):

⁴⁰ In the event of 90 calendar days prior to the day 0 falling onto a non-trading day, the closest previous trading day is chosen. Hence, an estimation window for some companies is 91 or 92 days. Similar logic is applied to the estimation window.

⁴¹ The days within the event window will be hereinafter referred to as *day -5*, *day 1*, etc.

$$AAR^i_{t,t+k} = \frac{1}{N} \sum_{n=1}^{N_j} AR^n_{t,t+k}; \quad (5)$$

$$CAR^i_{t,t+k} = \sum_k AR_{i,t+k}; \quad (6)$$

$$CAAR^i_{t,t+k} = \frac{1}{N} \sum_{n=1}^{N_j} CAR^n_{t,t+k}, \quad (7)$$

where $CAR^i_{t,t+k}$ is cumulative abnormal return for a firm in a given event window; $AAR^i_{t,t+k}$ is an average abnormal return for a subsample on each day of the event window; and $CAAR^i_{t,t+k}$ is a cumulative average abnormal return for a subsample over the event window. After calculating ARs, CARs, AARs and CAAR for both subgroups, a series of significance tests will be performed to assess whether returns are significantly different from the mean returns of the *STOXX Europe 600* index, hence establishing if an announcement of a market exit produces a reaction in stock returns.⁴²

3.2 Data and methodology for the regression model

The second part of the analysis assesses which factors significantly contribute to the distinction in investor reactions towards different radicalities of a market exit. Hence, this part will focus on the second research question, where a simple bivariate regression will be conducted, followed by a multivariate regression with inclusion of control variables.

3.2.1 Bivariate

The bivariate model will include calculated CARs as the dependent variable (DV) and a binary variable that signifies a radicality of an exit as the independent variable (IV), with an aim to examine a simple linear relationship between different types of an exit and cumulative abnormal returns (8):

$$CAR_i = \alpha_0 + \beta_1 EXIT_i, \quad (8)$$

where CAR_i is calculated during the previous step and $EXIT$ is a binary variable taking value of 1 if a company announced a full withdrawal from the Russian market and a value of 0 if a partial exit was announced. In pursuit of exploring a preliminary relationship, my objective is to examine the model for a presence of statistically significant positive correlation when no control variables are introduced. Since correlation will be investigated between a binary and a continuous variable, a point-biserial correlation coefficient will be calculated, as it allows for dichotomous variables (9):

⁴² See Appendix C.

$$r_{pb} = \frac{M_1 - M_0}{s_n} \times \sqrt{\frac{n_1 n_0}{n^2}}, \quad (9)$$

where M_1 is the mean CAR_i for the full exit subgroup; M_0 is the mean CAR for the partial exit subgroup; s_n is the standard deviation for the entire sample; n_1 is the number of data points within the full exit subgroup; n_0 is the number of data points within the partial exit subgroup; and n is the sample size. Then, a simple t-test will be performed to assess statistical significance of the coefficient.⁴³

3.2.2 Multivariate

After the primary relationship is established, the second regression will be conducted with inclusion of control variables to assess factors that influence CARs and might contribute to significant differences in abnormal returns between the two subgroups.

The first control variable is binary, taking a value of 1 if a sampled company is closely related to the defence sector or produces goods or services that could potentially support a military invasion. The identification by America's Cyber Defence Agency was used to analyse the sample,⁴⁴ and the research will therefore consider companies operating within chemical, basic materials and technology industries as critical for defence infrastructure.⁴⁵ This variable is crucial to capture outliers in the data and address several concepts introduced in the literature review, where the defence-related sector is predicted to exhibit large positive returns during security-infringing events.⁴⁶

The second binary variable takes a value of 1 if a sampled firm belongs to the energy sector. This dummy was created to capture the specificity of the case and a potentially different dynamic of this particular industry. The returns of the energy segment may be overall heightened given the new wave of demand from the European Union, which may especially affect firms intending to withdraw fully due to greater opportunities to conduct more contracts. At the same time, companies exiting partially may experience heightened demand from within Russia, subsequently growing their stock returns. At the same time, profit-seeking financiers incentivised by opportunities growing in the thriving sector may intensify the effects within the whole sample. Therefore, the energy industry was separated from other defence-related companies to assess whether operating within this segment has more significant influence on returns.

The third control variable is the mean change of RUB:EUR exchange rate, which is introduced to account for the currency fluctuations and external market factors. Since movements in exchange rates are frequently influenced by

⁴³ See Appendix B.

⁴⁴Cybersecurity & Infrastructure Security Agency. "Defence Industrial Base Sector." Accessed June 23, 2023. <https://www.cisa.gov/topics/critical-infrastructure-security-and-resilience/>.

⁴⁵ Firms operating within basic materials were only included in the group if they operate within the metals and mining industry. At the same time, firms within the technology industry were only included in the group if they are engaged in production of semiconductors.

⁴⁶ Note that the variable will not include companies within the energy industry, as a separate binary variable is created for this segment specifically.

macroeconomic factors,⁴⁷ they may reflect an overall economic outlook of a country, which is an important consideration, as investors may react differently to exit news if markets exhibit heightened volatility.⁴⁸ The averages in currency fluctuations were taken over the length of an individual event window to assess market conditions at the time the announcement was communicated to investors.

The fourth control variable denotes market capitalisation of a company, given by the total value of the common stock, and serves as proxy for firm size, which should reflect investors' perception of a company's worth. The rationale for controlling for size is to control for the small firm effect within the current context. The theory states that companies with lower market capitalisation tend to outperform larger companies due to higher potential growth rate and more opportunities to expand.⁴⁹ Hence, investors may reason that smaller enterprises exiting Russia will recover from losses faster and hence, a portion of positive abnormal returns might be attributed to the small firm effect.⁵⁰ Additionally, since industries differ by their market capitalisation averages, controlling for industry-specific size will help isolating effects on CARs, which is a frequent practice in event studies.⁵¹

The last control variable is the perceived level of geopolitical risk in Russia given by the GPR index, conducted by Caldara and Iacoviello (2022).⁵² This variable is included to assess the level of political tensions during the time of an exit announcement, which helps to reflect investors perception of market volatility and risk. According to the Modern Portfolio theory, the trade-off between risk and return may be no longer optimal for a rational investor when geopolitical tensions arise, which may result in less incoming capital and lower returns for companies due to short selling.

Table 2 summarises regression variables, provides with short descriptions, sources and units of measurement. The final regression model (10) and the fourth research hypothesis are given below.

$$CAR_i = \alpha_0 + \beta_1 EXIT_i + \beta_2 DefSector_i + \beta_3 EnergSec_i + \beta_4 RUBEUR_i + \beta_5 MarketCap_i + \beta_6 GeoRisk_i + e \quad (10)$$

H0₄: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$: Radicality of an exit, firm-specific characteristics and economic outlook have no significant joint impact on cumulative average stock returns.

HA₄: $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0$. Radicality of an exit, firm-specific characteristics and economic outlook have joint impact on cumulative average stock returns.

⁴⁷ Fama, Eugene F. "Stock Returns, Real Activity, Inflation, and Money," *The American Economic Review*, Issue No. 71(4) (1981): 545–65.

⁴⁸ Conway, Ian. "Why do shares sometimes react so differently to positive news updates?" *Shares*, October 8, 2020. Accessed June 23, 2023. <https://www.sharesmagazine.co.uk/article/why-do-shares-sometimes-react-so-differently-to-positive-news-updates>.

⁴⁹ Roll, Richard, "A possible explanation of the small firm effect," *The Journal of Finance*, Issue No. 36(4) (1981): 879–888.

⁵⁰ Beaver, William H., "Econometric properties of alternative security return methods," *Journal of Accounting Research*, Issue No.19 (1981): 163–184.

⁵¹ Mackley, James R.K., "European 3G auctions: Using a comparative event study to search for a winner's curse," *Utilities Policy*, Issue No. 16(4) (2008): 275–283.

⁵² Caldara, Dario and Iacoviello, Matteo, "Measuring Geopolitical Risk," *American Economic Review*, Issue No. 112(4) (2022):1194–1225.

Table 2. Description of regression variables.

<i>Variable</i>	<i>Description</i>	<i>Units of measurement</i>	<i>Source</i>
Dependent variable <i>CAR</i>	Cumulative abnormal returns (CARs)	%	Calculated
Independent variable <i>EXIT</i>	Binary variable (1 if an announcement of full exit was made; and 0 if an announcement of partial exit was made)	N/A	LeaveRussia
Control variables <i>DefSector</i>	Binary variable (1 if a firm operates within a defence-related sector or produces goods or services that could support military invasion; and 0 otherwise)	N/A	America's Cyber Defence Agency
<i>EnergSec</i>	Binary variable (1 if a firm operates within the energy industry; and 0 otherwise)	N/A	LeaveRussia
<i>RUBEUR</i>	Mean change of RUB:EUR exchange rate over the length of an event window (individual for every company)	Euros	Yahoo Finance
<i>MarketCap</i>	Market capitalisation	Billions of euros	companiesmarketcap ⁵³
<i>MarketCap_cat</i>	Categorical variable (1 if firm's value <10 billion euros and 3 if firms value is >10 billion euros).	N/A	Assumed
<i>GeoRisk</i>	GPR index in the month of an announcement	Index	matteoiacoviello.com ⁵⁴

4. Results

4.1 Abnormal returns calculation

4.1.1 AR and AAR

Overall, my research detected abnormal patterns in stock returns for companies withdrawing from Russia both partially and fully, although the extent of abnormality is typically low, excluding several outliers for defence-related companies. The research identified more instances of positive ARs for enterprises announcing full withdrawal, although on the event day the magnitude difference is minor (*Table 3*). However, averaging ARs across subsamples on the day of the announcement demonstrated that companies intending to exit the Russian market partially were generally yielding higher abnormal returns. The value for this subgroup, however, was skewed by a presence of a large positive outlier, where one company obtained 9,4% abnormal return on their stock that day.

⁵³ Companiesmarketcap. "Largest Companies by Market Cap." Accessed June 20, 2023. <https://companiesmarketcap.com>.

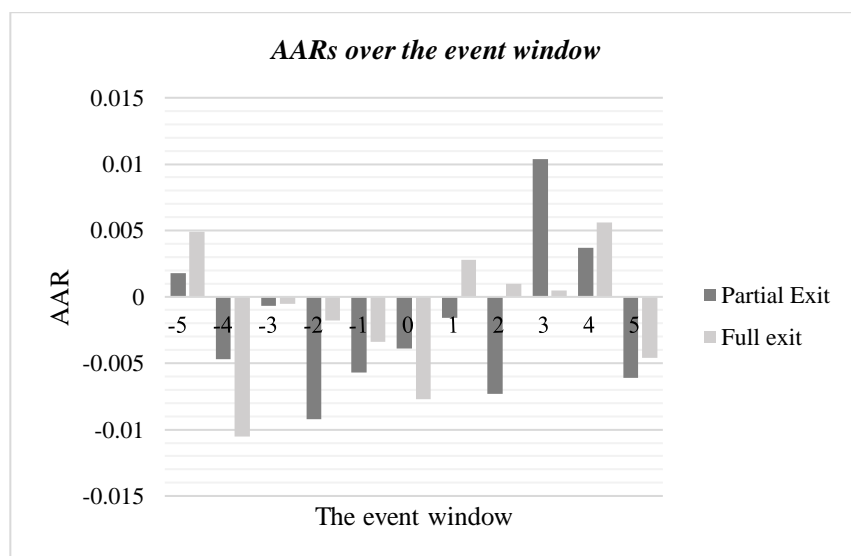
⁵⁴ Matteoiacoviello. "Geopolitical Risk (GPR) Index." Accessed June 20, 2023. <https://www.matteoiacoviello.com/gpr.htm>.

Table 3. Summary of abnormal returns (AR) and average abnormal returns (AAR) for firms exiting Russia (in %).

<i>Event day</i>	<i>Partial Exit (N=23)</i>				<i>Full Exit (N=23)</i>			
	<u>% of Positive AR</u>	<u>AAR</u>	<u>Minimum</u>	<u>Maximum</u>	<u>% of Positive AR</u>	<u>AAR</u>	<u>Minimum</u>	<u>Maximum</u>
-5	48	0,18	(4,7)	6,4	57	0,49	(5,3)	8,7
-4	48	(0,47)	(4,7)	1,7	35	(1,05)	(6,4)	3,1
-3	48	(0,07)	(5,4)	2,5	61	(0,05)	(9,2)	5,8
-2	43	(0,92)	(5,4)	2	43	(0,18)	(6,1)	8,1
-1	39	(0,57)	(4,7)	5,3	61	(0,34)	(10,6)	5,5
0	43	(0,39)	(7,4)	9,4	48	(0,77)	(5,3)	1,5
1	48	(0,16)	(9,3)	18,5	39	0,28	(4,4)	14
2	43	(0,73)	(6)	3,7	48	0,1	(4,9)	3,7
3	65	1,04	(3,1)	10,6	48	0,05	(4,1)	5,7
4	61	0,37	(3,7)	6,7	70	0,56	(5,1)	4,5
5	43	(0,61)	(8,2)	3,1	30	(0,46)	(2,8)	2,5

None-the-less, *Figure 2* illustrates that both subgroups tend to follow similar trends with the exception of the first two days after the announcement, where outliers exemplified the averages. For instance, *Table 3* demonstrates that returns on *day 1* were highest maximum returns for both subgroups with +18,5% for the partial and +14% for the full exit, where both companies belong to the energy industry.

Figure 2. Calculated ARR over the whole event window.



Performing a simple t-test on the ARs showed that returns of sampled firms in many instances did not deviate from the mean index returns in a statistically significant manner.⁵⁵ On the event day itself, the research detected only two statistically valid instances of ARs for the full exit subgroup and seven for the partial, indicating that other companies might have obtained substantial abnormal returns due to chance. At the same time, when accounting for average reactions in the market on *day 0*, I found that both subgroups exhibited statistically significant AARs, as demonstrated by two different significance tests (*Table 4*). Interestingly, when analysing AARs across the whole event window, I found more instances of statistically valid deviations from the mean index returns for the partial exit subgroup.

⁵⁵ See Appendix C.

Table 4. Significance testing of average abnormal returns (AAR).

<i>Radicality of an exit mode</i>	<i>Significance test</i>	<i>-5</i>	<i>-4</i>	<i>-3</i>	<i>-2</i>	<i>-1</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Partial exit (N=23)</i>	Patell Test Z-values	0,1039	(1,7337)*	(0,5501)	(2,9008)*	(2,1528)*	(1,657)**	(0,283)	(2,3337)*	2,9332*	1,7676*	(1,7185)*
	Sign Test Z-values	(0,2085)	(0,2085)	(0,2085)	(0,6255)	(1,0426)	(0,6255)	(0,2085)	(0,6255)	(1,4596)**	(1,0426)	(0,6255)
	Cross-sectional test t-values	0,3331	(1,3838)**	(0,1905)	(2,0381)*	(1,2155)	(0,5139)	(0,138)	(1,4207)**	1,6264**	0,7763	(1,0603)
	Standardised Cross-sectional test t-values	0,0664	(1,4667)**	(0,4826)	(2,115)*	(1,5227)**	(0,7443)	(0,0943)	(1,5211)**	1,7821*	1,2507	(1,0342)
	Rank test values	(0,4777)	(1,0837)	0,2533	(1,8179)*	(1,5839)**	(1,1767)	(0,8849)	(1,7057)*	1,9814*	1,3466**	(1,1222)
		-5	-4	-3	-2	-1	0	1	2	3	4	5
<i>Full exit (N=23)</i>	Patell Test Z-values	1,4676**	(3,4066)*	(0,5281)	(0,5389)	(1,143)	(1,0757)	0,481	0,693	(0,1848)	1,8338*	(1,3011)
	Sign Test Z-values	0,6255	(1,4596)**	1,0426	(0,6255)	1,0426	(0,2085)	(1,0426)	(0,2085)	(0,2085)	1,8766*	(1,8766)*
	Cross-sectional test t-values	0,9623	(2,2255)*	(0,0752)	(0,3238)	(0,5187)	(1,8687)*	0,3282	0,2104	0,1123	1,1993	(1,5562)**
	Standardised Cross-sectional test t-values	0,8508	(2,3785)*	(0,3153)	(0,3098)	(0,5969)	(1,0849)	0,2169	0,5373	(0,169)	1,3224**	(1,4675)**
	Rank test values	1,2276	(2,2501)*	0,6596	(0,8331)	0,3661	(0,7164)	(0,9878)	0,3282	(0,1452)	1,6852*	(1,4453)**
		-5	-4	-3	-2	-1	0	1	2	3	4	5

* – indicates statistically significant value at the 95% confidence interval; ** – indicates statistically significant value at the 90% confidence interval.

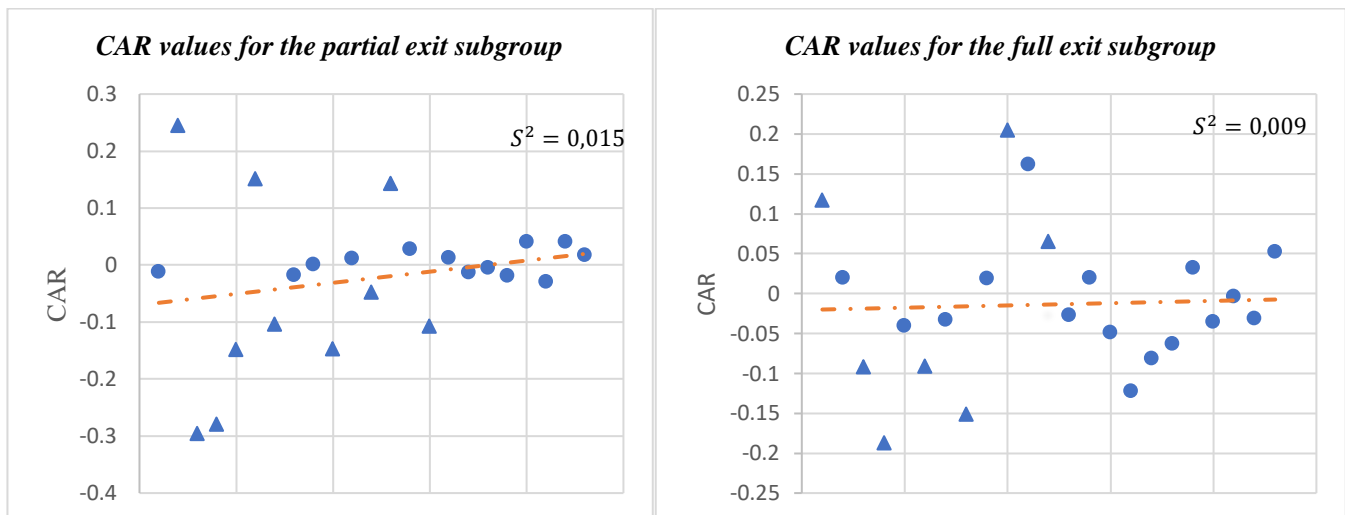
4.1.2 CAR and CAAR

When accumulating returns over the length of the entire event window, my findings indicated more instances of positive returns for firms announcing partial withdrawals, contrary to the findings of the previous subsection. This could be explained by the previously emphasised presence of extreme values in ARs, attributed mostly to firms operating within the defence-related industries, which are more frequent within the partial exit subgroup. While assessing a cumulative nature of abnormal returns, I find frequent occurrences of significance for both subgroups.⁵⁶

Consistent with the analysis of individual ARs, majority of CAR outliers again fall onto the firms operating within this particular segment. Intriguingly, the enterprise that previously demonstrated highest abnormal returns for the full exit subgroup on *day 1* (14%), have cumulatively underperformed, and currently exhibits the lowest CAR within the subsample of almost -19%. Investigating this phenomenon, I found that a large proportion of negative ARs for this company occurred during the days preceding the exit announcement, whereas high positive returns were consistently yielded during the days after the announcement.

Figure 3 illustrates variability in CARs within the sample, which was used to evaluate how cumulative returns are spread across the two subsamples. Analysing the graph, I found that despite visually more scattered indicators for the full exit subgroup, the variance of this subsample is approximately half as large. This counter-intuitive finding encouraged me to further assess CARs before running the regression, where homogeneity of returns will be evaluated in the next subsection.

Figure 3. Variability of cumulative abnormal returns (CAR) for both subgroups (▲ indicates statistically significant CARs; and ● indicates statistically insignificant CARs).



Examining the average total short-term market reaction towards an exit announcement, I find that CAAR of companies that opted for partial withdrawal from the Russian market are negative and large (-0,0233), while CAAR of firms withdrawing fully demonstrated a lesser negative magnitude (-0,0137) (*Table 5*). However, the assessment

⁵⁶ See Appendix C.

of statistical significance showed certain inconsistency. While CAAR of the partial exit subgroup exhibited significance via the Patell test, CAAR of the other subgroup did not indicate any sign of statistical validity (Table 6), although previously demonstrating significance in individual CARs.

Table 5. Summary of key findings of Cumulative Abnormal Returns for both subgroups.

	<i>% of Positive CARs</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Median</i>	<i>Average (CAAR)</i>	<i>Variance</i>	<i>Lowest positive</i>	<i>Highest negative</i>	<i>Difference</i>
<i>Partial exit</i>	43	(0,2955)	0,2441	(0,0122)	(0,0233)	0,015	0,0017	(0,0052)	0,0069
<i>Full exit</i>	39	(0,1873)	0,2041	(0,0312)	(0,0137)	0,009	0,019	(0,0034)	0,0224

Table 6. Cumulative Average Abnormal Returns (CAAR) amid withdrawal from Russia and significance testing.

<i>Radicality of an exit</i>	<i>Patell Test Z-values</i>	<i>Cross-sectional test t-values</i>	<i>Sign test Z-values</i>	<i>Standardised cross-sectional test t-values</i>
<i>Partial exit (N=23)</i>	(2,5627)*	(0,9102)	(0,6255)	(1,2222)
<i>Full exit (N=23)</i>	(1,1164)	(0,6991)	(1,0426)	(0,6963)

* – indicates statistically significant value at the 95% confidence interval.

4.1.3 Homogeneity

Calculating abnormal returns cumulatively demonstrated a frequent presence of outliers, where both subgroups exhibited variances that were relatively small, while the variability in the full exit subsample was almost twice as large. Thus, I have conducted additional tests on homogeneity in CARs to explore preliminary difference between the subgroups and attempt to interpret the established differences. Interquartile range (IQR) was used to measure the spread of the middle half of the data, Median Absolute Deviation (MAD) assisted in finding an average distance between each data point and the median CAR and the correlation coefficient helped establishing a liner relationship between the returns.⁵⁷

As illustrated in Table 7, CARs overall exhibited high levels of homogeneity. MAD equalling to 0 for both subgroups indicated that abnormal returns are situated closely around medians, pointing at little dispersion in individual subsamples. Notably minor differences in IQR imply that returns for the two subsets are also spread very similarity, demonstrating consistent variances in the sample. However, a weak positive correlation (0,1656) in CARs suggest a simultaneous lack of association between the two subgroups, providing another contradictory evidence.

⁵⁷ See Appendix D.

Table 7. Homogeneity tests.

	<i>Q1</i>	<i>Q3</i>	<i>IQR</i>	<i>MAD</i>	<i>Correlation coefficient</i>
<i>Partial Exit</i>	(0,0762)	0,0227	0,0989	0	0,1656
<i>Full Exit</i>	(0,0723)	0,0261	0,0984	0	

4.2 Regression model

4.2.1 Bivariate

To assess the preliminary difference in investor reaction towards the two radicalities of an exit, a bivariate model was conducted through an OLS regression. *Figure 4* demonstrated that an average abnormal cumulative return of the sampled firms is -1,85%, which is a considerably small deviation, although the difference between the highest and the lowest CAR in the sample is almost 55%. Performing a binary regression, I find that on average, CARs for companies announcing a full withdrawal from the Russian market are 0,95% higher in comparison to the reference group. However, the bivariate model indicated no statistically significant relationships between *CAR* and *EXIT*, suggesting that the established difference could have occurred due to chance, and when taken out of the context, no meaningful differences occur.

Figure 4. Summary statistics of bivariate model (top). The bivariate model (bottom).

Descriptive statistics of the bivariate model

Variable	Obs	Mean	Std. Dev.	Min	Max
CAR	46	-.018	.108	-.295	.244
Exit	46	.5	.506	0	1

Bivariate regression model

CAR	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]	Sig
Exit	.01	.032	0.30	.769	-.055 .074	
Constant	-.023	.023	-1.02	.313	-.069 .023	

Mean dependent var	-0.018	SD dependent var	0.108
R-squared	0.002	Number of obs	46
F-test	0.088	Prob > F	0.769
Akaike crit. (AIC)	-71.203	Bayesian crit. (BIC)	-67.546

*** $p < .01$, ** $p < .05$, * $p < .1$

The point-biserial correlation coefficient (11) between *EXIT* and *CAR* was found to be small and positive, suggesting a relatively weak relationship between the variables. Moreover, the correlation coefficient was also

insignificant ($t\text{-value}=0.0592$),⁵⁸ implying no statistically meaningful relationship between an exit announcement and subsequent CARs.

4.2.2 Multivariate

The summary statistics of the control variables is presented in the *Figure 5*. Overall, 28% of sampled firms belong to defence or defence-related sector, with 13% of companies operating within the energy industry. Based on the minimum and maximum values presented by *MarketCap*, my sample included companies of various sizes, which increases the external validity of the study and allows to assess whether investor perception towards withdrawals of small firms is more positive. The levels of geopolitical risk in Russia were on average high when exit announcements were made, with the highest indicator in March 2022 displaying almost 9 points.⁵⁹ In comparison, the index in October 2021, several months prior to the invasion, displayed a value of 0.57. The extreme level in March 2022 was even higher than levels associated with WWI, WWII and the Soviet invasion of Afghanistan,⁶⁰ indicating great perceived risks and substantial reasons to divest from Russia. At the same time, an overall economic outlook was somewhat inconsistent, where the mean change of the currency exchange rate during different event windows fluctuated almost 11%, both appreciating and depreciating.

Figure 5. Summary of control variables.

Descriptive statistics of the control variables

Variable	Obs	Mean	Std. Dev.	Min	Max
DefSector	46	.152	.363	0	1
EnergSec	46	.13	.341	0	1
RUBEUR	46	-.018	.032	-.064	.044
MarketCap	46	23.7	26.038	1.67	128.56
MarketCap cat	46	2.217	.987	1	3
GeoRisk	46	6.938	2.617	1.87	8.98

Running the multivariate model (10), I found that the chosen specification demonstrated moderate levels of R-squared, where the control variables explain 26% of the variability in CARs (*Figure 6*). At the same time, the model exhibited significant explanatory power ($p\text{-value}=0.039$), and hence, the chosen specification is suitable to assess the topic of interest. Controlling for an industry, a size of a company and economic and political outlook, I find that on average, firms exiting Russia fully are expected to yield 0,5% higher cumulative abnormal returns in comparison to firms exiting partially. While the radicality of an exit showed no individual statistical validity in the bivariate model, including control variables into the regression allowed to establish a joint significance.

⁵⁸ See Appendix D.

⁵⁹ Matteiacoviello. "Country-Specific Geopolitical Risk Index." Accessed June 20, 2023. https://www.matteiacoviello.com/gpr_country_files/.

⁶⁰Ibid.

Figure 6. The multivariate regression model.

Multivariate regression model							
CAR	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Exit	.005	.03	0.16	.872	-.057	.066	
DefSector	.0896	.041	2.20	.034	.007	.172	**
EnergSec	.121	.066	1.82	.077	-.014	.255	*
RUBEUR	1.131	.454	2.49	.017	.212	2.051	**
MarketCap	0.0004	.001	0.85	.401	-.001	.001	
GeoRisk	.004	.005	0.69	.492	-.007	.014	
Constant	-.066	.046	-1.43	.16	-.16	.027	
Mean dependent var		-0.018	SD dependent var		0.108		
R-squared		0.262	Number of obs		46		
F-test		2.482	Prob > F		0.039		
Akaike crit. (AIC)		-75.115	Bayesian crit. (BIC)		-62.315		

*** $p < .01$, ** $p < .05$, * $p < .1$

At the same time, the control variables, with exclusion of *MarketCap* and *GeoRisk*, have exerted individually significant influence on CARs of the sampled firms. Firstly, an appreciation of the Russian rouble by 1% is associated with an increase of CARs by 1,13% for firms announcing any type of a market exit. However, when analysed for both subgroups separately, the effect held statistically valid only for firms intending to keep a partial presence in Russia (*Figure 7*).

Secondly, the model predicted that a company within the defence-related sector announcing any type of an exit will yield on average 8,96% higher cumulative returns in the short-term, than a company operating in a different segment. At the same time, belongingness to the energy industry in particular, will likely result in 12,07% higher CARs on average. When relating an industry to the radicality of an exit, I found that defence-related companies announcing the decision of a partial exit will experience on average 2,4% lower returns than their competitors intending to exit from the market completely (*Figure 7*). However, considering the energy industry specifically, I established that announcing a partial exit on average results in much larger abnormal returns accumulated over the short-term (32,2%).

Exploring the small firm effect in the whole sample, I found that on average, smaller enterprises are expected to yield 1% higher CARs than larger companies (*Figure 8*), although size was deemed generally insignificant for market withdrawals and the established difference could occur due to chance. None-the-less, controlling for a particular radicality of an exit, *MarketCap* exerts significant influence on CARs when a company announces a full withdrawal from the market. Here, each additional 1 billion euros of market capitalisation is predicted to accumulate 0,1% higher cumulative abnormal returns over the event window (*Figure 7*). At the same time, *MarketCap* was found to have no statistical effect on returns for the partial exit subgroup.

Figure 7. Regression given full exit (top). Regression given partial exit (bottom).

Regression for the full exit subgroup

CAR	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
o	0	.	.	.	.	.	.
DefSector	.105	.108	0.97	.344	-.123	.334	
EnergSec	.004	.048	0.08	.935	-.098	.106	
RUBEUR	.782	.489	1.60	.128	-.249	1.813	
MarketCap	.0016	.001	2.37	.03	0	.003	**
GeoRisk	.004	.006	0.65	.527	-.01	.018	
Constant	-.07	.045	-1.57	.136	-.165	.024	
Mean dependent var		-0.014	SD dependent var			0.094	
R-squared		0.318	Number of obs			23	
F-test		2.160	Prob > F			0.107	
Akaike crit. (AIC)		-41.269	Bayesian crit. (BIC)			-34.457	

*** $p < .01$, ** $p < .05$, * $p < .1$

Regression for the partial exit subgroup

CAR	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
o	0	.	.	.	.	.	.
DefSector	.082	.038	2.16	.046	.002	.163	**
EnergSec	.323	.051	6.33	0	.215	.431	***
RUBEUR	2.055	.951	2.16	.045	.049	4.06	**
MarketCap	-.0002	0	-0.46	.653	-.001	.001	
GeoRisk	.006	.011	0.61	.551	-.016	.029	
Constant	-.062	.068	-0.91	.376	-.206	.082	
Mean dependent var		-0.023	SD dependent var			0.123	
R-squared		0.587	Number of obs			23	
F-test		11.445	Prob > F			0.000	
Akaike crit. (AIC)		-40.660	Bayesian crit. (BIC)			-33.847	

*** $p < .01$, ** $p < .05$, * $p < .1$

Figure 8. Effect of market capitalisation on cumulative abnormal returns (CAR).

Effect of market capitalisation

CAR	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
1. MarketCap_cat	.01	.033	0.29	.77	-.057	.076	
: base 3	0	.	.	.	.	.	.
Constant	-.022	.021	-1.08	.286	-.064	.019	
Mean dependent var		-0.018	SD dependent var			0.108	
R-squared		0.002	Number of obs			46	
F-test		0.086	Prob > F			0.770	
Akaike crit. (AIC)		-71.201	Bayesian crit. (BIC)			-67.544	

*** $p < .01$, ** $p < .05$, * $p < .1$

4.3 Robustness assessment

4.3.1 Diagnostic checks

To evaluate reliability of the findings, several diagnostic checks were performed prior to the regression.⁶¹ Firstly, possibility of multicollinearity between the explanatory variables in the model was assessed using the Correlation Matrix and the Variance Inflation Factor (VIF) methods, where VIF lower than 5 signifies that multicollinearity is not present. Checking for collinearity in the model was crucial for my research due to close connection between geopolitical risks and currency exchange rate fluctuations, which is a common discussion in the academic world. For instance, the study by Njindan et al. (2022) established that levels of national geopolitical risks could predict exchange rate returns for 59% of currencies within the sample.⁶² Never-the-less, the matrix detected no high correlations in the model and VIF was found to be 1.14. Hence, the multivariate regression model does not exhibit any signs of multicollinearity.

The second diagnostic test was performed to check for the presence of heteroskedasticity in the variance of the residuals, which could bias the standard errors and lead to unreliable hypothesis testing. Breusch-Pagan test was performed, where squared residuals are regressed on the explanatory variables and the overall significance of the model is then assessed. While no signs of heteroskedasticity were detected, the regression was conducted with robust standard errors since my data is prone to outliers and the variances given by an OLS estimators may be consequently artificially inflated. This might not be a common practice, but Hallin and Mizera (2001) suggested that robust estimators may help avoiding misleading estimates when large extremes are present, even if variance of the residuals showed homoscedastic.⁶³

4.3.2 Robustness check

I conducted two types of robustness checks for the multivariate model to evaluate the consistency of my findings. A sensitivity analysis was carried out by firstly substituting the measure of economic stability in Russia and then by substituting a proxy for assessing the size of a company. Then, an outlier analysis was conducted to detect the most significant outliers in my data and to assess if the findings have been significantly affected by extreme datapoints.

Sensitivity analysis

Since the average change in the exchange rate, as a measure of economic outlook in the country, exhibited statistical significance in the model, I decided to assess the robustness of this finding by using a different proxy closely associated with economic projections. The monthly level of Harmonized Index of Consumer Prices (HICP)

⁶¹ See Appendix E.

⁶² Njindan et al., "Exchange rate return predictability in times of geopolitical risk," *International Review of Financial Analysis*, Issue No. 81 (2022).

⁶³ Hallin, Marc and Mizera, Ivan, "Sample heterogeneity and M-estimation," *Journal of Statistical Planning and Inference*, Issue No.93 (2001): 139-160.

within the European Union is a measure used to control for the inflationary effects in a market, where including this variable will help to account for impact of general price changes on CARs of the sampled companies. The effect of high inflation on stock returns has been frequently analysed by scholars and it is believed to have significant negative influence, especially in a short-term, since high levels of inflation predict a period of low growth.⁶⁴ In this context, simultaneously low growth prospects and heightened risks deems keeping investments in Russia as suboptimal, as predicted by the Modern Portfolio theory. The monthly HICP, provided by *Eurostat* will be assigned to firms given the respective month of an exit announcement.⁶⁵ The regression model with the new proxy is given below (11).

$$CAR_i = \alpha_0 + \beta_1 EXIT_i + \beta_2 DefSector_i + \beta_3 EnergSec_i + \beta_4 Inflation_i + \beta_5 MarketCap_i + \beta_6 GeoRisk_i + e \quad (11)$$

Figure 9. Regression with the new proxy for economic outlook.

Multivariate regression using Inflation							
CAR	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Exit	.016	.031	0.51	.616	-.047	.078	
Inflation	.813	2.59	0.31	.755	-4.427	6.053	
DefSector	.092	.044	2.09	.043	.003	.181	**
EnergSec	.094	.067	1.40	.17	-.042	.231	
MarketCap	.001	.001	0.95	.348	-.001	.002	
GeoRisk	.001	.008	0.16	.871	-.015	.018	
Constant	-.141	.27	-0.52	.605	-.687	.406	
Mean dependent var		-0.018	SD dependent var			0.108	
R-squared		0.178	Number of obs			46	
F-test		1.437	Prob > F			0.225	
Akaike crit. (AIC)		-70.127	Bayesian crit. (BIC)			-57.326	

*** $p < .01$, ** $p < .05$, * $p < .1$

The individual relationship between an announcement of an exit and subsequent cumulative returns appears to have strengthened and announcing a full market exit is now expected to yield on average 1,56% higher CARs, in comparison to 0,5% detected via the original model. Substituting *RUBEUR* with *Inflation*, however, resulted in lower predictable power ($R\text{-squared}=0.1780$) and in general insignificance of the model ($p=0.225$) (Figure 9). At the same time, *EXIT* remains individually insignificant and statistical effect associated with belongingness to the energy industry has disappeared. Due to insufficient predictable power of the model, no further conclusion could be drawn.

The second robustness check will include a different proxy for measuring the size of the sampled firms, given by total assets (TA) of an enterprise prior to the announcement of an exit, where data was gathered from the same

⁶⁴ Jaffe, Jeffrey F. and Mandelker, Gershon, "The 'Fisher Effect' for risky assets: an empirical investigation," *The Journal of Finance*, Issue No. 31(2) (1976): 447-458.

⁶⁵ Eurostat. "Euro area annual inflation and its main components, May 2013 - May 2023 (estimated)." Accessed on June 20, 2023. <https://ec.europa.eu/eurostat/>.

database as the other size proxy, *companiesmarketcap*. This proxy is frequently used in academia, where Dang, Li and Yang (2015) found that out of 100 sampled papers on corporate finance, 49 were using TA as a proxy for size, which generally shown robust and significant.⁶⁶ Similarly to assessing the size using total value of equity, the sampled firms will be separated in accordance to their TA (in billions of euros), where the guidelines on categorising are adopted from Yadav, Pahi and Gangakhedkar (2021).⁶⁷ The regression model with *TotAsset* as the measure of firm size is given below (12).

$$CAR_i = \alpha_0 + \beta_1 EXIT_i + \beta_2 DefSector_i + \beta_3 EnergSec_i + \beta_4 RUBEUR_i + \beta_5 TotAsset_i + \beta_6 GeoRisk_i + e$$

(12)

Figure 10. Regression with the new proxy for firm size.

Multivariate regression using <i>TotAsset</i>							
CAR	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Exit	-.0017	.031	-0.06	.956	-.065	.061	
DefSector	.0897	.04	2.27	.029	.01	.17	**
EnergSec	.127	.068	1.87	.069	-.01	.264	*
RUBEUR	1.166	.46	2.53	.015	.235	2.096	**
GeoRisk	.004	.005	0.77	.445	-.007	.015	
TotAsset	0.0002	0	0.52	.603	0	0	
Constant	-.057	.047	-1.22	.23	-.153	.038	
Mean dependent var		-0.018	SD dependent var		0.108		
R-squared		0.255	Number of obs		46		
F-test		2.451	Prob > F		0.042		
Akaike crit. (AIC)		-74.664	Bayesian crit. (BIC)		-61.864		

*** $p < .01$, ** $p < .05$, * $p < .1$

Introducing the new proxy into the model slightly reduced the R-squared, but the new specification is still capable of explaining 25,5% of the variation in CARs, exhibiting statistical power to predict cumulative returns of the sampled firms ($p\text{-value}=0.042$)(Figure 10). While different exit radicalities still exerts no statistically valid impact on CARs, joint significance of explanatory variables allows to continue the analysis.

The only notable difference followed by the introduction of the new proxy, however, is the most important for my research, where the coefficient of *EXIT* now exhibits negative magnitude. The model predicted that companies intending to exit Russia fully are expected to accumulate on average 0,17% less abnormal returns in comparison to enterprises indenting to exit partially. For reference, the coefficient was previously positive and predicted 0,5% higher cumulative abnormal returns on average. The change in magnitude may indicate that size could have been interpreted

⁶⁶Dang, Chonguy and Li, Frank and Yang, Chen, “Measuring Firm Size in Empirical Corporate Finance,” *Journal of Banking and Finance*, Issue No. 86 (C) (2018): 159-176.

⁶⁷ Yadav, Inder Sekhar and Pahi, Debasis and Gangakhedkar, Rajesh, “The nexus between firm size, growth and profitability: new panel data evidence from Asia–Pacific markets,” *European Journal of Management and Business Economics*, Issue No. 31(1) (2021).

differently by the two proxies, which shows by the difference in averages of the categorical variables (*Figure 11*). For instance, using *MarketCap* as a proxy for firm size indicated that almost 74% of the sampled companies were small and medium-sized enterprises, whereas *TotAsset* categorisation assumed almost equal size distribution.

Figure 11. Differences in assessment by different size proxies.

Differences in size categorisation

Variable	Obs	Mean	Std. Dev.	Min	Max
MarketCap cat	46	2.217	.987	1	3
TotAsset cat	46	1.565	.91	1	3

Never-the-less, firm size was deemed repeatedly not significant in predicting investor reactions when the new proxy was introduced ($p=0.748$) (*Figure 12*). However, the results consistently demonstrated that size has positive significant impact on CARs when an enterprise announces a full exit from the Russian market (*Figure 13*), although the magnitude of the effect has substantially reduced and goes beyond four decimals. Similarity to the original regression model, the new proxy showed negative effect of size on the announcement of a partial exit, which now is statistically significant, but considerably minor. According to the model, each additional 1 billion of the TA owned by the firms is associated with 0,03% lower CARs for the firms keeping partial presence in the Russian market.

Figure 12. Effect of total assets (TA) owned by a company on cumulative abnormal returns (CAR).

Effect of TA owned by a company

CAR	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
1.TotAsset_cat	.012	.036	0.32	.748	-.061	.084	
: base 3	0	.	.	.	.	.
Constant	-.027	.03	-0.88	.381	-.088	.034	
Mean dependent var		-0.018	SD dependent var			0.108	
R-squared		0.002	Number of obs			46	
F-test		0.105	Prob > F			0.748	
Akaike crit. (AIC)		-71.221	Bayesian crit. (BIC)			-67.563	

*** $p < .01$, ** $p < .05$, * $p < .1$

Figure 13. Regression with the new proxy for the size of the firm for the partial exit subgroup (top) and for the full exit subgroup (bottom).

Multivariate regression for the partial exit subgroup using *TotAsset*

CAR	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
o	0	.	.	.	.	.	.
DefSector	.053	.041	1.31	.209	-.033	.14	
EnergSec	.322	.04	8.09	0	.238	.406	***
RUBEUR	2.788	.772	3.61	.002	1.159	4.418	***
GeoRisk	.008	.008	1.00	.333	-.009	.024	
TotAsset	-.0003	0	-2.34	.032	-.001	0	**
Constant	-.029	.049	-0.59	.562	-.133	.075	
Mean dependent var		-0.023	SD dependent var			0.123	
R-squared		0.695	Number of obs			23	
F-test		17.072	Prob > F			0.000	
Akaike crit. (AIC)		-47.620	Bayesian crit. (BIC)			-40.807	

*** $p < .01$, ** $p < .05$, * $p < .1$

Multivariate regression for the full exit subgroup using *TotAsset*

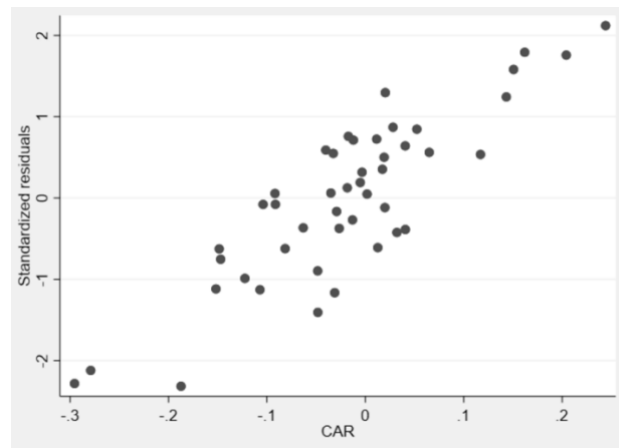
CAR	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
o	0	.	.	.	.	.	.
DefSector	.119	.09	1.32	.206	-.072	.309	
EnergSec	.032	.066	0.49	.633	-.107	.172	
RUBEUR	.874	.491	1.78	.093	-.161	1.909	*
GeoRisk	.006	.006	0.95	.353	-.007	.02	
TotAsset	0.0008	0	3.63	.002	0	0	***
Constant	-.069	.045	-1.52	.148	-.165	.027	
Mean dependent var		-0.014	SD dependent var			0.094	
R-squared		0.246	Number of obs			23	
F-test		3.762	Prob > F			0.018	
Akaike crit. (AIC)		-38.965	Bayesian crit. (BIC)			-32.152	

*** $p < .01$, ** $p < .05$, * $p < .1$

Outlier analysis

To assess whether outliers have potentially biased my findings, I firstly obtained standardised residuals to determine statistically important outliers. *Figure 14* illustrates the standardised residuals plotted against CARs, which visually indicates four significant outliers outside of the (-2;2) area. Hence, the firms exhibiting these levels of cumulative returns will be removed from the sample and a new regression will be conducted with exclusion of outliers.

Figure 14. Scatterplot of standardised residuals.



Excluding outliers resulted in the overall insignificance of the model ($p=0.1019$), although the general fitness to explain variations in returns decreased only to a small extent (Figure 15). Removing extreme datapoints demonstrated similar relationship between a radicality of an exit and subsequent returns, although firms announcing an intention of a full market exit are now expected to yield slightly lower cumulative abnormal returns on average (0,4%). While three out of four outliers removed belonged to the energy industry, the coefficient of *EnergySec* still exhibits individual significance. However, the operating in energy sector is now associated with 1,7% lower abnormal returns in comparison to the original model. At the same time, the relationship between CARs and fluctuations in the exchange rate no longer indicated statistical validity.

Figure 15. Regression excluding outliers.

Multivariate regression excluding outliers

CAR	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Exit	.004	.026	0.17	.863	-.048	.057	
DefSector	.076	.033	2.31	.027	.009	.144	**
EnergSec	.103	.043	2.41	.021	.016	.19	**
RUBEUR	.618	.421	1.47	.151	-.236	1.472	
MarketCap	0	0	0.39	.7	-.001	.001	
GeoRisk	.002	.005	0.39	.696	-.008	.012	
Constant	-.041	.042	-0.98	.336	-.126	.044	
Mean dependent var		-0.008	SD dependent var			0.083	
R-squared		0.249	Number of obs			42	
F-test		1.938	Prob > F			0.102	
Akaike crit. (AIC)		-89.394	Bayesian crit. (BIC)			-77.230	

*** $p < .01$, ** $p < .05$, * $p < .1$

5. Discussion and implications

Overall, my research detected abnormal patterns in stock returns yielded by the sampled companies after an announcement of the market exit from Russia. While the results showed that some companies exiting fully tend to yield higher cumulative abnormal returns, the average investor reaction towards a certain radicality of an exit is contingent upon the general economic and political outlook at the time of an announcement and firm-specific characteristics. At the same time, I found that investors tend to react more actively to the announcement of a partial exit, given by more frequent instances of statistically significant returns for this subgroup. Additionally, I established an interesting dynamic, which is exclusively associated with the energy industry.

The research established that an announcement of an exit may lead to abnormal returns. While abnormal returns calculated were of various magnitudes and weights, I established that in many instances companies experienced sudden spikes of volatility, where stock prices deviated from their usual patterns immediately after an exit was announced. On average, abnormal returns yielded by the end of the event day, demonstrated statistical significance for both subgroups. Hence, $H0_1$ was rejected for the entire sample, concluding that an exit announcement from the Russian market led to immediate end-of-the-day significant deviations from the mean index patterns and resulted in abnormal returns.

Analysing returns accumulated over the length of the entire event window, I consistently established frequent presence of individually significant CARs, which suggests great reliability when accounting for the entire event window and considering possibilities of information leakages and insider trading. Hence, based on individual significance of CARs for many sampled firms, I rejected $H0_2$ for the entire sample and concluded that an announcement of an exit leads to accumulation of short-term abnormal returns.

However, while on average, the partial exit subgroup aggregated significantly different short-term returns in comparison to those of the market index, CAAR for the second subset did not exhibit statistically important deviations. For the full withdrawal subgroup, significance of CARs and concurrent lack of significance of CAAR may indicate exceptionally short-term impact of the news and an inconsistently sustained abnormal performance over the event period. For instance, the initial announcement may have shocked profit-oriented investors and caused proactive stock selling on the day of the event, anticipating decline in share prices. At the same time, ethical investors might have started to actively buy their shares, considering an exit as a signal to a firmer socially responsible stance. Thus, this may have resulted in trend inconsistency, which greatly varied on the daily basis, where investors simultaneously diminish and enhance stock returns.

Alternatively, an insignificant CAAR may be a result of diversity. Since sampled companies differ by an industry, size and timeframe of the event day, this could lead to various individually significant abnormal returns of different weights and magnitudes. Consequently, aggregated together in CAAR, negative and positive outliers might have cancelled each other out, causing a less pronounced change in average reactions.

Never-the-less, $H0_3$ cannot be rejected based on the insignificance of CAAR for the full exit subgroup, suggesting that the established difference in investor reactions might have occurred due to chance. Thus, this weakens the claim that an announcement of an exit generally results in abnormal returns when no other factors are taken into account.

Investor reaction was found to be more positive towards an announcement of full withdrawal, although it is contingent upon different factors. Examining individual daily ARs, I established that positive instances were more frequent for the full exit subgroup in comparison to the partial exit subsample. This finding was also consistent with the results of CAAR calculations, where CAAR was found to be -0,014% and -0,023% respectively. Thus, these findings, in fact, suggested that a complete withdrawal may yield higher returns, as it reduces proximity to the source of the geopolitical risk and sends stronger commitment signal to ethical investors, in line with the proposed theory. Never-the-less, rejecting HO_1 and HO_2 , while also rejecting HA_3 , indicated that the average differences could have occurred due to chance. This encouraged me to expand the analysis to assess whether other factors might contribute to significant distinctions between the subgroups, and to understand whether exiting fully, in fact, leads to higher returns.

Examining abnormal returns accumulated over the entire event window, I repeatedly encountered outliers, while the calculated variances in CARs appeared considerably small, which was true for both subgroups. While this itself could be the result of frequent outliers, since extremes may exert dominance on the return distribution, I decided to perform additional homogeneity tests to assess the phenomenon. Through IQR and MAD analysis I established that both subgroups follow statistically similar trends in CARs, although weak correlation implied that returns are accumulated differently. At the same time, *EXIT* was found to be statistically insignificant in the bivariate model, alongside the point-biserial correlation coefficient, which indicated that on average, investors do not react different to the two radicalities of an exit. This contradicting evidence, therefore, hinted that factors other than a radicality of an exit might lead to substantial differences in the subgroups.

Hence, conducting a multivariate model, I found that the choice of an exit mode has exerted statistical influence on CARs when firm-specific characteristics and economic and political outlooks were considered, given by the joint significance established. This finding explained the results of the homogeneity assessment and provided empirical evidence that market sentiment towards a radicality of an exit is contingent upon other factors. The regression demonstrated that the selected control variables capture crucial confounding aspects influencing both the DV and the IV and help uncover the underlying relationship between CARs and an exit radicality. Hence, I rejected $H0_4$ and concluded that a radicality of an exit, firm-specific characteristics and economic outlook have significant joint impact on cumulative average stock returns.

At the same time, I established that firms announcing full withdrawal are expected to yield on average 0,5% higher CARs than the control group, although Sonnenfeld et al. (2022) found a slightly higher number of 1-2%, contingent upon the weighting methods used.⁶⁸ This demonstrated further statistical evidence to the Distance Decay theory, suggesting that proximity to the source of geopolitical risk and stock returns are negatively correlated, as well as to the Ethical Investment concepts, where the differences could also be explained by greater ethicality perception of firms announcing a full market withdrawal.

Additionally, I found that currency fluctuations and belongingness to a defence-related industry exerted individual significant impact on CARs. The former may be explained through close connection between an exchange rate and

⁶⁸ Sonnenfeld et al., *It Pays for Companies to leave Russia*, para 30.

economic growth, where negative future outlook given by sharp drop in export and imports may reduce demand for the currency and lead to a substantial depreciation. Indeed, Broda and Cédric (2003) and Musonda (2007) found that engagement in international trade have significant impact on the economic outlook and perceived future growth, although the studies were mostly concerned with developing countries.⁶⁹ In this case, investors perception of the future of the economy is crucial, as a negative expectations may imply high risks and potentially modest returns, giving little incentives for a rational investor to purchase stocks in Russia, as suggested by the Modern Portfolio theory. At the same time, the insignificant impact of currency fluctuations on abnormal returns for the full exit subgroup may be explained by future irrelevance of the currency to the overall company performance.

High returns in the defence-related sector, including the energy industry, were established in the event of an exit announcement, regardless of the radicality of that exit. Interestingly, even when several energy companies exhibiting extreme positive returns were dropped from the sample, the energy sector kept a significant coefficient, indicating that the observed tendency to outperform remains accurate. This is consistent with findings by Sonnenfeld et al. (2022) and reflects the current boom in the energy and defence-related industries amid the military conflict, in line with findings by Apergis and Apergis (2016) and Zhang et al. (2022). I believe that the explanation in this particular context lies in high potential growth prospects for these companies since the European countries increased their defence-related expenditures by 204 billion dollars⁷⁰ and energy prices rose sharply by 20% immediately after the invasion.⁷¹ Thus, this finding indicates that profit-oriented investors are rushing to purchase their common stock at lowest possible price, consequently resulting in abnormally high returns.

While firm size demonstrated little importance for the sample overall, the research established that size has significant effect on market reaction when an announcement of full withdrawal is made. The study showed that each additional 1 billion euros of market capitalisation is predicted to accumulate 0,1% higher cumulative abnormal returns over the event window, disproving the small firm effect for this subgroup. This demonstrates higher investor confidence towards withdrawals of larger firms, since they have more resources available to recover from losses associated with a full exit and have closer access to various capital markets.⁷² Additionally, larger companies are believed to be more capable to generate larger profits in the future.⁷³ At the same time, my research was inconclusive about the small firm effect for the entire sample, since no significance in the coefficient was established.

The reason for an individual statistical insignificance of the geopolitical risk as measure of investor risk perception in the model, may be due to market efficiency. Geopolitical risks may have been well-known and incorporated in the stock prices prior to the opening of the event window, as the escalations in the Russo-Ukrainian conflicts were evident months prior to the invasion. The major event that might have risen the levels substantially, was the official

⁶⁹ Broda, Christian and Tille, Cedric, "Coping with terms-of-trade shocks in developing countries," *Current issues in Economics and Finance*, Issue No. 11 (9) (2003);

Musonda, L., "Is economic growth led by exports in Zambia?" *Ministry of Finance, National Planning and Economic Management* (2007).

⁷⁰ Deloitte, "2023 Aerospace and Defence industry outlook." Accessed on June 20, 2023. <https://www2.deloitte.com/>.

⁷¹ Michiyuki, Yagi and Shunsuke, Managi, "The spillover effects of rising energy prices following 2022 Russian invasion of Ukraine," *Economic Analysis and Policy*, Issue No. 77 (2023): 680-695.

⁷² Nofsinger, John R. and Kim, Kenneth A., "The Importance of Investor Confidence." In: *Infectious Greed: Restoring Confidence in America's Companies*, 1-15, Pearson, 2023.

⁷³ Hasanuddin et al., "The Effect of Firm Size, Debt, Current Ratio, and Investment Opportunity Set on Earnings Quality: An Empirical Study in Indonesia," *Journal of Asian Finance, Economics and Business*, Issue No. 8(6) (2021): 179-188

recognition by the Russian President the self-proclaimed Donetsk and Luhansk People's Republics as independent states on 21st February 2022,⁷⁴ three days before the invasion of Ukraine. Since only several sampled companies announced their exit few days after the invasion, the event window would have not started earlier than 21st February. Hence, this may indicate the relevance of this assumption.

However, the robustness assessment unfortunately indicated reduced reliability of the results, whereby performing sensitivity analyses demonstrated that my findings are prone to certain inconsistencies. For instance, substituting *RUBEUR* for *Inflation* have led to joint insignificance in the model. However, this can be explained by stock returns being more sensitive to fluctuations in the exchange rate due to more immediate effects on trade and profitability. Simultaneously, HICP provides a better reflection of change in prices and purchasing power amid reduction in the trade, which usually requires more time to adjust. Since the study concerned with the short-term effects, perhaps the influence was not yet exerted.

Additionally, using a different proxy for firm size exhibited negative relationship between an announcement of a full exit and subsequent abnormal cumulative returns. These differences in coefficients could be attributed to the fact that market capitalisation and TA may not be interchangeable since these are two different ways to assess the size. The latter evaluates the size based on both tangible and intangible assets, rather than exclusively on equity. For example, financial institutions and consulting firms included in the sample may have relatively low tangible assets, whereby their competitive power is concentrated in their intangible assets (e.g expertise, intellectual capital), which may not be accounted for in their TA statements, but still sufficiently contribute to accumulation of a large equity base.

At the same time, the outlier analysis showed that the dropped extreme datapoints were crucial in explaining the relationship between CARs, radicality of an exit and the cofounding factors, since the model lost its statistical power when the outliers were excluded. An alternative, more positive explanation to the loss of an overall statistical power, could be related to the sample size. Since the number of firms in the study is initially small, removing 10% of the datapoints have substantially decreased the odds of detecting significant relationship and conduct reliable hypothesis testing. Never-the-less, it is important to consider that extreme values might have initially biased the variances and caused false statistical significance in the original model.

Overall, based on the findings, CAARs of both subgroups were found to be negative, although consistently with the underlying theory, average abnormal return accumulated in short-term was less adverse in case of complete market withdrawal. Never-the-less, according to Ethical Investment concepts, CAAR for the full exit subgroup was expected to be positive, since support directed towards a fully ethical company should be the highest. I believe that negative CAARs may have resulted from the chosen methodological approach, where equal weighted method was used to evaluate the overall subgroup performance, ignoring the difference in effect exerted by small and large enterprises onto the index returns.

⁷⁴ Kremlin. "Signing of documents recognising Donetsk and Lugansk People's Republics." Accessed 20 June, 2023. <http://en.kremlin.ru/events/president/news/67829>.

Substantial difference in returns while using the two techniques may occur due the fundamentals of market weighted returns, where larger companies are assigned larger weight, and hence, exert greater influence on the market index. As research has established, larger companies yield higher cumulative abnormal returns, and hence, their influence on the index returns is greater, leading to higher overall abnormal returns. At the same time, opting for this technique may also explain why the overall effect of size on CARs was deemed insignificant.

Indeed, according to the findings of Sonnenfeld et al. (2022), returns appear positive when using market capitalisation weighted method, whereas equally weighted technique displays small negative returns. For instance, using the latter approach, the average stock returns from 23rd February to 8th April 2022 for companies withdrawing fully were found to be 0,51%, whereas using the former method resulted in positive 3,96%. At the same time, companies suspending operations in Russia obtained on average -1,98% and 2.99% respectively (para. 11).⁷⁵ Regardless of the magnitude, the returns of the firms completely withdrawing from the market were consistently higher, which aligns with the findings of my paper.

A unique dynamic relevant exclusively to the energy industry was detected. Examining individual ARs, the research indicated a frequent presence of positive AR outliers within the energy sector, supporting findings by Apergis and Apergis (2016) and Zhang et al. (2022), who established that firms operating within defence-related sector tend to have higher returns during the times of heightened geopolitical risk. The trend held true when analysing cumulative abnormal returns, where outliers were consistently attributed to companies within the defence-related segment.

Interestingly, I established that the energy company in the full exit subsample that previously exhibited the highest positive individual AR on *day 1 (TE.PA)*, have cumulatively underperformed due to large negative returns during the days preceding the announcement. While this finding would potentially lend empirical support to the notion of ‘divesting from the unethical’, the research did not indicate similar notable patterns in the sample. However, other enterprises in the energy sector (eg. ORSTED.CO and EQNR) have yielded substantial positive returns after the event. Hence, while divesting from unethical enterprises may be less pronounced, this finding provides with evidence for enhanced investment into ethical companies. At the same time, an alternative explanation for negative returns prior to exit announcements in general may be connected to market anticipation. For instance, profit-seeking investors might have anticipated withdrawals and actively engaged in short-selling, awaiting negative overall reactions in the market towards exit announcements.

Alternatively, the inconsistency in returns for the energy sector may correspond to the trends in the market itself. For example, IEA report stated that the escalation of the military conflict led to rapid growth in the renewable energy sector, where investments into the green power market are expected to exceed investments into fossil fuels by 0.7 trillion dollars.⁷⁶ According to the research, the cause of this phenomenon was the arisen “risk of over-reliance on highly concentrated manufacturing and critical minerals” (para. 3),⁷⁷ especially when the products are exported from Russia. ORSTED.CO and EQNR are large players in renewable energy industry, whereas TE.PA is a considerably

⁷⁵ Sonnenfeld et al., *It Pays for Companies to leave Russia*, para 11.

⁷⁶ IEA. “Data and statistics.” Accessed on June 23, 2023. <https://www.iea.org/data-and-statistics>

⁷⁷ IEA. “Russia’s War in Ukraine”. Accessed on June 23, 2023. <https://www.iea.org/topics/russias-war-on-ukraine>.

small project.⁷⁸ Hence, significant negative returns of TE.PA could have resulted from enhanced competition in the industry, leading to pressures in pricing, lower profit margins and diminishing market shares. Here, larger players are more protected, attracting more investors and a larger influx of capital, hence less likely to experience adverse effects.

None-the-less, I have established a distinctive characteristic of the energy segment, where abnormal returns were predicted to be higher for energy companies announcing a partial exit, in contrast to predictably lower returns for any other industry. This is contradictory to the reference study, where Sonnenfeld et al. (2022) found consistency in every segment, aside from the utilities sector.⁷⁹ This is also contrary to my expectations, since I anticipated that companies in the energy sector withdrawing fully would have greater opportunities to conduct contracts with the EU countries, and hence, enhance investor interest in their common stock. The idea behind this assumption was attributable to sanctions introduced by the European Union, whereby oil cannot be exported from Russia since December 2022 and gas since February 2023,⁸⁰ and many European countries would have to find the new supplier.

Inevitably, positive returns were predicted for the energy sector, but partial companies yielding higher returns is contradictory to the Distance Decay theory. This confirms the idea that investors perceive partial presence in Russia as more beneficial for an energy company, following greater local need for fuel and oil, as well as rising opportunities for subsidies from the government. Hereby, enhanced future returns may outweigh the associated risks.

My research, however, did not find any evidence regarding contagion effects, where even great outliers in the defence-related sector did not raise the overall short-term returns of companies partially operating in Russia above returns of companies that are exiting fully. At the same time, this effect may be more apparent in the long-term.

Evidence for more active responses to the news of a partial exit was established. Throughout the entire research I noticed that the partial exit subgroup consistently exhibited more frequent statistically significant deviations. This trend was established upon examinations of AARs, CARs and CAARs, where this subset repeatedly yielded returns that were on average more abnormal, indicating that investors tend to react more actively to the news of a partial withdrawal. One of the reasons may be attributed to larger risk exposure attached to keeping a partial presence in Russia. In particular, investors may be concerned about future growth prospects and profitability of companies, given highly unstable economic outlook, peaking geopolitical risk and limited participation opportunities in the global market when a partial presence in Russia is maintained. Here, reduced potential growth and profit margins may lower the overall interest in a company and result in short-selling, and hence, investors may opt to sell high as quickly as possible before the news reach the wider market.

Simultaneously, less pronounced reactions towards announcements of full exits might signify that financiers are less concerned about potential risks associated with complete market withdrawals. Thus, this finding may provide an

⁷⁸ According to the database of the market capitalisation, equity of ORSTED.CO was worth 49.96 billion euro, which was 10 billion euro for EQNR and 3.36 billion euro for TE.PA when announcement were made. The announcement were made just several days apart.

⁷⁹ Sonnenfeld et al., *It Pays for Companies to leave Russia*, para 21.

⁸⁰ European Council. "EU sanctions against Russia explained." Accessed June 20, 2023. <https://www.consilium.europa.eu/en/policies/sanctions/>.

additional empirical support to the Distance Decay theory, since companies reducing their proximity to the main source of the geopolitical risk are perceived as less risky and are consequently less negatively affected.

On the concluding note, it is important to mention that average abnormal returns measured by CAAR were on average minor, which may be a sign that market tend to refrain from actively changing their portfolio strategy regardless of the radicality of an exit. This idea is supported by the research conducted by HYCM, where it was established that less than 10% of investors adjusted their investment strategies amid the invasion of Ukraine.⁸¹ One plausible explanation is that investor may prefer to wait until more information regarding an exit becomes available. For example, Bhagat et al. (2005) found that short-term adjustments in stock returns may not occur when firms are announcing horizontal acquirers, as these may be subject to strict regulations, hence motivating financiers to wait until the acquisition is officially permitted.⁸² Here, since any type of a market exit is subject to long regulatory and due diligence processes, investors might also opt for the waiting strategy.

The summary of the findings of my research, as well as implications of these findings are presented in *Table 8*.

Table 8. The summary of the research findings.

<i>Finding</i>	<i>Implication</i>	<i>Evidence</i>
Stock returns after exit announcements have generally deviated from their previous patters and from the mean index returns.	Announcing an exit from Russia may lead to abnormal returns.	Significance of AAR on the event day; significance of CARs.
Control variables are crucial in explaining difference in investor reactions.	Generally, investors react towards an announcement of full withdrawal more positively, but is it contingent upon other factors	Homogenous patters, while exerting little correlation; multivariate regression using the control variables; joint significance.
Partial exit subgroup showed consistently more statistical significance.	Investors react more actively to the less radical withdrawal.	More instances of instances of significant AARs for the partial exit subgroup; CAAR is significant only for the partial exit subgroup.
Defence sector and energy industry specifically, outperformed other sectors	Defence sector and the energy industry will likely yield higher returns regardless of an exit radicality due to heightened demand amid rising global geopolitical risks.	Extreme positive outliers in the defence sector for ARs and CARs; Significant positive returns when outliers removed; multivariate regression results.

Overall, I believe that my research contributed to understanding both theoretical and practical side of strategic management in several ways. Firstly, my paper combined the Signaling theory and resource-based view and related the concept to the context of a market exit, rather than the extensively researched concept of a market entry. I

⁸¹ Coghlan, Giles. “Two months into the Russia-Ukraine conflict, how are investors reacting?” Investment Monitor, April 25, 2022. Accessed June 23, 2023. <https://www.investmentmonitor.ai/special-focus/ukraine-crisis/>

⁸² Bhagat et al., “Do Tender Offers Create Value? New Methods and Evidence,” *Journal of Financial Economics*, Issue No. 76 (2005): 3–60.

suggested that since the strength of a signal is proportional to the cost of sending that signal, companies fully withdrawing from the market send costlier indications, in comparison to enterprises intending to keep a partial presence. Additionally, I related this concept to the emerging topic of ethics-induced withdrawals, that are morally driven, rather than profit- and cost-oriented. Secondly, I challenged the idea that market withdrawals deteriorate fundamental share price determinants and necessary lead to negative investor reactions and diminishing stock returns. I proposed that this might not hold true when an element of ethicality is introduced, where reverse correlations could be established if withdrawals are morally justified. Thirdly, I broadened the topic of ethical investments from a perspective of the social and political aspects, rather than the environmental factors, as the former pillars are lacking academic attention.

In terms of practical contributions, my research offers insights to managers and boards of directors who are faced with the decision of how to proceed with a Russian subsidiary amid the invasion. Here, my study provides with an example on how investors react to different radicalities of withdrawals and likely consequences of an announcement on stock prices. My research, therefore, may serve as a message of encouragement to companies that wish to withdraw from the Russian market based on their democratic and pacifistic views. I demonstrated that such enterprises may not experience a substantial decline in their share prices, as the support of ethical investors is evident in this context.

Never-the-less, my research should be approached with considerations to certain methodological limitations. Firstly, the study might be subject to researcher bias, where I subjectively evaluated exit statements for the sign of morally driven withdrawals. Although the definition might be intuitive, to improve research replicability and to reduce the bias, I have provided with quotes that were used to determine companies' suitability for the study. Additionally, my research may still lack external validity due to both, small sample size and usage of a single European market index. This could be the case that researching market indices in the West may exhibit distinct results, perhaps due to predominant presence of American companies that do not have operations in Russia or due to different proximities to the source of geopolitical risks. While the reference paper found that these patterns hold true for every region, the research did not account for ethics-induced withdrawals, indicating a large possibility for inconsistent results with those presented in this paper. Furthermore, a small size is a big concern, since it might have led to the inconsistencies in robustness and reduced the reliability of the findings.

My recommendation for scholars who wish to continue exploring this topic is to focus on accumulating larger sample size to control the findings for consistency, since the robustness assessment indicated a certain degree of irregularities. It may also bring interesting insights conducting the study with both equal weighted and market capitalised returns, similarity to the methods of Sonnenfeld et al. (2022), for easier comparability of the outcomes. Additionally, the phenomenon of consistently more significant market reactions towards an announcement of a partial exit could be further explored to determine the true reason behind this finding. Lastly, since my paper is only concerned with short-term effects of an announcement, the long-term impact should be studied. For example, stock returns on announcement and on actual withdrawal date could be compared to determine patterns in ethical investing. Here, market reaction could be firstly positive, but the wish for higher returns may still prevail.

6. Conclusion

This research analysed stock returns of companies that have stated the intent to exit the Russian market amid the invasion of Ukraine based on ethical considerations. My sample included 46 enterprises that are components to the *STOXX Europe 600* market index and have made different announcements regarding the radicality of an exit, where 23 firms were intending to perform a complete withdrawal from the market, and 23 firms were intending to halt new investments and reduce the scope of their operations, hence engaging in a partial exit. The study was performed in two steps, where abnormal returns were firstly calculated and assessed in their individual significance, and secondly, were regressed onto a binary variable accounting for a radicality of an exit, as well as other control variables.

My study sought to answer two research questions. Firstly, ‘Is there a difference between abnormal stock returns of companies that stated their intent to withdraw from the Russian market based on ethical considerations partially and fully?’ Secondly, ‘Which factors significantly contribute to this difference?’ Consequently, four hypotheses were drawn up to address these questions.

With regards to the first research question, I have found evidence for significant differences in abnormal stock returns for firms that intend to withdraw fully and partially, but the reaction is contingent upon several factors. Overall, the research indicated that firms completely exiting the market are expected to yield 0,5% higher returns in the short-term. This provided support to the theory of ethical investment, where ethical financiers would provide larger support to a company sending a stronger signal to their support for democracy and peace. Additionally, this provided support to the Distance Decay theory, suggesting that operational proximity to the source of the geopolitical risk decreases with higher radicality of an exit, where investors are more likely to purchase stocks of companies with lower perceived risk. Lastly, it supported the idea that investors distinguish between strengths of a signal.

Reflecting on the second research question, I have found that investor reactions towards a certain radicality of an exit is contingent upon an industry where a company operates, the size of a company and economic and political outlooks. I established that larger company announcing a full exit are expected to yield higher returns, since investors have more confidence in their recovery from losses, given larger pool of resources available. With regards to an industry, announcing a partial exit as an energy company leads to much higher abnormal returns. This shows that investors might perceive that keeping partial presence in Russia is crucial for profitability due to higher demand from within the country and great opportunities for funding via subsidies from the Russian side, and the trade-off between risk and return might seem plausible.

Additionally, my research established two phenomena. Firstly, I found that defence sector will likely yield higher returns regardless of a radicality of an exit due to enhanced demand in the segment, where profit-seeking investors are actively purchasing common stock of defence-related companies in an attempt to buy low. Secondly, I found that investors might react more actively to an announcement of a less radical withdrawal. I believe this indicates that investors wish to sell common stock of companies keeping partial presence in Russia, as they have higher risk exposure and may have inconsistent profit margins and little growth opportunities. On the other hand, fully withdrawing may be of a lesser concern since business operations will be then performed in less risky areas.

However, it is important to approach my findings with caution due to several issues connected to the small sample size and consequentially low external validity, as well as due to certain degree of inconsistency detected during the robustness checks. Never-the-less, combining theories of geopolitical risks, ethical investment, signaling and market withdrawals, the objective of my research was to spark an academic interest in the topic and encourage further scholarly investigation. More importantly, the objective was to continue providing awareness towards the unjust military invasion of Ukraine, its implications on people and enterprises, and to encourage companies to take an active stance on this topic.

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Appendix B: Sampled companies

Table 9. Summary of the sampled companies.

<i>Company</i>	<i>Stock</i>	<i>Code</i>	<i>Exit radicality</i>	<i>Industry</i>	<i>Date of announcement</i>	<i>Evidence towards ethics induced exit</i>
<i>Wienerberger</i>	WIE.VI	40	Full exit	Basic Materials	15/06/2022	“We are deeply concerned over the effects of the conflict and want to make our contribution as a responsible company, taking a firm stance for freedom and peace. In line with our company’s actively pursued policy of sustainability and the commitment vis-à-vis our employees on site, we are convinced that the takeover of our activities by the local management is the best possible solution to ensure continuity for all”(para. 4). ⁸³
<i>Carlsberg</i>	CARL-B.CO	23	Full exit	Consumer Defensive	28/03/2022	“The war in Ukraine, and the escalating humanitarian and refugee crisis, shocks us all. We continue to strongly condemn the Russian invasion, which has led to so much loss of life, devastation and human tragedy. On 9 March, we announced a strategic review of the Carlsberg Group’s presence in Russia. Based on this review, we have taken the difficult and immediate decision to seek a full disposal of our business in Russia, which we believe is the right thing to do in the current environment. Upon completion we will have no presence in Russia ”(para. 1). ⁸⁴
<i>Elisa Esports</i>	ELISA.HE	7	Full exit	Communication Services	02/03/2022	“As a support for Ukraine, all Russian-owned organizations are suspended from participation in Elisa Esports tournaments until further notice” (para. 1). ⁸⁵
<i>Stora Enso</i>	STERV.HE	8	Full exit	Basic Materials	02/03/2022	“The war in Ukraine is unacceptable and we are fully behind all sanctions. We stay true to our values and responsible business is an integral part of our day-to-day decision making” (para. 2). ⁸⁶
<i>Wartsila</i>	WRT1V.HE	41	Full exit	Energy	25/07/2022	“Human safety and prosperity are very important for Wärtsilä and we would like to have a peaceful and stable business environment wherever we operate. We have suspended all deliveries and new sales to Russia and are committed to complying with all the sanctions currently being

⁸³ Wienerberger. “Wienerberger decides to sell its operations in Russia.” Press release, June 15, 2022. Accessed on June 23, 2023. <https://www.wienerberger.com/en/media/press-releases/>.

⁸⁴ Carlsberg Group. “Carlsberg Group to leave Russia.” Press release, March 28, 2022. <https://www.carlsberggroup.com/newsroom/carlsberg-group-to-leave-russia/>.

⁸⁵ Elisa Esports. “Stand with Ukraine.” Media release, March 2, 2022. Accessed on June 23, 2023. <https://twitter.com/ElisaEsports/status/1498931113703653380>.

⁸⁶ Stora Enso. “Stora Enso stops all production and sales in russia.” Press release, March 2, 2022. Accessed on June 23, 2023. , <https://www.storaenso.com/en/newsroom/regulatory-and-investor-releases/>.

Atos	ATO.PA	33	Full exit	Information Technology	05/04/2022	implemented. We hope these sanctions will expedite a peaceful resolution” (para. 1). ⁸⁷ “Atos condemns the war in Ukraine, and we stand shoulder to shoulder in solidarity with the people of Ukraine as well as all countries supporting Ukrainian refugees. Atos teams from across the globe continue to band together at pace supporting humanitarian and refugee aid initiatives. Our utmost priority is the welfare of our people, wherever they are” (para. 2). ⁸⁸
Publicis Groupe	PUB.PA	28	Full exit	Communication Services	15/03/2022	“Since the start of the invasion, we have been working on exiting Russia as we strongly condemn the unilateral aggression against Ukraine” (para. 2). ⁸⁹
TechnipFMC	TE.PA	9	Full exit	Energy	02/03/2022	“We are deeply concerned by the war in Ukraine, and express solidarity with all those suffering. We are closely monitoring the evolving situation, taking appropriate measures and constantly assessing its impact on people and operations” (para. 4). ⁹⁰
Ubisoft	UBI.PA	42	Full exit	Communication Services	09/11/2022	“In light of the ongoing tragedy in Ukraine, we have decided to suspend our sales in Russia. We are devastated and heartbroken by the tragic events taking place in Ukraine. Many Ubisoft team members call Ukraine home, and the thoughts of the entire Ubisoft community are with them, their loved ones and all those affected by this war” (para. 1). ⁹¹
BASF SE	BAS.DE	44	Full exit	Chemicals	16/02/2023	“BASF strongly condemns the attack on Ukraine ordered by the Russian government. We stand in solidarity with the people of Ukraine and hope that this war ends as fast as possible. As announced on March 3, 2022, BASF has not conducted new business in Russia and Belarus, in light of the war of aggression against Ukraine ordered by the Russian government” (para. 1). ⁹²
Deutsche Bank	DBK.DE	45	Full exit	Financials	11/03/2022	“We condemn the Russian invasion of Ukraine in the strongest possible terms and support German government and its allies in defending the democracy and freedom” (para. 1). ⁹³
Kingspan	KGP.L	34	Full exit	Industrials	05/04/2022	“Kingspan is deeply saddened by the growing humanitarian crisis as a result of Russia’s unjustified attack on Ukraine and its people” (para.

⁸⁷ Wartsila. “Q&A on the Russia-Ukraine Crisis.” Media release, 25 July 2022. Accessed on June 23, 2023. <https://www.wartsila.com/insights/>.

⁸⁸ Atos. “Atos confirms managed exit of our Russian-based operations.” Press release, April 5, 2022. Accessed on June 23, 2023. <https://atos.net/cs/2022/>.

⁸⁹ Campaign Brief Asia. “Publicis Groupe exits Russia by ceding the ownership of its agencies to local management.” Media release, 15 March 2022. Accessed on June 23, 2023. <https://campaignbriefasia.com/2022/>.

⁹⁰ Technip Energies. “Technip Energies financial results Full year 2021.” Press release, 2 March 2022. Accessed on June 23, 2023. <https://www.technipenergies.com/en/media/press-releases/>.

⁹¹ Ubisoft. “How Ubisoft is supporting our teams and the people of Ukraine.” Media release, November 9, 2022. Accessed on June 23, 2023. <https://news.ubisoft.com/sv-se/article/>.

⁹² BASF SE. “Statement Ukraine.” Media release, February 16, 2023. Accessed on June 23, 2023. <https://www.basf.com/global/>.

⁹³ Deutsche Bank. “Statement on business activities in Russia.” Media release, March 11, 2022. Accessed on June 23, 2023. https://www.db.com/news/detail/20220311-statement-on-russia?language_id=1.

Heineken	HEINY	31	Full exit	Consumer Defensive	28/03/2022	3). ⁹⁴ “Kingspan has exited the Russian market and divested its operations to local management. Whilst our decision to exit was made in early March it has taken several weeks to ensure that it could be completed in an orderly fashion, with the safety and welfare of our staff as a key priority” (para. 1). ⁹⁵ “We are shocked and deeply saddened to watch the war in Ukraine continue to unfold and intensify. We earlier announced that HEINEKEN stopped new investments and exports to Russia, ended the production, sale and advertising of the Heineken® brand, and announced that we will not accept any net financial benefits or profit from our business in Russia” (para.1). ⁹⁶
Equinor	EQNR	3	Full exit	Energy	28/02/2022	“We are all deeply troubled by the invasion of Ukraine, which represents a terrible setback for the world, and we are thinking of all those who are suffering because of the military action.. In the current situation, we regard our position as untenable. We will now stop new investments into our Russian business, and we will start the process of exiting our joint ventures in a manner that is consistent with our values”(para.1). ⁹⁷
Allegro	ALE.WA	27	Full exit	Consumer Cyclical	13/03/2022	“We do not want to support the Russian and Belarusian economy, which is why we will limit the sale of products from these countries on Allegro and Allegro Lokalnie” (para. 2). ⁹⁸
Holcim	HOLN.SW	43	Full exit	Basic materials	29/03/2022	“The Holcim Board of Directors has decided to initiate the process to exit the Russian market in line with the company’s. The Board expresses its heartfelt concern about the tragic human suffering unfolding across the region and is fully committed to supporting affected people, families and communities and values to operate in the most responsible manner” (para. 1). ⁹⁹
Aviva	AV.L	10	Full exit	Financials	02/03/2022	“We have exited all equity and debt positions in Russia where we are able to do so. Where we are unable to dispose, we have written the value of the assets down to zero. This will remain our position until there is material

⁹⁴ Kingspan. Media release, April 5, 2022. Accessed on June 23, 2023. https://www.linkedin.com/posts/kingspan_kingspan.

⁹⁵ Ibid.

⁹⁶ Heineken NV. “Heineken N.V. announces decision to leave Russia.” Media release, March 28, 2022. Accessed on June 23, 2023. <https://www.theheinekencompany.com/newsroom/>.

⁹⁷ Equinor. “Equinor to start exiting from Joint Ventures in Russia.” Media release, February 28, 2022. Accessed on June 23, 2023. <https://www.equinor.com/news/archive/20220227-equinor-start-exiting-joint-ventures-russia>.

⁹⁸ NewsBeezer. “Allegro blocks the sale of Russian and Belarusian products.” Media release, March 13, 2022. Accessed on June 23, 2023. <https://newsbeezer.com/polandeng/allegro-blocks-the-sale-of-russian-and-belarusian-products/>.

⁹⁹ Holcim. “Holcim to exit the Russian market.” Media release, March 29, 2022. Accessed on June 23, 2023. <https://www.holcim.com/media/media-releases/>.

Compass Group	CPG.L	24	Full exit	Consumer Cyclical	14/03/2022	change in the situation that would cause us to reassess Russian entities in alignment with an ESG analysis” (para. 1). ¹⁰⁰ “We have all been shocked and saddened by the tragic events unfolding in Ukraine and we condemn in the strongest possible terms the Russian state’s acts of aggression against Ukraine and its people” (para. 1). ¹⁰¹
Hays	HAS.L	13	Full exit	Industrials	04/03/2022	“While we all still hope for a diplomatic solution to this crisis and that peace may be restored, our thoughts throughout the group are first and foremost with everyone affected. We cannot continue to maintain a presence in Russia, nor assist organisations there in any way, in light of the current situation” (para. 6). ¹⁰²
Inchcape	INCH.L	29	Full exit	Consumer Cyclical	15/03/2022	“Inchcape is deeply saddened by the ongoing conflict in Ukraine and the enormous humanitarian impact on all those affected. We share the hopes of the world for a peaceful resolution. In light of the current circumstances, we have concluded that the Group’s ownership of its business interests in Russia is no longer tenable” (para. 1). ¹⁰³
John Wood Group	WG.L	32	Full exit	Energy	22/03/2022	“We are deeply saddened by the ongoing conflict in Ukraine and reiterate our strong condemnation of the invasion. Wood plc has taken the decision to exit Russia and will begin the process of withdrawal from operations in the country. We continue to keep the people of Ukraine at the forefront of our thoughts and join with the international community in calling for a swift and peaceful end to this tragic conflict”(para 1). ¹⁰⁴
Weir Group	WEIR.L	25	Full exit	Industrials	09/03/2022	“We remain shocked and deeply saddened by the brutal events that have continued to unfold in Ukraine. Our absolute priority remains the safety of our Ukraine-based colleagues and their families. In light of the ongoing situation, The Weir Group PLC has now decided to fully suspend all operations at its Russian businesses and all imports to the country” (para.1). ¹⁰⁵
WPP	WPP.L	15	Full exit	Communication Services	04/03/2022	“WPP stands with Ukraine and the international community in condemning the Russian invasion, which has created a humanitarian crisis in the heart of Europe. The Board of WPP has concluded that WPP’s ongoing presence

¹⁰⁰ Aviva. “Our position on investing in Russia.” Media release, March 2, 2022. Accessed on June 23, 2023. <https://www.avivainvestors.com/en-gb/about/what-we-stand-for/>.

¹⁰¹ Compass group. “Statement on the War in Ukraine.” Press release, March 14,2022. Accessed on June 23, 2023. <https://www.compass-group.be/en/stories/statement-on-the-war-in-ukraine>.

¹⁰² Staffing industry. “Hays Ceases All Business Operations In Russia, Adecco, Wec, And Ilo Publish Statements On Conflict.” Media release, March 4, 2022. Accessed on June 23, 2023. <https://www2.staffingindustry.com/eng/Editorial/Daily-News/>

¹⁰³ Inchape. “Update on Russian operations.” Media release, March 15, 2022. Accessed on June 23, 2023. <https://www.inchcape.com/update-on-russian-operations/>.

¹⁰⁴ John Wood Group. “Decision to withdraw from Russia”. Media release, March 22, 2022. Accessed on June 23, 2023. <https://www.woodplc.com/news/latest-news-articles/>

¹⁰⁵ Weir Group. “Weir announces full suspension of business and operations in Russia.” Media release, March 9, 2022. Accessed on June 23, 2023. <https://www.global.weir/newsroom/global-news/news-articles/>.

<i>KBC Group</i>	KBC.BR	4	Partial exit	Financials	28/02/2022	in Russia would be inconsistent with our values as a company, and we are therefore discontinuing our operations in the country” (para. 1). ¹⁰⁶ “KBC Group has a responsibility towards customers and authorities to conduct business in a lawful and ethical way. For reasons of social responsibility or other considerations, we may also choose to be more strict than legally imposed”(para 2.) ¹⁰⁷
<i>Solvay</i>	SOLB.BR	19	Partial exit	Chemicals	07/03/2022	“Solvay is deeply concerned by the dramatic humanitarian crisis that is unfolding as a result of the hostilities in Ukraine. In light of these events, Solvay has decided to suspend its operations and new investments in Russia. We are taking action to support the ongoing humanitarian efforts to ease the suffering of those impacted by this crisis” (para. 1, 3) ¹⁰⁸
<i>Orsted</i>	ORSTED.CO	2	Partial exit	Energy	27/02/2022	“Ørsted finds the situation deeply disturbing, not least the human suffering following the war in Ukraine. The Russian aggression goes against everything that Ørsted stands for, and we have therefore taken significant steps in accordance with our values as a company”(para. 1). ¹⁰⁹
<i>Pandora</i>	PNDORA.CO	1	Partial exit	Consumer Cyclical	30/03/2022	“We are shocked and saddened by the unprovoked attack on Ukraine, and our thoughts go to the people of Ukraine, who are victims of this senseless act of military aggression. The war requires all businesses to act with the utmost responsibility regarding any interactions or business dealings with Russia and Belarus. Pandora cannot in good faith be a member of an association that does not share our values” (para. 3). ¹¹⁰
<i>Danske Bank</i>	DANSKE.CO	38	Partial exit	Financials	29/04/2022	“We are all dismayed by what is happening in Ukraine. The Russian invasion goes against everything Danske Bank stands for, and as a bank and part of the global financial system, we have a key role to play in ensuring that the sanctions imposed on Russia are implemented in a timely and expedient manner” (para. 1). ¹¹¹
<i>Dassault Systemes</i>	DASTY	26	Partial exit	Technology	09/03/2022	“Dassault Systèmes strongly stands for peace. We stand in solidarity with the people of Ukraine. Dassault Systèmes has implemented, since last

¹⁰⁶ WPP. “WPP announces decision to discontinue operations in Russia.” Media release, March 4, 2022. Accessed on June 23, 2023. <https://www.wpp.com/news/2022/03/wpp-announces-decision-to-discontinue-operations-in-russia>.

¹⁰⁷ KBC Group. “Information regarding the KBC group embargo policy.” Press release, February 28, 2022. Accessed on June 23, 2023. <https://www.kbc.com/content/dam/kbccom/doc/sustainability-responsibility/>.

¹⁰⁸ Solvay. “Solvay to suspend operations in Russia.” Press release, March 7, 2022. Accessed on June 23, 2023. <https://www.solvay.com/en/press-release/solvay-suspend-operations-russia>.

¹⁰⁹ Orsted. “Orsted statement on Russia’s invasion of Ukraine.” Press release, February 27, 2022. Accessed on June 23, 2023. <https://orsted.com/en/media/newsroom/news/2022/02/13644342>

¹¹⁰ Pandora. “Pandora leaves trade association RJC.” Press release, March 30, 2022. Accessed on June 23, 2023. <https://pandoragroup.com/investor/news-and-reports/newsdetail?id=25046>.

¹¹¹ Danske Bank. “The war in Ukraine: What we do at Danske Bank.” Press release, April 29, 2022. Accessed on June 23, 2022. <https://danskebank.com/about-us/the-war-in-ukraine>.

<i>Pernod Ricard</i>	RI.PA	46	Partial exit	Consumer Defensive	27/04/2023	week, all the actions to suspend its business operations in Russia” (para.1). ¹¹² “From the very beginning we have utterly condemned the invasion of Ukraine by Russia. We also fully understand and acknowledge the reaction over the recent days as we sought to give context to the decisions we have taken. Many companies, in our industry and in others, have made the same difficult choice” (para.1, 5). ¹¹³
<i>Adidas</i>	ADS.DE	21	Partial exit	Consumer Cyclical	09/03/2022	“As a company, we strongly condemn any form of violence and stand in solidarity with those calling for peace”(para.1). ¹¹⁴
<i>Infineon</i>	IFX.DE	39	Partial exit	Technology	08/03/2022	“As so many, we feel shocked in the face of this blatant violation of international law and values of humanity,” said Infineon Technologies in a statement. “We are watching with dismay that it is escalating further. We appeal to the aggressor to give way to end this fight and to solve the issues in a peaceful way as civilized nations do”(para. 2). ¹¹⁵
<i>Daimler Truck</i>	DTG.DE	5	Partial exit	Industrials	28/02/2022	“We are shocked by the military violence in Ukraine. In view of the events of the last few days we have decided to discontinue our business activities in Russia with immediate effect until further notice” (para. 1). ¹¹⁶
<i>Nemetschek</i>	NEM.DE	18	Partial exit	Technology	07/03/2022	“We are shocked and saddened about the human impact of the current situation in and around the Russian invasion of Ukraine. Our hearts and thoughts are with the local population and our colleagues and community in the affected regions. In the efforts to restore peace, the Nemetschek Group has decided to suspend any new business in Russia and all business with the sanctioned individuals, organizations, or regions for the time being” (para. 1). ¹¹⁷
<i>Munich Re</i>	MUV2.DE	30	Partial exit	Financials	16/03/2022	“Munich Re stands for a peaceful and democratic world. Russia's invasion is an act contrary to international law. The attempt to place the law of the strongest above international law is completely unacceptable”(para.1). ¹¹⁸
<i>Puma</i>	PUM.DE	17	Partial exit	Consumer Cyclical	05/03/2022	“The war in Ukraine has deeply sadden our entire PUMA family and we are continuously thinking of how we can support our Ukrainian employees

¹¹² 3DS. “Dassault Systèmes Suspends Business Operations in Russia.” Press release, March 9, 2022. Accessed on June 23, 2022.

<https://www.3ds.com/newsroom/press-releases/dassault-systemes-suspends-business-operations-russia>.

¹¹³ Pernod Ricard. “Update on Russia.” Media release, April 27, 2023. Accessed on June 23, 2022. <https://www.pernod-ricard.com/en/media/update-russia/>.

¹¹⁴ Adidas group. “ADIDAS DELIVERS STRONG RESULTS IN 2021 AND EXPECTS DOUBLE-DIGIT SALES GROWTH IN 2022.” Press release, March 9, 2022. Accessed on June 23, 2022. <https://www.adidas-group.com/en/media/news-archive/press-releases/2022/>.

¹¹⁵ Infineon Technologies. Media release, March 8, 2022. Accessed on June 23, 2022. <https://www.linkedin.com/posts/>.

¹¹⁶ Daimler Truck AG. Media release, February 28, 2022. Accessed on June 23, 2022. <https://www.linkedin.com/posts/daimlertruckag>.

¹¹⁷ Nemetschek. “Responding to the Ukraine crisis.” Media release, March 7, 2022. Accessed on June 23, 2022. <https://www.nemetschek.com/en/news-media/responding-ukraine-crisis>.

¹¹⁸ Munich Re. “Munich Re on the Russian war against Ukraine.” Press release, March 16, 2022. Accessed on June 23, 2022. <https://www.munichre.com/landingpage/en/munich-re-on-the-russian-war-against-ukraine.html>.

Wolters Kluwer	WKL.AS	35	Partial exit	Industrials	08/04/2022	and their loved ones. We will not stop here and be there for our people in Ukraine to help wherever we can”(para. 1). ¹¹⁹ “The world has watched the invasion of Ukraine with growing horror and disbelief. Wolters Kluwer continues to stand with Ukraine and the international community in condemning this unjustifiable aggression, which has created a humanitarian crisis in the heart of Europe. Over the last week, Wolters Kluwer has been carefully considering the future of our customer relationships in Russia and Belarus, where we have a limited footprint, and, above all, what our actions would mean for people in the region. We will discontinue doing business in Russia and Belarus except for certain of our health products where there are compelling humanitarian reasons “(para. 1,2). ¹²⁰
CD Projekt	CDR.WA	14	Partial exit	Communication Services	03/03/2022	“We believe that commercial entities, when united, have the power to inspire global change in hearts in mind of ordinary people. The entire CD PROJEKT Group stands firm with people of Ukraine” (para. 1). ¹²¹
Galp	GALP.LS	11	Partial exit	Energy	02/03/2022	“Galp deplores the Russian acts of aggression against the people of Ukraine. Galp’s Board of Directors has therefore decided to suspend all new purchases of petroleum products either sourced in Russia or from Russian companies. Russia’s massive invasion of Ukraine represents a harsh blow to the free world. Our sympathy is with the Ukrainian people who are suffering this aggression. We are looking at how Galp can support the collective humanitarian efforts”(para. 1, 3). ¹²²
H&M	HM-B.ST	12	Partial exit	Consumer Cyclical	02/03/2022	“H&M Group is deeply concerned about the tragic developments in Ukraine and stand with all the people who are suffering. H&M Group has decided to temporarily pause all sales in Russia. H&M Group cares for all colleagues and joins all those around the world who are calling for peace” (para. 1,3). ¹²³
Clariant	CLN.SW	16	Partial exit	Chemicals	04/03/2022	“We strongly oppose Russia's war against the Ukraine. Continuing to do business under these circumstances is incompatible with our purpose and

¹¹⁹ Puma Group. “Update March 5.” Media release, March 5, 2022. Accessed on June 23. <https://www.facebook.com/PUMAGroup/photos/>

¹²⁰ Wolters Kluwer. Media release, April 8, 2022. Accessed on June 23. <https://www.linkedin.com/posts/wolters-kluwer>.

¹²¹ Engadget. “CD Projekt Red will no longer sell games in Russia and Belarus.” Media release, March 3, 2022. Accessed on June 23, 2023. <https://www.engadget.com/cd-projekt-red-russia-belarus-ukraine>.

¹²² Galp. “Galp to suspend Russian oil-product purchases.” Press release, March 2, 2022. Accessed June 23, 2023. <https://www.galp.com/corp/en/media/press-releases/press-release/>.

¹²³ H&M Group. “H&M Group temporarily pauses all sales in Russia.” Press release, March 2, 2022. Accessed June 23, 2023. <https://hmgroupp.com/news/hm-group-temporarily-pauses-all-sales-in-russia/>.

<i>abrdn</i>	ABDN.L	6	Partial exit	Financials	01/03/2022	values. Therefore, we have decided to suspend all business with Russia with immediate effect ”(para. 2). ¹²⁴ “We want to express our deepest concern and sadness at events happening in Ukraine. abrdn has concluded that we will not be investing in Russia or Belarus for the foreseeable future, on ESG grounds” (para. 1, 2). ¹²⁵
<i>Intercontinental Hotels</i>	IHG.L	36	Partial exit	Consumer Cyclical	09/03/2022	“We are deeply saddened and shocked by the war in Ukraine and our thoughts continue to be with all those impacted by these horrific events. IHG has a commitment to look after the people and communities where we have a presence around the world. In light of the war in Ukraine, we are suspending future investments, development activity and new hotel openings in Russia”(para. 1,2). ¹²⁶
<i>Johnson Matthey</i>	JMAT.L	20	Partial exit	Basic materials	07/03/2022	“Johnson Matthey is deeply concerned about the situation in Ukraine, and we stand together with the people of Ukraine suffering from this completely unacceptable conflict. JM complies with all its sanctions obligations, and in addition will stop with immediate effect all new commercial activities in Russia and Belarus” (para. 1,2). ¹²⁷
<i>Reckitt Benckiser Group</i>	RKT.L	37	Partial exit	Consumer Defensive	13/04/2022	“Many international companies have also taken action and are reassessing their current position in Russia. We are no exception. In doing so, we want to be clear that we are not guided by profit or making money in Russia. What matters most is the safety of our people and their families” (para. 6). ¹²⁸
<i>Unilever</i>	ULVR.L	22	Partial exit	Consumer Defensive	08/03/2022	“ We continue to condemn the war in Ukraine as a brutal and senseless act by the Russian state. We have suspended all imports and exports of our products into and out of Russia, and we will stop all media and advertising spend. We will not invest any further capital into the country nor will we profit from our presence in Russia. ” (para. 1,3). ¹²⁹

¹²⁴ Clariant. “Clariant suspends all business with Russia.” Press release, March 4, 2022. Accessed June 23, 2023. <https://www.clariant.com/en/Corporate/News/2022/03/Clariant-suspends-all-business-with-Russia>.

¹²⁵ Abrdn. “Our position on the conflict in Ukraine.” Press release, March 1, 2022. Accessed June 23, 2023. <https://www.abrdn.com/en-gb/corporate/news/all-news/our-position-on-the-conflict-in-ukraine>.

¹²⁶ Intercontinental Hotels Group. “IHG statement on Ukraine.” Press release, March 9, 2022. Accessed on June 23, 2022. <https://www.ihgplc.com/en/news-and-media/news-releases/2022/ihg-statement-on-ukraine>.

¹²⁷ Johnson Matthey. “Ukraine: an update on JM support.” Press release, March 7, 2022. Accessed on June 23, 2023. <https://matthey.com/news/2022/ukraine-update>.

¹²⁸ Reckitt Benckiser Group. “An update on Russian operations.” Press release, April 13, 2022. Accessed on June 23, 2023. <https://www.reckitt.com/media-landing/press-releases/2022/an-update-on-russian-operations/>.

¹²⁹ Unilever. “Unilever statement on the war in Ukraine.” Press release, March 8, 2022. Accessed on June 23, 2023. <https://www.unilever.com/news/news-search/2022/updated-unilever-statement-on-the-war-in-ukraine/>

Appendix C: Results and significance testing of calculated returns

Note: For this Appendix, L_1 is an estimation window, L_2 is an event window, T_0 is the beginning of the estimation window, T_1 is the end of an estimation window, T_1+1 is the beginning of an event window and T_2 is the end of an event window; K is a number of free parameters, and is equal to 2 in the CAPM models; N is number of instances.

AR

$H_0: \beta_i = 0$, where H_0 is rejected if t_{AR} is larger than $t_{critical}$.

$N \approx 80$

$t_{critical} (\alpha = 0.05) = 1.99$

$t_{critical} (\alpha = 0.1) = 1.664$

$$t_{AR} = \frac{AR_{i,t}}{\sigma_{AR}}; \quad (13)$$

$$\sigma_{AR}^2 = \frac{1}{M_i - 2} \sum_{t=T_0}^{T_1} AR_{i,t}^2, \quad (14)$$

where $AR_{i,t}$ is the abnormal returns for the stock; σ is the standard deviation of returns, M_i is the number of days in the event window for a company.

Table 10. Calculated abnormal returns (AR) and significance testing.

Company code	Company	Exit radicality	AR(-5)	t-value(-5)	AR(-4)	t-value(-4)	AR(-3)	t-value(-3)	AR(-2)	t-value(-2)
1	PNDORA.CO	Partial	0,0156	0,8914	-0,0298	-1,7029**	0,0222	1,2686	0,0199	1,1371
2	ORSTED.CO	Partial	-0,0115	-0,5808	0,0114	0,5758	0,0129	0,6515	-0,0046	-0,2323
3	EQNR	Full	-0,0008	-0,0376	0,0101	0,4742	0,0291	1,3662	0,0054	0,2535
4	KBC.BR	Partial	-0,0094	-0,6144	-0,0161	-1,0523	-0,0124	-0,8105	-0,054	-3,5294
5	DTG.DE	Partial	-0,0128	-0,5141	-0,0154	-0,6185	-0,0233	-0,9357	-0,0271	-1,0884
6	ABDN.L	Partial	-0,0472	-3,9333	0,0028	0,2333	-0,0539	-4,4917*	-0,0082	-0,6833

7	ELISA.HE	Full	-0,0027	-0,2935	-0,0227	-2,4674*	0,0184	2*	-0,0035	-0,3804
8	STERV.HE	Full	0,0065	0,4815	-0,0317	-2,3481*	0,0196	1,4519	-0,0282	-2,0889*
9	TE.PA	Full	-0,0058	-0,3053	-0,0638	-3,3579*	-0,0919	-4,8368*	-0,0608	-3,2
10	AV.L	Full	0,0058	0,5524	-0,0361	-3,4381*	0,012	1,1429	-0,0087	-0,8286
11	GALP.LS	Partial	0,0056	0,3146	0,0104	0,5843	-0,0037	-0,2079	0,011	0,618
12	HM-B.ST	Partial	-0,0124	-0,6327	-0,0045	-0,2296	-0,0022	-0,1122	-0,0331	-1,6888**
13	HAS.L	Full	-0,0104	-0,6582	-0,0008	-0,0506	-0,027	-1,7089**	-0,032	-2,0253*
14	CDR.WA	Partial	-0,0313	-1,1723	0,0027	0,1011	0,0252	0,9438	0,0187	0,7004
15	WPP.L	Full	0,0165	1,3525	-0,0262	-2,1475*	-0,0317	-2,5984*	0,0089	0,7295
16	CLN.SW	Partial	-0,0048	-0,2637	0,013	0,7143	0,014	0,7692	-0,0052	-0,2857
17	PUM.DE	Partial	-0,0103	-0,8655	-0,047	-3,9496*	0,0031	0,2605	-0,0445	-3,7395*
18	NEM.DE	Partial	0,0239	0,8852	0,0104	0,3852	0,0167	0,6185	-0,0115	-0,4259
19	SOLB.BR	Partial	-0,0172	-1,6863**	-0,0338	-3,3137*	0,0036	0,3529	-0,0128	-1,2549
20	JMAT.L	Partial	0,0637	2,498*	-0,0109	-0,4275	0,0129	0,5059	0,0002	0,0078
21	ADS.DE	Partial	-0,0075	-0,6148	-0,0026	-0,2131	-0,0004	-0,0328	-0,0252	-2,0656*
22	ULVR.L	Partial	-0,0223	-1,517	-0,0076	-0,517	-0,0278	-1,8912**	-0,0528	-3,5918*
23	CARL-B.CO	Full	-0,0533	-3,9481*	0,0003	0,0222	-0,0115	-0,8519	-0,0306	-2,2667*
24	CPG.L	Full	0,0291	1,6441	-0,0294	-1,661	0,0035	0,1977	0,0005	0,0282
25	WEIR.L	Full	0,0872	6,6061*	-0,03	-2,2727*	-0,0517	-3,9167*	0,0809	6,1288*
26	DASTY	Partial	0,0082	0,4481	-0,0101	-0,5519	-0,006	-0,3279	0,0154	0,8415
27	ALE.WA	Full	0,0222	0,5428	0,0037	0,0905	0,0576	1,4083	0,0289	0,7066
28	PUB.XD	Full	0,0162	1,3846	0,0305	2,6068*	0,0136	1,1624	0,0174	1,4872
29	INCH.L	Full	0,0031	0,2168	0,0124	0,8671	0,001	0,0699	-0,0179	-1,2517
30	MUV2.DE	Partial	0,04	3,6364*	-0,0064	-0,5818	-0,0006	-0,0545	0,0054	0,4909
31	HEINY	Full	-0,0232	-1,3976	-0,0025	-0,1506	0,011	0,6627	0,0099	0,5964
32	WG.L	Full	-0,0085	-0,2279	0,0086	0,2306	0,0194	0,5201	-0,0027	-0,0724
33	ATO.PA	Full	0,0061	0,1826	-0,0045	-0,1347	-0,0341	-1,021	-0,0212	-0,6347
34	KGP.L	Full	-0,0003	-0,0143	-0,0466	-2,219	0,0117	0,5571	-0,0003	-0,0143
35	WKL.AS	Partial	-0,0118	-0,8082	0,0064	0,4384	0,0116	0,7945	0,0045	0,3082
36	IHG.L	Partial	0,0011	0,0696	-0,016	-1,0127	-0,0127	-0,8038	0,0078	0,4937
37	RKT.L	Partial	0,0052	0,3377	0,001	0,0649	-0,0038	-0,2468	-0,0088	-0,5714
38	DANSKE.CO	Partial	0,0124	0,8052	0,0045	0,2922	0,0055	0,3571	-0,0181	-1,1753
39	IFX.DE	Partial	0,0564	3,2229*	0,0169	0,9657	-0,0064	-0,3657	0,0062	0,3543
40	WIE.VI	Full	0,0088	0,4356	-0,0027	-0,1337	0,0018	0,0891	0,0113	0,5594
41	WRT1V.HE	Full	-0,003	-0,1382	0,0214	0,9862	0,0482	2,2212*	0,0086	0,3963
42	UBI.PA	Full	0,0103	0,3601	-0,0013	-0,0455	-0,0059	-0,2063	-0,0026	-0,0909
43	HOLN.SW	Full	0,0039	0,3679	0,001	0,0943	-0,0027	-0,2547	-0,0021	-0,1981

44	BAS.DE	Full	-0,0085	-0,6028	-0,0194	-1,3759	-0,0043	-0,305	-0,0138	-0,9787
45	DBK.DE	Full	0,014	0,6796	-0,0112	-0,5437	0,0017	0,0825	0,0101	0,4903
46	RI.PA	Partial	0,0074	0,6916	0,0117	1,0935	0,0086	0,8037	0,0056	0,5234
Company code	Company	Exit radicality	AR(-1)	t-value(-1)	AR(0)	t-value(0)	AR(1)	t-value(1)	AR(2)	t-value(2)
1	PNDORA.CO	Partial	0,015	0,8571	-0,0139	-0,7943	-0,0235	-1,3429	0,0006	0,0343
2	ORSTED.CO	Partial	0,0046	0,2323	0,0155	0,7828	0,1853	9,3586*	-0,0211	-1,0657
3	EQNR	Full	-0,0104	-0,4883	0,0033	0,1549	0,0737	3,4601*	-0,0005	-0,0235
4	KBC.BR	Partial	0,012	0,7843	-0,0549	-3,5882*	-0,0483	-3,1569*	-0,0306	-2*
5	DTG.DE	Partial	-0,0223	-0,8956	-0,0377	-1,5141	-0,0638	-2,5622*	-0,0595	-2,3896*
6	ABDN.L	Partial	-0,009	-0,75	-0,0258	-2,15*	0,009	0,75	-0,0216	-1,8**
7	ELISA.HE	Full	0,0076	0,8261	0,012	1,3043	0,0038	0,413	0,0163	1,7717**
8	STERV.HE	Full	-0,0435	-3,2222*	0,0075	0,5556	-0,0288	-2,1333*	-0,0094	-0,6963
9	TE.PA	Full	-0,1061	-5,5842*	-0,0193	-1,0158	0,1442	7,5895*	-0,0494	-2,6*
10	AV.L	Full	-0,0154	-1,4667	0,0021	0,2	0,0021	0,2	-0,0221	-2,1048*
11	GALP.LS	Partial	0,0525	2,9494*	0,0937	5,264*	0,0169	0,9494	-0,0247	-1,3876
12	HM-B.ST	Partial	-0,0297	-1,5153	-0,0166	-0,8469	-0,0415	-2,1173*	0,0101	0,5153
13	HAS.L	Full	0,0091	0,5759	-0,0329	-2,0823*	-0,0358	-2,2658*	-0,0063	-0,3987
14	CDR.WA	Partial	0,0182	0,6816	-0,0404	-1,5131	0,0184	0,6891	0,019	0,7116
15	WPP.L	Full	-0,045	-3,6885*	0,0051	0,418	-0,0126	-1,0328	0,0336	2,7541*
16	CLN.SW	Partial	-0,0148	-0,8132	0,0092	0,5055	-0,0281	-1,544	-0,0201	-1,1044
17	PUM.DE	Partial	0,0001	0,0084	-0,0148	-1,2437	-0,0557	-4,6807*	-0,0286	-2,4034*
18	NEM.DE	Partial	0,0072	0,2667	0,0377	1,3963	-0,0934	-3,4593*	0,0336	1,2444
19	SOLB.BR	Partial	-0,0389	-3,8137*	-0,0297	-2,9118*	0,0307	3,0098*	0,0374	3,6667*
20	JMAT.L	Partial	0,0093	0,3647	0,0194	0,7608	0,0131	0,5137	0,0178	0,698
21	ADS.DE	Partial	-0,0408	-3,3443*	0,0523	4,2869*	0,0773	6,3361*	-0,0427	-3,5*
22	ULVR.L	Partial	-0,0268	-1,8231**	0,0018	0,1224	0,0413	2,8095*	-0,0244	-1,6599
23	CARL-B.CO	Full	0,0114	0,8444	0,0097	0,7185	-0,0426	-3,1556*	0,0009	0,0667
24	CPG.L	Full	0,0053	0,2994	0,0078	0,4407	0,0086	0,4859	0,011	0,6215
25	WEIR.L	Full	0,055	4,1667*	-0,0197	-1,4924	0,0507	3,8409*	0,0318	2,4091*
26	DASTY	Partial	-0,0472	-2,5792*	0,021	1,1475	-0,0035	-0,1913	-0,0219	-1,1967
27	ALE.WA	Full	-0,0009	-0,022	-0,0131	-0,3203	0,0153	0,3741	0,0183	0,4474
28	PUB.XD	Full	-0,0224	-1,9145**	0,0146	1,2479	0,0153	1,3077	-0,0103	-0,8803
29	INCH.L	Full	0,0212	1,4825	-0,0166	-1,1608	-0,0012	-0,0839	-0,006	-0,4196
30	MUV2.DE	Partial	-0,004	-0,3636	-0,0258	-2,3455*	-0,0285	-2,5909*	-0,0166	-1,5091
31	HEINY	Full	0,0091	0,5482	0,0111	0,6687	-0,0275	-1,6566	-0,0017	-0,1024
32	WG.L	Full	0,0033	0,0885	-0,0133	-0,3566	-0,0032	-0,0858	-0,0263	-0,7051

33	ATO.PA	Full	0,0232	0,6946	-0,0533	-1,5958	-0,0135	-0,4042	-0,0289	-0,8653
34	KGPL	Full	0,0122	0,581	-0,0088	-0,419	-0,0442	-2,1048*	0,003	0,1429
35	WKL.AS	Partial	0,0114	0,7808	-0,0056	-0,3836	0,0019	0,1301	-0,007	-0,4795
36	IHG.L	Partial	-0,0048	-0,3038	-0,0204	-1,2911	-0,027	-1,7089**	0,0053	0,3354
37	RKT.L	Partial	-0,0058	-0,3766	0,0207	1,3442	0,0119	0,7727	-0,0142	-0,9221
38	DANSKE.CO	Partial	-0,0009	-0,0584	-0,074	-4,8052*	0,0136	0,8831	0,0141	0,9156
39	IFX.DE	Partial	-0,016	-0,9143	0,0059	0,3371	-0,0116	-0,6629	0,0112	0,64
40	WIE.VI	Full	0,0134	0,6634	-0,0012	-0,0594	-0,0137	-0,6782	-0,0033	-0,1634
41	WRT1V.HE	Full	0,0193	0,8894	-0,0486	-2,2396*	-0,0142	-0,6544	-0,0277	-1,2765
42	UBL.PA	Full	-0,0259	-0,9056	-0,0367	-1,2832	0,0088	0,3077	0,0367	1,2832
43	HOLN.SW	Full	-0,0112	-1,0566	0,0035	0,3302	-0,0059	-0,5566	0,0116	1,0943
44	BAS.DE	Full	0,0065	0,461	0,0103	0,7305	-0,0016	-0,1135	0,0147	1,0426
45	DBK.DE	Full	0,0064	0,3107	-0,0001	-0,0049	-0,0126	-0,6117	0,0371	1,801**
46	RI.PA	Partial	-0,0009	-0,0841	-0,0074	-0,6916	-0,0307	-2,8692*	0,0165	1,5421
<i>Company code</i>	<i>Company</i>	<i>Exit radicality</i>	<i>AR(3)</i>	<i>t-value(3)</i>	<i>AR(4)</i>	<i>t-value(4)</i>	<i>AR(5)</i>	<i>t-value(5)</i>		
1	PNDORA.CO	Partial	0,0153	0,8743	-0,026	-1,4857	-0,0076	-0,4343		
2	ORSTED.CO	Partial	0,1055	5,3283*	-0,0295	-1,4899	-0,0244	-1,2323		
3	EQNR	Full	-0,0366	-1,7183**	0,0445	2,0892*	-0,0008	-0,0376		
4	KBC.BR	Partial	0,0066	0,4314	-0,0222	-1,451	-0,0662	-4,3268*		
5	DTG.DE	Partial	-0,0072	-0,2892	-0,0368	-1,4779	0,0268	1,0763		
6	ABDN.L	Partial	-0,0195	-1,625	0,0143	1,1917	0,0106	0,8833		
7	ELISA.HE	Full	0,0059	0,6413	0,0067	0,7283	-0,0216	-2,3478*		
8	STERV.HE	Full	0,0155	1,1481	0,0191	1,4148	-0,0184	-1,363		
9	TE.PA	Full	0,0194	1,0211	0,0249	1,3105	0,0213	1,1211		
10	AV.L	Full	-0,0251	-2,3905*	0,0342	3,2571*	0,011	1,0476		
11	GALP.LS	Partial	0,0683	3,8371*	0,0027	0,1517	-0,0821	-4,6124*		
12	HM-B.ST	Partial	-0,0259	-1,3214	0,0453	2,3112*	0,0066	0,3367		
13	HAS.L	Full	0,0242	1,5316	0,0381	2,4114*	-0,0176	-1,1139		
14	CDR.WA	Partial	-0,0262	-0,9813	-0,01	-0,3745	-0,0116	-0,4345		
15	WPP.L	Full	0,0087	0,7131	0,0086	0,7049	0,0015	0,123		
16	CLN.SW	Partial	0,0284	1,5604	0,014	0,7692	-0,0039	-0,2143		
17	PUM.DE	Partial	0,0221	1,8571**	0,0668	5,6134*	-0,0382	-3,2101*		
18	NEM.DE	Partial	-0,0118	-0,437	0,005	0,1852	-0,0064	-0,237		
19	SOLB.BR	Partial	-0,013	-1,2745	0,0049	0,4804	0,0203	1,9902*		
20	JMAT.L	Partial	0,0281	1,102	-0,0048	-0,1882	-0,0056	-0,2196		
21	ADS.DE	Partial	0,0257	2,1066*	-0,0015	-0,123	-0,0065	-0,5328		

22	ULVR.L	Partial	0,011	0,7483	0,0129	0,8776	-0,0124	-0,8435
23	CARL-B.CO	Full	-0,0097	-0,7185	-0,0513	-3,8*	0,0249	1,8444**
24	CPG.L	Full	-0,0118	-0,6667	0,0022	0,1243	-0,0078	-0,4407
25	WEIR.L	Full	0,0233	1,7652**	0,0005	0,0379	-0,0239	-1,8106**
26	DASTY	Partial	0,0138	0,7541	0,0138	0,7541	0,0291	1,5902
27	ALE.WA	Full	0,0569	1,3912	-0,0136	-0,3325	-0,0134	-0,3276
28	PUB.XD	Full	-0,0093	-0,7949	0,0049	0,4188	-0,0056	-0,4786
29	INCH.L	Full	-0,0024	-0,1678	-0,0158	-1,1049	-0,0044	-0,3077
30	MUV2.DE	Partial	0,0078	0,7091	0,0096	0,8727	0,006	0,5455
31	HEINY	Full	-0,0012	-0,0723	0,0368	2,2169*	-0,002	-0,1205
32	WG.L	Full	0,0081	0,2172	-0,0314	-0,8418	-0,0023	-0,0617
33	ATO.PA	Full	-0,005	-0,1497	-0,0004	-0,012	0,0092	0,2754
34	KGPL	Full	-0,0037	-0,1762	0,0027	0,1286	-0,0072	-0,3429
35	WKL.AS	Partial	-0,0026	-0,1781	0,0078	0,5342	-0,0218	-1,4932
36	IHG.L	Partial	0,0006	0,038	0,0172	1,0886	0,0305	1,9304**
37	RKT.L	Partial	0,0253	1,6429	0,0059	0,3831	0,0031	0,2013
38	DANSKE.CO	Partial	0,0173	1,1234	-0,0166	-1,0779	0,013	0,8442
39	IFX.DE	Partial	-0,031	-1,7714**	-0,0012	-0,0686	0,0102	0,5829
40	WIE.VI	Full	-0,0412	-2,0396*	-0,0083	-0,4109	-0,028	-1,3861
41	WRT1V.HE	Full	0,017	0,7834	0,0171	0,788	-0,0061	-0,2811
42	UBI.PA	Full	0,0052	0,1818	0,0002	0,007	-0,0239	-0,8357
43	HOLN.SW	Full	0,0035	0,3302	-0,0062	-0,5849	0,0012	0,1132
44	BAS.DE	Full	-0,0104	-0,7376	0,0006	0,0426	-0,0053	-0,3759
45	DBK.DE	Full	-0,0202	-0,9806	0,0141	0,6845	0,013	0,6311
46	RI.PA	Partial	0,0015	0,1402	0,0145	1,3551	-0,0095	-0,8879

*– indicates statistically significant value at the 95% confidence interval; ** – indicates statistically significant value at the 90% confidence interval.

CAR

$H_0: \beta_i = 0$, where H_0 is rejected if t_{CAR} is larger than $t_{critical}$

$N=46$

$t_{critical} (\alpha = 0.05) = 2.021$

$t_{critical} (\alpha = 0.1) = 1.684$

$$t_{CAR} = \frac{CAR_{i,t}}{\sigma_{CAR}}, \quad (15)$$

$$\sigma^2_{CAR} = L_2 \sigma_{AR}^2 \quad (16)$$

where $AR_{i,t}$ is the average abnormal returns for the stock; σ is the standard deviation of returns, n is the number of days in the estimation window.

Table 11. Calculated cumulative abnormal returns (CAR) and significance testing.

	Full exit			Partial exit			
Company ID	Company	CAR	CAR t-value	Company ID	Company	CAR	CAR t-value
3	EQNR	0,117	1,6562	1	PNDORA.CO	-0,2102	-0,2102
7	ELISA.HE	0,0202	0,662	2	ORSTED.CO	0,2441	3,7171*
8	STERV.HE	-0,0918	-2,0503*	4	KBC.BR	-0,2955	-5,8233*
9	TE.PA	-0,1873	-2,9723*	5	DTG.DE	-0,2791	-3,3796*
10	AV.L	-0,0402	-1,1544	6	ABDN.L	-0,1485	-3,7312*
13	HAS.L	-0,0914	-1,7442**	11	GALP.LS	0,1506	2,551*
15	WPP.L	-0,0326	-0,8057	12	HM-B.ST	-0,1039	-1,5983
23	CARL-B.CO	-0,1518	-3,3903*	14	CDR.WA	-0,0173	-0,1954
24	CPG.L	0,019	0,3237	16	CLN.SW	0,0017	0,0282
25	WEIR.L	0,2041	4,662*	17	PUM.DE	-0,147	-3,7246*
27	ALE.WA	0,1619	1,1935	18	NEM.DE	0,0114	0,1273
28	PUB.XD	0,0649	1,6725	19	SOLB.BR	-0,0485	-1,4337
29	INCH.L	-0,0266	-0,5609	20	JMAT.L	0,1432	1,6932*
31	HEINY	0,0198	0,3596	21	ADS.DE	0,0281	0,6945
32	WG.L	-0,0483	-0,3904	22	ULVR.L	-0,1071	-2,1967*
33	ATO.PA	-0,1224	-1,1049	26	DASTY	0,0126	0,2076
34	KGP.L	-0,0815	-1,1702	30	MUV2.DE	-0,0131	-0,3591
40	WIE.VI	-0,0631	-0,9418	35	WKL.AS	-0,0052	-0,1074
41	WRT1V.HE	0,032	0,4446	36	IHG.L	-0,0184	-0,3511
42	UBI.PA	-0,0351	-0,37	37	RKT.L	0,0405	0,7929
43	HOLN.SW	-0,0034	-0,0967	38	DANSKE.CO	-0,0292	-0,5717
44	BAS.DE	-0,0312	-0,6672	39	IFX.DE	0,0406	0,6995
45	DBK.DE	0,0523	0,7655	46	RI.PA	0,0173	0,4875

* – indicates statistically significant value at the 95% confidence interval; ** – indicates statistically significant value at the 90% confidence interval.

Significance testing of AAR

$$t_{critical} (\alpha = 0.05) = 1.96$$

$$z_{critical} = 1.96$$

1. Cross-sectional test t-values:

$H_0: E(AAR_0) = 0$, where H_0 is rejected if t_{AAR} is larger than $t_{critical}$

$$t_{AAR} = \sqrt{N} \frac{AAR_0}{\sigma_{AAR_0}}, \quad (17)$$

$$\sigma_{AAR}^2 = \frac{1}{N-1} \sum_{i=1}^N (AR_{i,0} - AAR_0)^2. \quad (18)$$

2. Patell Test Z-values

$H_0: E(AAR_0) = 0$, where H_0 is rejected if z is larger than $z_{critical}$.

$$z = \frac{ASAR_0}{\sigma_{ASAR}}, \quad (19)$$

$$ASAR_0 = \sum_{i=1}^N SAR_{i,0}, \quad (20)$$

$$SAR_{i,0} = \frac{AR_{i,0}}{\sigma_{AR_{t,0}}}; \quad (21)$$

$$\sigma_{AR_{t,0}}^2 = \sigma_{AR}^2 \left(1 + \frac{1}{M_i} + \frac{(R_{m,0} - \bar{R}_m)^2}{\sum_{t=T_0}^{T_1} (R_{m,t} - \bar{R}_m)^2} \right); \quad (22)$$

$$\bar{R}_m = \frac{1}{L_1} \sum_{t=T_0}^{T_1} R_{m,t}; \quad (23)$$

$$\sigma_{ASAR}^2 = \sum_{i=1}^N \frac{M_i - 2}{M_i - 4}, \quad (24)$$

where $ASAR_0$ is average standardised abnormal return at the event day, σ_{ASAR} is standard deviation of average standardised abnormal return; $SAR_{i,0}$ is standardised abnormal return of a security i at the event date; $R_{m,0}$ is market index return at the event date and \bar{R}_m is an average market index return.

3. *Standardised cross-sectional test t-values*

$H_0: E(AAR_0) = 0$, where H_0 is rejected if t_{AAR} is larger than $t_{critical}$

$$t_{AAR} = \frac{ASAR_0}{\sqrt{N}\sigma_{ASAR_0}}; \quad (25)$$

$$\sigma_{ASAR,0}^2 = \frac{1}{N-1} \sum_{i=1}^N (SAR_{i,0} - \frac{1}{N} \sum_{i=1}^N SAR_{i,0})^2. \quad (26)$$

4. *Sign Test Z-values*

$H_0: E(AAR_0) = 0$, where H_0 is rejected if z is larger than $z_{critical}$.

$$z = \frac{w - N \times 0.5}{\sqrt{N \times 0.5 \times 0.5}}, \quad (27)$$

where w is the number of positive abnormal returns of the event day within the subsample.

Significance testing of CAAR

$t_{critical} (\alpha = 0.05) = 1.96$

$z_{critical} = 1.96$

1. *Cross-sectional test t-values:*

$H_0: E(CAAR) = 0$, where H_0 is rejected if t_{CAAR} is larger than $t_{critical}$

$$t_{CAAR} = \sqrt{N} \frac{CAAR}{\sigma_{CAAR}}; \quad (28)$$

$$\sigma_{CAAR}^2 = \frac{1}{N-1} \sum_{i=1}^N (CAR_i - CAAR)^2. \quad (29)$$

2. *Patell Test Z-values*

$H_0: E(CAAR) = 0$, where H_0 is rejected if z is larger than $z_{critical}$.

$$z = \frac{1}{\sqrt{N}} \sum_{i=1}^N \frac{CSAR_i}{\sigma_{CSAR}}; \quad (30)$$

$$CSAR_i = \sum_{t=T_1+1}^{T_2} SAR_{i,t}; \quad (31)$$

$$\sigma_{CSAR}^2 = L_2 \frac{M_i - 2}{M_i - 4} \quad (32)$$

where $CSAR_i$ is cumulative standardised abnormal return of a security i , σ_{CSAR} is standard deviation of average standardised abnormal return within the sub-sample; $SAR_{i,t}$ is standardised abnormal return of a security i over days in the event window.

3. Standardised cross-sectional test t -values:

$H_0: E(CAAR) = 0$, where H_0 is rejected if t_{CAAR} is larger than $t_{critical}$

$$t_{CAAR} = \sqrt{N} \frac{\overline{SCAR}}{\sigma_{SCAR}}; \quad (33)$$

$$\overline{SCAR} = \frac{1}{N} \sum_{i=1}^N SCAR_i; \quad (34)$$

$$SCAR_i = \frac{CAR_i}{\sigma_{CAR}}; \quad (35)$$

$$\sigma_{\overline{SCAR}}^2 = \frac{1}{N-1} \sum_{i=1}^N (SCAR_i - \overline{SCAR})^2; \quad (36)$$

$$\sigma_{CAR}^2 = \sigma_{AR}^2 \left(L_2 + \frac{L_2}{M_i} + \frac{\sum_{t=T_1+1}^{T_2} (R_{m,t} - \overline{R_m})^2}{\sum_{t=T_0}^{T_1} (R_{m,t} - \overline{R_m})^2} \right), \quad (37)$$

where \overline{SCAR} is an average standardised cumulative abnormal return within the sub-sample; $SCAR_i$ signifies standardised cumulative abnormal returns of a security, σ_{CAR}^2 is a standard deviation of CAR within the sub-sample, and $\sigma_{\overline{SCAR}}^2$ is a variance of an average standardised cumulative abnormal returns within the sample.

4. Sign Test Z -values

$H_0: E(CAAR) = 0$, where H_0 is rejected if z is larger than $z_{critical}$.

$$z = \frac{w - N \times 0.5}{\sqrt{N \times 0.5 \times 0.5}} \quad (38)$$

where w is the number of positive cumulative abnormal returns within the subsample.

Appendix D: Additional formulas

Point-biserial correlation coefficient

$$r_{pb} = \frac{-0.0137+0.0233}{0.1081} \times \sqrt{\frac{23 \cdot 23}{23^2}} = 0.089 \quad (39)$$

$H_0: r_{pb} = 0$, where H_0 is rejected if t is larger than $t_{critical}$.

$N=46$

$t_{critical} (\alpha = 0.05) = 1.684$

$t_{critical} (\alpha = 0.1) = 1.303$

$$t = r_{pb} \times \sqrt{\frac{n_1+n_0-2}{1-r_{pb}^2}}, \quad (40)$$

$$t = 0.089 \times \sqrt{\frac{23+23-2}{1-0.089^2}} = 0.0592 \quad (41)$$

IQR

$$IQR = Q_3 - Q_1 \quad (42)$$

Table 12. Interquartile range calculations.

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>IQR</i>
<i>Partial exit subgroup</i>	-0,0762	-0,0122	0,0227	0,0989
<i>Full exit subgroup</i>	-0,0723	-0,0312	0,0261	0,0984

Correlation coefficient

$$p_{CAR_{full}CAR_{partial}} = \frac{Cov(CAR_{full}CAR_{partial})}{\sigma_{full}\sigma_{partial}}$$

where $p_{CAR_{full}CAR_{partial}}$ is the Pearson product-moment correlation coefficient; $Cov(CAR_{full}CAR_{partial})$ is the covariance of the CARs, and $\sigma_{full}\sigma_{partial}$ are the standard deviations.

MAD

(1) <i>CARs for the partial exit subgroup</i>	(2) <i>Median</i>	(3) <i>Absolute deviations (1)-(2)</i>	(4) <i>MAD</i>	(5) <i>CARs for the full exit subgroup</i>	(6) <i>Median</i>	(7) <i>Absolute deviations (5)-(6)</i>	(8) <i>MAD</i>
-0,2955	-0,0122	-0,2833	0	-0,1873	-0,0312	-0,1561	0
-0,2791		-0,2669		-0,1518		-0,1206	
-0,1485		-0,1363		-0,1224		-0,0912	
-0,147		-0,1348		-0,0918		-0,0606	
-0,1071		-0,0949		-0,0914		-0,0602	
-0,1039		-0,0917		-0,0815		-0,0503	
-0,0485		-0,0363		-0,0631		-0,0319	
-0,0292		-0,017		-0,0483		-0,0171	
-0,0184		-0,0062		-0,0402		-0,009	
-0,0173		-0,0051		-0,0351		-0,0039	
-0,0131		-0,0009		-0,0326		-0,0014	
-0,0122		0		-0,0312		0	
-0,0052		0,007		-0,0266		0,0046	
0,0017		0,0139		-0,0034		0,0278	
0,0114		0,0236		0,019		0,0502	
0,0126		0,0248		0,0198		0,051	
0,0173		0,0295		0,0202		0,0514	
0,0281		0,0403		0,032		0,0632	
0,0405		0,0527		0,0523		0,0835	
0,0406		0,0528		0,0649		0,0961	
0,1432		0,1554		0,117		0,1482	
0,1506		0,1628		0,1619		0,1931	
0,2441		0,2563		0,2041		0,2353	

Appendix E: Robustness assessment

Heteroskedasticity

Figure 16. Heteroskedasticity test of the model.

Breusch-Pagan test for heteroskedasticity

uhat2	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Exit	-.002	.004	-0.54	.594	-.009	.005	
DefSector	.001	.005	0.13	.9	-.009	.01	
EnergSec	.012	.005	2.28	.028	.001	.023	**
RUBEUR	-.06	.059	-1.01	.321	-.18	.06	
MarketCap	0	0	-0.66	.514	0	0	
GeoRisk	0	.001	0.23	.82	-.001	.002	
Constant	.007	.006	1.14	.262	-.005	.018	
Mean dependent var		0.008	SD dependent var		0.012		
R-squared		0.190	Number of obs		46		
F-test		1.525	Prob > F		0.196		
Akaike crit. (AIC)		-275.488	Bayesian crit. (BIC)		-262.688		

*** $p < .01$, ** $p < .05$, * $p < .1$

Multicollinearity

Figure 17. Correlation matrix of the explanatory variables (top). Variance inflation factor (VIF) test (bottom).

Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) Exit	1.000					
(2) DefSector	-0.182	1.000				
(3) EnergSec	0.129	-0.164	1.000			
(4) RUBEUR	0.171	0.062	-0.258	1.000		
(5) MarketCap	-0.225	-0.030	0.065	0.030	1.000	
(6) GeoRisk	-0.061	0.043	-0.025	-0.287	-0.094	1.000

Variance inflation factor

Variables	VIF	1/VIF
RUBEUR	1.246	.803
Exit	1.178	.849
EnergSec	1.149	.87
GeoRisk	1.112	.899
MarketCap	1.087	.92
DefSector	1.066	.938
Mean VIF	1.14	.