EXIT THE RUSSIAN MARKET. WHAT DETERMINES THE BEHAVIOR OF TRANSNATIONAL CORPORATIONS?

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Abstract

Many transnational corporations decided to leave the Russian market after the beginning of the Russian full-scale invasion of Ukraine. This phenomenon is among the few cases of corporations' mass political actions that are available for research. However, the reaction was not homogeneous, as some corporations were not ready to cut ties with Russia. This study seeks to find factors that determine such variability, empirically test several hypotheses, and identify factors that have a significant influence on withdrawal probability. I argue that ownership structure and the presence of institutional investors in it positively affect the likelihood of divestment. The methods used in the analysis include logistic regressions, OLS regressions, and Bayesian multi-level logistic regressions. The present research contributes to the literature by introducing institutional investors' ownership of a company as a key factor influencing leaving decisions. Moreover, it tests the influence of corporations' revenue exposure in Russia, arriving at a surprising conclusion regarding the positive correlation between this variable and withdrawal. This fact contradicts pure shareholderism, supporting stakeholderism as a more trustworthy framework for analyzing corporate behavior.

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Introduction

The full-scale Russian invasion of Ukraine, which started on the 24th of February 2022, caused many changes in the global economy, such as the energy crisis in Europe, new waves of sanctions, and the rise in military spending in many countries (Khudaykulova et al. 2022). Another feature of the present reaction of the global community to aggression was multinational corporations' divestment from Russia (Sonnenfeld 2023). This collective withdrawal might be considered another form of economic sanctions, but one introduced by the economic actors themselves, not by the governments of the countries of origin. At the same time, these were voluntary withdrawals that were not pushed by actors other than companies' management and stakeholders. Therefore, these actions can be explained by theories related to corporate behavior.

Shareholderism and stakeholderism are major competing approaches that explain corporations' behavior and purpose. The former assumes that corporations are driven purely by economic considerations related to maximizing shareholders' wealth (Jensen and Meckling 1976). By contrast, supporters of stakeholderism argue that corporations must consider all stakeholders' interests, including employees, customers, suppliers, society, local communities, and the environment (Ruggie, Rees, and Davis 2020). One version of stakeholderism, strategic (or enlightened) stakeholderism, claims that companies must take care of all stakeholders as it maximizes shareholders' wealth in the long run (in Parmar et al. 2010). At the same time, pluralistic stakeholderism insists on the importance of the interests of all stakeholders, regardless of the maximization (in Parmar et al. 2010).

The present thesis aims to identify the factors that influenced corporations' decisions in the Russian market after the start of the full-scale war in Ukraine in 2022, as many corporations decided to voluntarily leave Russia after the beginning of the conflict, while others did not. The

other purpose of the research is to link the findings to the broader theoretical framework and the shareholderism/stakeholderism debate. The research questions are: *What factors determined the variability of the behavior of transnational corporations in the context of the Russian*-*Ukrainian war? In particular, does the ownership structure matter for withdrawal? If yes, how?*

Some scholars have already tested several factors related to companies' divestment from Russia. One of the major focuses of previous studies has been companies' commitment to ESG¹ initiatives and their influence on withdrawal probability (Ahmed et al. 2022; Basnet, Blomkvist, and Galariotis 2022; Lu, Huang, and Li 2022). Other scholars have explored the influence of boycott campaigns (Pajuste and Toniolo 2022). Another intensively studied topic was the stock market performance of companies that left Russia (Balyuk and Fedyk 2022; Glambosky and Peterburgsky 2022; Sonnenfeld, Tian, Zaslavsky, et al. 2022; Tosun and Eshraghi 2022).

I argue that one of the underestimated reasons for the major switch in companies' priorities is the change in the ownership structure of many large corporations. Institutional investors are considered one of the major factors pushing companies towards more sustainable (ESG) policies (Dyck et al. 2019). However, the existing literature has not considered the influence of institutional investors on the corporations' leaving strategies from Russia, which is the gap filled by this research.

The present study empirically tests the influence of institutional investors on the corporations' withdrawal probability. The analysis was carried out on the sample of 456 transnational corporations from KSE Institute database (2023). Most of the presented models show that institutional investors had a positive statistically significant effect on the probability of withdrawal. However, the effect was not robust to the introduction of country variables. This study also tests the role of a corporation's size and exposure to Russia (measured as a share of

¹ Environmental, social and corporate governance. And their ratings according to some primary rating agencies (such as Refinitiv EIKON).

revenue and the number of employees in Russia). The size of corporations was the main explanatory variable, as the logarithm of the total company's revenue had a positive and significant effect in all of the provided models. The relative presence of companies in Russia appeared to have a positive (but significant only in a few models), not a negative (as expected), effect on the probability of withdrawal. This fact contradicts the assumptions of pure shareholderism, as companies with a higher share of revenue in Russia are likely to lose more because of the leaving decision but decided to do it, nevertheless. At the same time, this can be explained by both versions of stakeholderism advocating for their relevance to corporations' behavior analysis.

Overall, this study contributes to the literature in three ways. Firstly, by introducing another critical factor, ownership structure, and providing evidence of the positive influence of institutional investors. Secondly, this study contributes to the shareholderism and stakeholderism debate, advocating for the former. Thirdly, the research is based on a broader and more updated dataset (as of August 2023) than that of other studies.

The thesis arrangement is outlined as follows: The first chapter discusses the debate on sanction effectiveness and its relation to corporations' reactions and proceeds with the presentation of stakeholderism and shareholderism approaches. The second chapter summarizes the present literature on corporations' withdrawals from Russia. The research question and hypotheses are formulated in the third chapter, which also includes the data collection process, methodology, and descriptive data summaries. The last chapter is focused on the empirical analysis of the data. The thesis then proceeds with the discussion section, where the results are summarized and shown in relation to the existing literature on the topic.

Chapter 1 – Theoretical Framework

This chapter is focused on the main theoretical approaches explaining corporations' behavior. The first part provides information on the withdrawal volumes and the actual volume of foreign investments in Russia. The second part discusses corporations' withdrawal and its relation to overall sanctions' effectiveness debates. The last part compares shareholderism with the two types of stakeholderism.

1.1 How many companies left Russia, and why were they there?

The scale of corporations' withdrawal is outstanding. One of the main databases that contain information about corporations' decisions is Leaving Russia project, which was created by scholars of the Kyiv School of Economics (KSE 2023). The data was aggregated from several sources. Mainly, the list contains companies from the Yale SOM list, introduced by Jeffrey Sonnenfeld (2023). According to their data, 1,358 companies did not do anything (Stay), 496 of them stopped expanding their business (Wait), 1,189 announced leaving (Leave), and 235 left completely (Exited). They have also collected data on the number of staff, revenue, capital, and assets in Russia. Data (Figure 1) suggests that, in total, companies leaving Russia (leave and exit) had higher assets and capital, while remainers (stay and wait) had higher revenue. At the same time, leavers in total had revenue of 76 billion USD, which is equal to 4.3% of Russian GDP (World Bank 2023c). Moreover, the KSE Institute does not have information about every company's revenue (their database contains only 539 companies with indicated revenue), so this value is significantly underestimated.



Figure 1 Total Revenue, Capital, and Assets in Russia by Category Source: (KSE 2023)

Overall, the KSE database contains over 3,000 corporations. So, at least 3000 multinational corporations operated in Russia and invested there. This activity of multi-national corporations is usually called Foreign Direct Investments (FDI). Literature on Multinational enterprises (MNEs) or Transnational corporations (TNCs) often emphasizes the worldwide rise of FDI over the past 40 years (Radice 2014). Many global corporations relocated their production to developing countries and created subsidiaries in other markets to sell their products. Dunning developed the Eclectic Paradigm for understanding this phenomenon. It claims that corporations create their subsidiaries because of two reasons: the advantage of the owner and the advantage of the location (2015). Firstly, MNEs often acquire a lot of knowledge through Research and Development (R&D) investments, which local companies cannot afford.

Ultimately, this knowledge becomes a significant advantage in making profits in a particular market. For example, international nutrition producers such as Nestle could benefit from their innovations in the Russian market, as their local competitors did not have this advantage. Secondly, the country of investment might have some critical (usually cheap) resources that an MNE can use in its supply chain. For example, a relatively inexpensive working force in Russia was used by many car producers, such as General Motors, Volkswagen, Peugeot, Citroën, and Mitsubishi (Vityutina and Pirogova 2011).

So, due to these factors, many MNEs made investments in Russia, creating local subsidiaries there. Russia had a positive net FDI inflow even after the annexation of Crimea and the starting of war in East Ukraine in 2014. On average, Russia received a net FDI inflow of 1.44% of its Gross National Product (GDP) per year between 2015 and 2021. The first negative inflow (outflow) was recorded in 2022 (-1.9% of GDP, according to the World Bank database (2023b)). According to the same source, the net FDI volume in Russia is 29 billion USD (2023a). Currently, these investments have become a political tool for companies, which, losing part of their revenue and assets, can put significant pressure on the Russian economy.

1.2 A new form of sanctions?

Corporations' voluntary leaving decisions have quite a similar logic to sanctions, and some scholars call them self-sanctions or private sanctions (Hart, Thesmar, and Zingales 2022). Because they have some similarities, they might share the same drawbacks. The first part of the chapter is dedicated to the existing literature on sanctions and their effectiveness debate. Some authors define international sanctions as "nonmilitary coercive measures imposed by a country or a group of countries against another country, organization, or individuals" (Meyer et al. 2023, 2). Sanctions have been used in many cases; the most known are sanctioning of Iran, Iraq, North Korea, the Republic of South Africa, and Russia. However, in most cases, sanctions were less effective than their designers hoped.

One of the main problems with sanctions is that there are still no conventional measurement tools for estimating their effectiveness. Many statistical tools, such as those used by US consultants in the case of Iraq, failed to provide robust estimations and were based on incorrect assumptions (Parker 1999). Some authors claim that even in optimistic scenarios, sanctions are often ineffective (Lektzian and Souva 2007). Hufbauer et al. estimated that only around 30% (among over 90 explored cases) of sanctions were effective and reached at least some of the initial goals (1990). Even sanctions imposed to prevent human rights violations usually had adverse effects, which were even worse if they were introduced by a group of countries (Peksen 2009). Moreover, sanctions usually cause repressions against the democratic opposition, who is supposed to be empowered by those sanctions (Armstrong 2020, 13). Armstrong argues that even with ethical arguments, sanctions cannot be justified and could even be considered as a violation of countries' moral duties, as intensification of trade is associated with improved human rights records and a lower likelihood of aggression (2020). Some authors emphasize the role of stakeholders in a country that introduces sanctions, as many are imposed to please an audience inside, so sanctions are highly dependent on public opinion (Meyer et al. 2023). As a result, sometimes their effectiveness might not even be considered as the main evaluation criteria.

Despite all this criticism, it is possible to argue that sanctions are very important for the current case international community's response to Russian aggression, as it has three essential features related to the war status. Firstly, sanctions were imposed on the country that had already started the aggression, so trade cannot help to prevent it. Secondly, the Russian opposition faced high pressure, and repressions and human rights violations were intensified because of the protests against the war, not the introduction of sanctions (McCarthy, Rice, and Lokhmutov 2023). Thirdly, Western countries (which introduced most of the sanctions) actively help Ukraine with financial aid, military equipment, and refugees (Trebesch et al. 2023). At the same time, trade

with Russia provides additional resources to Putin so he can continue the war. Thus, it is not rational to give money to Putin, as they will have to spend even more money on additional support for the Ukraine.

Corporations' withdrawal has a similar effect as trade sanctions but is more targeted and might be even more harmful to the Russian economy (Sonnenfeld, Tian, Sokolowski, et al. 2022). However, despite the public pressure, many corporations continue operating in Russia. One recent investigation showed that over twenty Western companies still provide services to the Russian army, including important missile components and military clothes (Ezhov 2023). Thus, corporations' decisions can greatly influence the current conflict either by prolonging or shortening the war.

One of the sanctions' success stories was the Republic of South Africa case in the 1980s when many Western countries introduced sanctions and boycotts against the apartheid regime. Ultimately, the government had to reform its system. One of the leading forces pushing the government was big Western corporations with economic ties to South Africa, which were ready to withdraw (Teoh, Welch, and Wazzan 1999). It is difficult to estimate the overall effect of their actions, but unlike many other sanctioned countries, South Africa had to go to concessions.

1.3 Which theories can explain corporations' massive exit from Russia?

In this paper, I present three conflicting views on a corporation's purpose and explanations of its behavior. The first is shareholderism, the classic approach that is still the most popular among economists, according to which corporations operate to maximize their shareholders' wealth. The second is pluralistic Stakeholderism, which emphasizes the role of other actors, such as employees, customers, and the environment. The third is strategic stakeholderism, which switches focus from every stakeholder's interest to how caring about other stakeholders helps to maximize shareholders' wealth in the long run.

1.3.1. Shareholderism

Milton Friedman is one of the major theorists of the classical approach (called shareholderism by many scholars), which states that firms aim to maximize their profits, which is beneficial for the society. Any other interpretation of a firm's goals is useless or even harmful to society. He articulated this position in the article "The Social Responsibility of business is to increase its profits" (Friedman 1973). At the same time, companies can maximize not only profits but also the overall portfolio value of their investors, so they can have more complex decision-making procedures.

This approach was developed in the 1970s and still dominates business schools. This idea is also supported by CEOs having good incentives to maximize profits (or overall company market evaluation) if their earnings are connected to the firm's value (Jensen and Meckling 1976). This approach shows that this is the only possible way, if not to get rid of, then at least weaken, the principal–agent problem. The problem appears in the case of any delegation, as the principal and agent have asymmetry of information and often have different, sometimes opposite, interests (Ruggie, Rees, and Davis 2020, 7). But in the case of shareholder value maximization, directors are chosen by shareholders. They are accountable, as they must present their results and could be fired in the event of any harmful behavior. Positive incentives are usually added to this model as managers obtain extra money for good company performance, and this way, the problem seems to be almost solved at least theoretically (2020).

However, there are criticisms regarding this approach. One of them is the impossibility of caring about all investors, but managers are already expected to do so (Fisch and Solomon 2020). For example, some investors would prefer higher dividends, while others would vote for investing

profits to expand the market. The classical Principal-Agent problem is also not fully solved by this model. Managers might be much more interested in short-term benefits than investors. This leads to short-termism in corporate governance, as managers are particularly interested in short-term projects and care less about long-term consequences (Bratton 2001). They would receive their money for a good company's performance, but this performance can be achieved more easily by, for example, accounting manipulations or taking unproportional "fat-tail" risks, which put the entire corporation at long-term risk (Dallas 2011).

Concerning the companies' withdrawal, this approach would emphasize that the decision to withdraw from the Russian market should benefit the owners. So, the main factors for them could be stock performance, risk of further sanctions imposition and risk of escaping these sanctions, and loss of revenue from Russia.

1.3.2. Pluralistic stakeholderism

One of the alternatives to shareholderism is stakeholderism. This approach proposes companies' responsibility over other actors besides shareholders. This usually includes employees, customers, suppliers, communities, and the environment (Ruggie, Rees, and Davis 2020, 12). The leading business associations have already proposed their new view on the problem (in Pajuste and Toniolo 2022, 10). They changed their position and stated that corporations must serve the interests of not only shareholders but other stakeholders as well.

Edward Freeman was among the first authors who proposed a more general approach than Friedman's view (in Parmar et al. 2010). According to his position, companies are supposed not only to maximize profits but care about other stakeholders. Initially, his position was close to Friedman's, but he emphasized other stakeholders' interests more, as it is beneficial for shareholders in the long run (in Ruggie, Rees, and Davis 2020, 8). Later, he changed this to a more radical view that companies do not need to consider profit maximization as the only goal (2020, 8).

Typically, stakeholderism is divided into two approaches that view the solution in different ways. The first version of stakeholderism is pluralistic stakeholderism, which states that the interests of other stakeholders are the goal in itself. Bebchuk and Tallarita, in "The illusory promise of stakeholder governance" claim, however, that corporations cannot work in this frame. Firstly, it is impossible to define stakeholders and their interests. Secondly, they are always in conflict with one another. Thirdly, CEOs are not incentivized to promote stakeholders' interests above those of shareholders (2020).

However, Ruggie, Rees, and Davis show that some regulation of the market can lead to positive consequences. Moreover, the current system with profit maximization purposes does not work sufficiently well to be considered the best. Firstly, directors still face problems with identifying the interests of investors, which are not homogeneous, so they already have to face the problem of high uncertainty, and taking other stakeholders into account might not be a big problem (2020). Secondly, managers have self-interests that contradict the interests of owners. Thus, their short-term strategies might be harmful to both owners and employees (Bratton 2001). However, if the interests of employees are considered, it can simultaneously prevent destructive scenarios for shareholders at the same time, as the whole system can become more sustainable.

1.3.3. Strategic (enlightened) stakeholderism

The second version of stakeholderism is commonly known as strategic (or enlightened) stakeholderism. It posits that a company needs to consider all stakeholders' interests as this can benefit shareholders in the long run. However, some scholars criticize this approach, arguing that it is not significantly different from the original profit maximization concept and only differs in the name (Bebchuk and Tallarita 2020). On the other hand, some argue that strategic stakeholderism has some unique features that differentiate it from pure profit maximization.

For instance, a company's reputation and sustainability are critical factors determining its longterm value (Parmar et al. 2010). Moreover, this approach can have an essential instrumental role for the company and society, such as improving communication, providing information, and educating CEOs who may overlook sustainability concerns in pursuit of short-term gains (Fisch and Solomon 2020).

Incentives from the stakeholders play an essential role in strategic stakeholderism, as they can be the primary mechanism of signaling and pushing managers to consider particular stakeholders' interests. Broccardo, Hart, and Zingales (2022) analyzed the two most popular options that stakeholders can take: voice (voting for investors, engagement) and exit (divestment and boycott). Based on their formal analysis, they conclude that voice option can lead to socially desirable outcomes. In contrast, exit option works only if all actors are socially responsible, so the free rider problem is avoided. However, the article has a significant limitation: it did not consider the possibility of combining voice and exit options, so it is still unclear if, for example, stakeholders decide to engage and show their preferences but are ready to threaten corporations by exit (boycott). Overall, their analysis shows the importance and effectiveness of the voice option, which is more accessible to investors than to other stakeholders.

Supporting evidence for boycott ineffectiveness was provided by Liaukonytė, Tuchman, and Zhu, who examined the boycott and counterboycott of Goya, a large food company in the US. Goya was boycotted by democrats in the US because of their CEO's position on Donald Trump (ex-president of the US) but had the opposite reaction from some Republicans. Sales analysis showed a rise in sales in Republican states, which lasted about three weeks, but the opposite trend was not observed in Democratic states. Thus, the boycott campaign failed because of a lack of consensus in the society (2023). This article might contribute to the present debate, as

social media boycotts do not necessarily transform into sales decreases, meaning that companies might not be afraid of such boycotts. At the same time, such boycotts can be considered a voice option, as they might provide essential information about public sentiment and stakeholders' interests to the decision-makers in companies.

Chapter 2 – Literature Review

The second chapter is focused on the existing literature on corporations' actions. The first part includes an overview of corporations' past political actions. The chapter then proceeds with the existing literature on corporate withdrawal and its evaluation.

2.1 Previous examples of corporations' political actions

The current withdrawal from Russia is not the first event when companies had to come up with some strategies or statements in response to a geopolitical event. Aleksander Kirss, in the article on American business leaders' opposition to the war in Vietnam, examined if CEOs of big US companies based their position regarding the war in Vietnam on their values and ideologies or if business interests were the only important factor. The author showed that both elements were relevant, as the ideology of the director had a significant influence (2022). Thus, firms' managers have factors other than strict financial considerations that can significantly impact their decisions. Handley, in "Business and Social Crisis in Africa", analyzes the reasons why some companies had a "constructive response" towards the HIV epidemic in Africa, while others did nothing. She shows that incentives from other actors (mainly employees), autonomy of the business, and broader self-interests in combination led the company to a constructive response. Other factors that had a positive effect on probability were the large size of the corporation, diversification to other sub-sectors, oligopolistic status in the market, being part of associations, and educated employees (2019).

The closest case to the companies' withdrawal from Russia is the same action of many corporations against South Africa during active protests against apartheid. Teoh, Welch, and Wazzan analyzed the effect of this withdrawal on financial markets. They found no significant impact either on American or South African financial markets. One suggested explanation is free riders, who were ready to take advantage of the situation, so the action was not collective enough. Moreover, they tested the influence of institutional investors (mainly universities'

endowments and pension funds). They found a positive, however, not significant (p-val<0.1) effect on the withdrawal, as due to rebalancing of the portfolios, they had a higher share in companies that announced decoupling (1999).

2.2 What determined withdrawal in the Russian case?

Many factors could be important for corporations' management when making decisions to leave or stay in Russia after the beginning of the war. Potential factors include country of origin, exposure to the Russian market, stock performance, commitment to ESG initiatives, size, company-level indicators (such as sector) and investors. The current literature on withdrawal is analyzed in the following part of the chapter. It is structured based on the factors examined in the articles.

Some authors have observed that countries that support Ukraine are more likely to announce sanctions. Therefore, companies with headquarters in these countries can face higher risks than others. Ngo et al., in "Public sentiment towards economic sanctions in the Russia–Ukraine War", show that public sentiment is a predictor of government decisions. The general sentiment itself is highly determined by the level of democracy in the country (2022). Therefore, public sentiment can easily influence corporate decisions, making further sanctions more likely to be implemented. Moreover, this public sentiment can have a direct influence on corporations' decisions. Hart, Thesmar, and Zingales conducted an experiment trying to estimate the share of people in the US who would prefer to influence companies' leaving decisions positively. Their data show that over 60% of the participants think that corporations should withdraw from Russia. Researchers provided three potential roles for the respondents with related possible negative incentives: an investor who can sell a stock, a customer who can stop buying a company's products, and a potential employee who can change the company. The results show

that respondents were willing to penalize a company in each role, which might be considered as an argument for stakeholderism, as not only investors are interested in the influence on the company's more sustainable behavior (2022). However, this type of experiment has limited value due to the imaginary situation presented to the respondents, so their responses do not necessarily correlate with their actual behavior in such situations.

The country of a company's headquarters can also have an important influence on management decisions. Lu, Huang, and Li found that country variables were crucial, as companies from countries with higher security concerns (NATO + neighboring) and public social awareness were more likely to leave. Similarly, companies from countries with higher Internet freedom and more Internet users are likely to leave (2022). Choy, Lai, and Wan (2022) complemented that research and discovered that companies originating from countries with a high level of awareness about environmental and social issues experienced lower market pressure after the announcement of decoupling. This finding supports the hypothesis of social media boycotts' importance, as companies from such countries could face higher pressure on social media due to the widespread access to the internet. Kanervisto and Rytsölä provide additional empirical support for the importance of country variables. They found that companies from Finland, Poland, and Sweden were more likely to withdraw, most likely, due to geographic proximity to Russia (2023).

The other crucial variable studied by the researchers was the company's dependence on the Russian market and its influence. Lu, Huang, and Li used a proxy variable, stock beta coefficients, to measure the relative connection between Ukrainian and Russian stock markets. However, they found no influence of this variable (2022). An important limitation of the study is the use of this proxy variable, which cannot supplement the actual share of revenue in the country. Another study used approximate disclosed by companies' share of revenue and found that companies that made fast leaving decisions had low revenue exposure (Pajuste and Toniolo

2022). However, the study does not take into account other types of exposures, such as the number of employees working in Russia. Moreover, the authors concentrated their analysis on the first few months after the start of the war.

Stock performance before and after announcements was studied by many scholars, but due to different samples, methods, and timelines, there is still no consensus on the topic. Balyuk and Fedyk analyzed the effect of exit decisions on stock performance. They found that firms that announced exits had negative abnormal returns (-4%) a week before the announcement, which was the best predictor of the decision (2022). However, it is possible to argue that investors could suspect this decision and discounted the prices in advance. After the announcements, prices stabilized. Glambosky and Peterburgsky also documented a negative market reaction to the announcement of withdrawal from Russia, especially to entirely withdrawing companies (-1.7%). However, on average, corporations recovered from their initial losses during the two weeks following the announcement (2022). Choy, Lai, and Wan found that the abnormal stock returns for companies announcing decoupling were -1.3%. However, the loss was significantly smaller for companies with high ESG scores (2022). By contrast, Tosun and Echraghi found that a portfolio of remainers significantly underperformed the portfolio leavers and the market benchmark during the two weeks after the main exit announcements' waves (2022). Garciac and Prof show the same tendency, as the leavers' portfolio outperformed the equal-based portfolio of remaining companies and the market benchmark (2023). Sonnenfeld et al. (2022) have also shown that a leaving decision is beneficial for the stock performance of the companies.

Overall, there is conflicting evidence on stock market performance, and it is hard to separate the reaction of the market to corporations' decisions (punishment before the announcement) and the ability of the market to predict these decisions. At the same time, stock performance is one of the leading indicators for the shareholder approach, as capitalization maximization is usually the central managers' goal, according to the approach.

ESG ratings have also been the focus of previous scholars, as these ratings directly refer to companies' sustainability characteristics, including human rights and local communities' protection. Ahmed et al. based their analysis on the Stoxx 600 companies' data and found that high-ESG-rated firms were not less likely to operate in Russia and were willing to take on this risk. Moreover, some of the ESG indicators were even higher in companies operating in Russia. These firms were not more likely to leave Russia or do it faster. Ahmed et al. conclude that ESG investing does not provide any protection to investors against geopolitical risks (2022). Lu, Huang, and Li's study "Sanctions and Social Capital" also investigated the same question as Ahmed's study but used a more extensive dataset not limited to European companies. They discovered that firms that left Russia had higher ESG scores, on average, especially in the social score category. However, these companies made announcements later, and their reactions were weaker, as they often decided to stop or leave their activities in Russia, while preserving the option to return to the market (2022). Another study by Basnet, Blomkvist, and Galariotis also examined firms' decisions to stay or leave the Russian market based on their ESG scores. They found that lower ESG scores (especially Human Rights scores) increased the likelihood of the company keeping Russian operations unchanged. At the same time, other indicators (such as sales, market-to-book value, and others) appeared to be insignificant. In addition, higher ESG scores led to less negative stock market reactions following complete exits (2022).

In sum, studies with larger samples (Ahmed et al. (2022) focused only on European companies) show that ESG ratings had a significant influence on corporations' decisions, as companies with higher ESG scores, on average, were more willing to withdraw. ESG ratings and investing strategies connected with them are related to both Stakeholderism and Shareholderism, as improvement of ESG scores is beneficial for all stakeholders, not only shareholders. At the

same time, ESG investing strategies provide additional funds inflows to companies, which is helpful for the shareholders. Thus, it might be called shareholderism in a sustainable (in ESG terms) institutionalized setting or strategic stakeholderism, as described above.

Twitter boycott campaigns, which usually target large companies, were also a significant factor in determining the decision. Pajuste and Toniolo argue that large corporations were more likely to leave earlier due to several reasons. One of the main reasons for this is that they were damaged by Twitter campaigns that mainly focused on large enterprises. They show that the decision to leave is either a marketing decision, which helps to improve reputation, or an attempt to avoid negative consequences, such as boycotts. This study argues that enlightened stakeholderism has more evidence, and stakeholders can create negative incentives, such as boycott campaigns in social media, leading to a socially desirable result (2022). Balyuk and Fedyk also found that big-size companies were more likely to leave (2022).

Companies with specific business models, such as franchises, might face additional problems in case of leaving, as franchisors have some rights, violations of which can cost a company much more than the costs of closing their own shops or restaurants. This was an especially important factor for brands, such as KFC and Pizza Hut (Yum! Brands), which were mostly governed by franchisors, according to Parella. The other factor mentioned by the author was organizational capacity, which is vital for corporations that have many educated employees, as their relocation might be very expensive and, at the same time, they might play an essential role in companies' production (Parella 2022). Some studies emphasized the importance of the field in which corporations operate; for example, firms in Healthcare and Manufacturing were less likely to divest from Russia (Balyuk and Fedyk 2022; Kanervisto and Rytsölä 2023).

Yet another possible factor affecting the likelihood of a firm's exiting the Russian market - and the one central to the strategic stakeholderism argument - is the shift in investor structure. Some investor groups appear to push companies towards more sustainable behavior, which leads to the increase of ESG scores of companies they own. These types of investors are pension funds, university endowments, and investment funds such as Blackrock and Vanguard (which provide passive investing strategies to their clients). All of these institutions are part of a broader category of institutional investors, which have become major holders of multinational enterprises (Fichtner 2019). Long-term investors are more likely to prioritize companies' sustainability and reputation, leading to a growing interest in Environmental, Social, and Governance (ESG) initiatives. Therefore, stakeholders increasingly hold companies accountable for their social and environmental impacts, indicating a fundamental shift in corporate priorities (Bebchuk and Tallarita 2020). Some authors have studied institutional investors' effect on companies' sustainable policies. They found that the presence of institutional investors in a company drives it toward more sustainable policies, and the authors emphasize their role in improving social ESG scores (Dyck et al. 2019). In this study, I argue that this shift led to the possibility of corporations' collective political decisions, such as the withdrawal of corporations from Russia.

Several investors asked companies where they had a share to withdraw from Russia, including the New York State Controller Thomas P. DiNapoli, who urged several US companies, such as McDonald's and PepsiCo, to examine their business operations in Russia and consider pausing or ending them (Parella 2022, 20). Several pension funds also supported the withdrawal of companies from their portfolios, and several state governors and legislatures pushed their pension funds to do the same (2022, 21).

Despite these facts, the role of institutional investors has not yet been tested empirically. The present study fills this gap in the literature.

Chapter 3 – Research Design

The withdrawal of corporations from Russia has been extensively studied over the past year. However, this topic still has some gaps, which this study aims to fulfill. This study tests the importance of the factors from the existing literature (size of a corporation, share of Russia in overall revenue, country, and sector), but also tests a hypothesis that has not yet been tested (influence of institutional investors).

The research questions of this study are: *What factors determined the variability of the behavior of transnational corporations in the context of the Russian-Ukrainian war? In particular, does the ownership structure matter for withdrawal? If yes, how?*

3.1 Hypotheses and Variables

The dependent variable in this research is whether companies left or decided to leave the Russian market. The goal of the study is to find the factors that determined these corporations' decisions or, by contrast, stopped some companies from taking this decision. To operationalize this variable, other researchers used two methods: either creating a binary variable from it (Kanervisto and Rytsölä 2023) or making a continuous variable from different "grades," which represent different levels of withdrawal (Sonnenfeld, Tian, Zaslavsky, et al. 2022).

Here is how one of the main databases (Yale SOM list) describes these levels:

A: WITHDRAWAL: companies making a clean break/permanent exit from Russia or and/or leaving behind no operational footprint.

B: SUSPENSION: companies temporarily suspending all or almost all Russian operations without permanently exiting or divesting.

C: SCALING BACK: companies suspending a significant portion (but not all) of their business in Russia.

D: BUYING TIME: companies pausing new investments/minor operations in Russia but largely continuing substantive business in Russia.

F: DIGGING IN: companies defying demands for exit or reduction of activities largely doing business-as-usual.

(Sonnenfeld, Tian, Zaslavsky, et al. 2022, 3)

In total, this most common classification gives five values for the continuous variable. Some authors have used this variable in multiple linear regressions (Sonnenfeld, Tian, Zaslavsky, et al. 2022; Balyuk and Fedyk 2022). However, this approach is deeply problematic. Many statistics scholars emphasize the importance of linearity, the same step difference between the values in continuous variables (Williams, Grajales, and Kurkiewicz 2013). The data provided do not necessarily satisfy this condition. This means that there is no evidence that the step from "digging in" to "buying time" is the same as between "suspension" and "withdrawal" for the companies in the list. Moreover, even if five categories are sufficient to provide adequate estimations in some linear models, one of the major conditions is balanced samples (Rhemtulla, Brosseau-Liard, and Savalei 2012), but the case of companies' withdrawal does not fit this condition well. In general, limited dependent variables in continuous models can lead to significant biases in the estimations (Bowen and Wiersema 2004).

Therefore, it seemed logical to operationalize the dependent variable as a binary and use logistic regressions for the estimation of the effects of the studied variables. For this reason, "suspension" and "withdrawal" were indicated as withdrawal (1), while three other grades as staying (0). However, linear regression models with Yale SOM list grades as a dependent variable were used to check whether the independent variables are robust to the other operationalization of the dependent variable.

It is possible that corporations' reactions could be spontaneous and could not be explained by any of the theories provided in the literature. This could be caused by the high uncertainty of the situation and the impossibility of making any predictions and estimations in such situations, leading to more emotional rather than rational behavior of the firms. So, in this case, data would show the randomness of the distribution.

H0: There are no statistically trackable factors that could explain corporations' behavior.

Institutional owners are usually more responsible, and some studies have shown their importance for the improvement of ESG scores, especially ESG Social scores (Dyck et al. 2019). ESG scores, at the same time, were proven to be a significant factor that determined companies' decisions. (Basnet et al. 2022, Lu and Huang 2022). Moreover, some institutional investors directly pushed companies in their portfolios to leave Russia (Parella 2022, 21). The potential difference between investor group preferences would provide evidence of institutional investors' commitment to the values of stakeholderism, which were supported by several business associations (Pajuste and Toniolo 2022, 10). Based on this knowledge, I test the following hypothesis, which has not yet been tested:

H1. Corporations with a higher share of institutional ownership were more likely to withdraw from Russia.

On the other hand, corporations have vital economic interests to stay in Russia, as they profit from their activity there. If companies leave, they can have reputational costs, but if these costs are lower than the costs of leaving, rational agents would prefer to stay according to shareholderism. Therefore, companies with a higher share of revenue received from Russia and with a higher number of employees working there (in the case these employees produce goods or services that are part of global supply chains) might face bigger problems while leaving (Pajuste and Toniolo 2022). Moreover, companies might face the problem of managers being unable to avoid the sunk cost fallacy (Dvir, Sadeh, and Malach-Pines 2006) due to the higher presence in Russia.

H2.1: Corporations with a higher share of revenue allocated in Russia were less likely to withdraw.

H2.2: Corporations with a higher number of employees in Russia were less likely to withdraw.

Larger corporations might care more about their reputation, and boycott campaigns usually target well-known companies (Pajuste and Toniolo 2022). Capitalization is one of the most conventional measures of the size of a corporation. At the same time, capitalization is a volatile variable. Therefore, a company's global revenue might be a better indicator of size.

H3: Corporations with higher global revenue would be more likely to withdraw.

The analysis also includes control variables. Some studies have shown that companies from several countries were more likely to withdraw from Russia due to geographic proximity and negative public sentiment towards the war (Lu, Huang, and Li 2022; Kanervisto and Rytsölä 2023). A company's industry was alsoan essential factor, as companies from Healthcare and Consumer Staples were less likely to withdraw, while corporations from Information Technology, Communication Services, and Financials had the opposite tendency (Balyuk and Fedyk 2022; Kanervisto and Rytsölä 2023, 27–28). This might be related to the lower or higher probability of being sanctioned for their activity in Russia, as healthcare companies rarely sell dual-use goods compared to technological companies (Seyoum 2017). Based on the facts mentioned above, this study includes sector and country variables as fixed effects in logistic regression models with fixed effects.

Robustness checks include the current ratio, stock beta coefficients, and profitability as control variables. Previous articles on the topic have tested a company's stock beta coefficient (stock risk indicator) and have had a significant positive effect, according to Kiesel and Kolaric (2023). A company's Current ratio is a measurement of bankruptcy risk (current assets / current liabilities), as it shows the ratio of liquid assets and debt to be paid the following year. This factor might influence companies' decisions as companies with bigger debt problems face higher risks while selling assets in Russia and refusing to get additional revenue from the Russian market. Current ratio was proved to have a positive effect on the probability of leaving

by the other research (Balyuk and Fedyk 2022). The last control variable is the net income received by a company in Russia in 2021. This is an indicator of profitability, and if shareholderism assumptions work, companies with higher profits received in Russia would be less likely to leave. Simultaneously, companies with low profits could leave for pure business reasons unrelated to moral considerations.

Unfortunately, some of the factors mentioned in the literature review cannot be tested using the available data. Firstly, companies' ESG scores are not included in the models due to the models' design, as it would make a share of institutional investors a confounding variable. Because of the presence of institutional investors in the ownership structure increases these scores, the model cannot estimate the effect of each factor. Moreover, this could lead to multicollinearity issues in the model. Secondly, factors such as business model, motivation of investment, market position in Russia, and asset mobility could not be tested due to the lack of data. However, some of these factors have a high correlation with a company's industry; therefore, some of the effects of these factors are controlled in the models by including categorical sector variables.

3.2 Data sources and collection process

The main dataset was built based on the KSE Institute's database (2023). It includes several essential variables for the study, including the company's revenue received in Russia, the number of employees in Russia in 2021, global revenue, net income and assets in RF in 2021, and the decision to leave (or not) from this source.

The original database from the KSE institute was collected by a group of researchers who used several sources; the breakdown of these primary sources is provided below:

- Companies statements 1224 39%
- Media and other sources 785 25%
- Legal entities identified in RF 586 19% (without news published)
- Taken from Yale's database 327 9%

• Provided by Ukrainian ministries 239 8%.

(Mylovanov et al. 2023, 8)

Data was sorted by revenue, revenue in Russia, and profitability, so only companies with available data in each of the listed above columns were not excluded. Then, stock-exchange tickers were (manually) found for each company; if another company owned a company from the list, then the mother company's ticker was added (KFC – Yum! Brands; Universal Pictures – Comcast, etc.). Other data was collected from Yahoo Finance (2023), including capitalization, the share of institutional investors, current ratio, stock beta coefficient, assets, revenue, and sectors. Then, values were converted into USD using currency exchange rates of 25th of August 2023.

Availability criteria were one of the main reasons for choosing a data aggregator, as most of the data is collected by several companies,² which are not easily accessible due to high prices and a limited number of universities provided with access. Yahoo Finance data is considered a reliable source that collects data from many other databases and original documents, such as 10-K corporations' reports (Boritz and No 2020). Data on the central hypothesis on institutional investors' ownership was taken by Yahoo Finance from Vickers-stock data.³ Vickers-stock collected this data by aggregating information from major institutional investors' reports, where they must indicate their stakes in public companies. After collecting all the data, only complete cases were chosen. Companies were classified by sector, according to the Morningstar Global Equity Classification Structure coding system. Definitions for each sector are provided in Appendix A. Countries were assigned to companies by the location of their headquarters.

² Most used in other studies are FACTSET OWNERSHIP Data Feed by FactSet

⁽https://go.factset.com/marketplace/catalog/product/factset-ownership#[object%20Object]), Thomson Reuters ASSET4 ESG database

³ Exchanges and data providers on Yahoo Finance <u>https://help.yahoo.com/kb/finance-for-web/SLN2310.html?locale=en_US</u>

Unfortunately, data from Yahoo Finance contain errors. The most apparent mistakes were related to a higher share of institutional investors than was possible (ten companies out of 457 had more than 100%, Herbalife Ltd. had the highest number of 107%). Most likely, this problem was related to highly volatile changes in the companies' prices and the number of stocks. Therefore, I decided that it is better to consider all stocks with more than 100% share to have 90%+ share, as even in the worst case, data collected by Yahoo from public sources, such as reports from Blackrock, would be close to the actual share. Therefore, all of these cases are most likely connected to buybacks and other decisions, which are highly unlikely to change the situation significantly. Nevertheless, companies with unrealistic shares are highly unlikely to have less than 50% share. Therefore, a binary version of the variable was created. 1 was assigned to every company with 50%+ of institutional ownership and 0 to corporations with a lower share of this type of ownership. Additionally, this form of the variable also can signal if any private owner can be a majority shareholder, who owns 50%+ of stocks and has control over a company.

Another challenge is that it is difficult to classify corporations, as many of them formally pretend to leave Russia, while in fact they continue working under different names, creating another legal entity. Evenett and Pisani studied the topic and discovered that only 9% of all corporations left Russia. They looked at the companies' subsidiaries in Russia, not the mother companies themselves, and only 9% of them closed at least one subsidiary (2023). The present research also has limitations related to the subsidiaries' classification. According to the KSE database (which collected data about subsidiaries as well), Hyundai had eight subsidiaries, and while the mother company was classified as having left, at least two of its subsidiaries (Hyundai Capital and Hyundai Wia) remained in Russia. The same happened with DHL and Deutsche Post (the second is the mother company), as DHL was classified as waiting while the mother company claimed withdrawal. It is difficult to solve this problem and take into account all the

subsidiaries of all corporations, as some of them do not even disclose their names. Therefore, for the present research, it was decided to concentrate on parent companies and their claimed decisions. The choice of the company added to the final dataset was based on the revenue generated in Russia, so if two companies had one owner, the company with the highest registered revenue in Russia was selected for further analysis. In total, there were 17 cases having an ownership collision, and many of subsidiaries were not included in the original KSE database, so the actual number is higher. This is an important limitation, as some of the companies that formally exited could continue their operations in Russia. Still, this analysis is more focused on the symbolic actions and the reasons why companies are ready at least to hide their operations in Russia.

3.3 Methods

For the hypotheses testing, quantitative methods were chosen as available data provides relatively big samples (over 400 observations). The main method used for the analysis is multiple logistic regression and its variations. The dependent variable was chosen as a binomial due to the limitations of the 5-grade classification described in Section 3.1. However, logistic regressions have some limitations. One of the major is the lack of a simple data interpretation due to the fact that models produce coefficients for log odds, not probabilities (Huang 2022). While transformation back to the probabilities might lead to counter-intuitive and wrong interpretations.

The first type of model in the analysis was a simple logistic regression with a binominal exit variable as the dependent variable. The models of this type also include several independent variables, such as the logarithm of global revenue, the logarithm of revenue from Russia, and the binominal version of the share of institutional investors. These models are made to estimate the influence of each factor on the dependent variable, on the probability of the company leaving Russia.

The next model type is the same regression with added sector and country effects as categorical variables, so they additionally estimate each country's and sector's influence. Unfortunately, these models suffered from heteroskedasticity, which arises because of fixed effects correlation. This results in an incorrect compilation of standard errors by the model, and the results are not reliable in this case. Heteroskedasticity is measured by the Breusch-Pagan LM test, which has shown a significant heteroskedasticity.

Bayesian multilevel models (Markov Chain Monte-Carlo) with adaptive priors and varying intercepts are capable of solving problems like heteroskedasticity as they adopt a more complex method of pooling data from each sector and country, avoiding their interactions' influence on the outcome variable and measurement of independent variables (Shor et al. 2007). Therefore, I used Bayesian multilevel models to better estimate country and sector effects. Another advantage of this method is that it uses a non-flat prior. This is one of the main differences from the previous frequentist models. Moreover, some counterintuitive assumptions (including the normal distribution of variables) were avoided by using it.

3.4 Descriptive data

The final dataset contains 456 corporations. 220 of them pulled out from Russia, while 237 stayed. 208 had over 50% of institutional investors in their ownership structure.

Figure 2 shows the distribution of companies by sector. Green indicates the number of companies in each category that left Russia. The sectoral structure is not balanced, as most companies are from three major sectors: Industrials (131), Consumer Cyclical (88), and Healthcare (54). Companies from consumer defensive, real estate, and healthcare sectors had a higher proportion of remainers, while all other sectors consisted mostly of leavers.



Figure 2. Sectoral distribution of the companies

Distribution among countries (Figure 3) is even less balanced, as most of the companies originated from the US (119). Companies from Austria, Belgium, China, Cyprus, Denmark, Greece, Iceland, India, Israel, Luxembourg, Netherlands, Slovenia, South Korea, Switzerland, and Turkey had a lower share of leavers compared to all others. Due to their distribution, it is very hard to aggregate them into specific categories. For example, possible aggregation to NATO/not NATO countries would lead to unequal distribution in this binomial variable. Moreover, it would make it impossible to search for specific trends that are related to the differences among NATO countries. For example, despite being a part of the alliance, Turkey had a higher proportion of remainers, in contrast to most other countries in the coalition.



Figure 3. Country distribution of the companies

Chapter 4 – Results

This chapter is dedicated to the results of the empirical data analysis. In the first part, I provide a primary analysis of the data, including correlation plots of the variables. The second part contains logistic regression models with the main variables and tests hypotheses. The third continues with adding country and sector effects into the models. The alternative multiple linear regressions, made for the additional robustness check, are presented in the fourth part. The fifth part is based on the Bayesian regression analysis of the mixed-effect model. The last part summarizes the results.

4.1. Primary analysis

Figure 4 presents a correlation matrix for the independent and control variables used in the analysis. Red indicates a positive correlation, and blue indicates a negative correlation. Correlation coefficients are written in each cell. The logarithms of global revenue, total assets, and capitalization are indicators of a company's size. All three of them have a high positive correlation (over 0.77). These high correlations signal that it is impossible to include them in the same model due to multicollinearity issues. At the same time, these indicators have very close values for each company, so there is no need to use more than one of these indicators. Due to the same multicollinearity problem, it is impossible to introduce a control on the share of revenue and assets or employees in the same model. Beta coefficient, which is often used to measure the risk of a particular stock based on its volatility comparison with the market benchmark (Eisenbeiss, Kauermann, and Semmler 2007), has no significant correlation with other factors. Net income registered in Russia has not shown any significant correlation.

-0.08	-0.1	0.01	0.24	0.16	0.3	0.46	0.54	0.55	0.54	0.75	0.9	1	log_RevRF
-0.09	-0.1	-0.03	0.27	0.2	0.31	0.44	0.53	0.53	0.54	0.75	1	0.9	log_assetsRF
-0.18	-0.04	0.04	0.39	0.12	0.25	0.41	0.48	0.49	0.38	1	0.75	0.75	log_StaffRF
-0.13	0	0	0.08	0.12	0.14	0.23	0.23	0.25	4	0.38	0.54	0.54	Profit
-0.13	-0.01	0.1	-0.11	-0.23	-0.27	0.77	0.89	1	0.25	0.49	0.53	0.55	log_GR
-0.15	-0.04	0.14	-0.11	-0.35	-0.23	0.83	1	0.89	0.23	0.48	0.53	0.54	log_assets
-0.1	-0.17	0.25	-0.15	-0.23	-0.23	1	0.83	0.77	0.23	0.41	0.44	0.46	log_cap
0.03	-0.1	-0.13	0.44	0.64	1	-0.23	-0.23	-0.27	0.14	0.25	0.31	0.3	ShareOfRevenue
0.03	-0.09	-0.12	0.28	- 1	0.64	-0.23	-0.35	-0.23	0.12	0.12	0.2	0.16	ShareOfAssets
0.01	-0.04	-0.07	1	0.28	0.44	-0.15	-0.11	-0.11	0.08	0.39	0.27	0.24	ShareOfStaff
-0.02	0.13	1	-0.07	-0.12	-0.13	0.25	0.14	0.1	0	0.04	-0.03	0.01	inst_hold
-0.03	4	0.13	-0.04	-0.09	-0.1	-0.17	-0.04	-0.01	0	-0.04	-0.1	-0.1	beta
1	-0.03	-0.02	0.01	0.03	0.03	-0.1	-0.15	-0.13	-0.13	-0.18	-0.09	-0.08	current_ratio
current_ratio	beta	inst_hold	ShareOfStaff	ShareOfAssets	shareOfRevenue	log_cap	log_assets	log_GR	Profit	log_StaffRF	log_assetsRF	log_RevRF	

Figure 4. Correlation Plot of the independent and control variables and their variations.

The logarithm of a company's revenue in Russia (log_RevRF). The logarithm of a company's assets in Russia (log_assetsRF). The logarithm of a company's number of employees in Russia (log_RevRF). The logarithm of a company's global revenue (log_GR). The logarithm of a company's assets (log_assets). The logarithm of a company's capitalization (log_cap). Share of Revenue in Russia (*Revenue in Russia / Global Revenue*) (ShareOfRevenue). Share of assets allocated in Russia (*Assets in Russia / Total Assets*) (ShareOfAssets). Share of employees working in Russia (*Employees in Russia / Total number of employees*) (ShareOfStaff). Binominal variable with value 1 if institutional investors own over 50% of shares (Inst_hold). Company's beta coefficient (*stock risk indicator*) (Beta). Current ratio of a company, measurement of bankruptcy risk (*current assets / current liabilities*) (Current_ratio).

In all of the further models, size is operationalized as a logarithm of a company's global revenue. Global revenue was chosen because it has lower correlations with other important variables, whereas capitalization correlates with institutional ownership. Moreover, this indicator is more stable. As an indicator, total assets do not work well for companies from the financial sector, as they show total assets, including their clients' holdings, not their own.

4.2 Logistic regressions

Table 1 provided below includes 6 logistic regression models. The dependent variable is the binomial version of the exit variable, which takes value 1 if the company left the Russian market. The first model (1) in Table 1 tests the influence of institutional investors on corporations' decisions without considering all other factors. A binomial variable representing

companies with 50% institutional ownership has a positive and significant effect (p-val. < 0.05) on the dependent variable. The second model (2) from the same table includes a share of the revenue that a company (with subsidiaries) registered in its tax declaration in Russia (taken from the KSE database). It did not show significant influence. Surprisingly, however, this had a positive effect.

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			Depender	nt variable	:	
			E	xit2		
	(1)	(2)	(3)	(4)	(5)	(6)
inst_hold_b1	0.457**	0.473**	0.451**	0.412**	0.413**	0.377*
	(0.189)	(0.191)	(0.195)	(0.193)	(0.201)	(0.199)
ShareOfRevenue		1.105	3.141*		3.298	
		(1.590)	(1.742)		(2.037)	
log_StaffRF				0.081		0.114*
				(0.059)		(0.066)
log_GR			0.291***	0.212***	0.296***	0.198***
			(0.068)	(0.074)	(0.075)	(0.076)
current_ratio					0.042	0.050
					(0.037)	(0.039)
beta					0.552**	0.552**
					(0.223)	(0.225)
NetIncomeRF					0.001	0.001
					(0.002)	(0.002)
Constant	-0.283**	-0.323**	-3.010***	-2.630***	-3.687***	-3.343***
	(0.128)	(0.140)	(0.650)	(0.607)	(0.768)	(0.712)
Observations	457	457	457	457	442	442
Log Likelihood	-313.520	-313.278	-303.637	-304.382	-290.140	-290.029
Akaike Inf. Crit.	631.041	632.555	615.274	616.764	594.281	594.058
Note:				*p<0.1;	**p<0.05;	****p<0.01

The logarithm of a company's global revenue (log_GR). The logarithm of a company's assets (log_assets). Share of Revenue in Russia (Revenue in Russia / Global Revenue) (ShareOfRevenue). Share of assets allocated in Russia (Assets in Russia / Total Assets) (ShareOfAssets). Share of employees working in Russia (Employees in Russia / Total number of employees) (ShareOfStaff). Binominal variable with value 1 if institutional investors own over 50% of shares (Inst_hold_b). Company's beta coefficient (stock risk indicator) (Beta). Current ratio of a company, measurement of bankruptcy risk (current assets / current liabilities) (Current_ratio).

The third model (3) includes (apart from the previous two variables) a company's global revenue as a measure of its size. Global revenue positively affects the probability of the

withdrawal with maximal confidence interval (p-val. < 0.001). Share of revenue had a positive and significant effect in the model, however, with a low confidence interval (p-val. < 0.1). This fact contradicts Hypothesis 2.1 (negative influence of share of revenue in Russia), so a higher share of revenue could potentially motivate, not stop, the corporations from withdrawing.

The next model (4) tests Hypothesis 2.2, the influence of the number of employees in Russia. The variable is taken under logarithm because it does not have a normal initial distribution. The model also includes the previous variables, except for the share of revenue. The variable did not show a significant influence but had a positive coefficient in contrast to the initial expectations.

Models five (5) and six (6) copy the previous two models ((3) and (4), respectively) but add control variables: beta coefficient, current ratio, and net income received in Russia. Beta coefficient was positive and significant in both models, as in the models of other scholars (Kiesel and Kolaric 2023), who used it as a company-level control variable. The sixth model, which includes the logarithm of the number of employees in Russia as an independent variable, showed the significance of this factor. Thus, the number of staff could also positively influence the probability of withdrawal. However, the share of revenue did not have significant effect in the fifth model, but maintained a positive impact.

The results suggest that institutional investors had a positive influence on the probability of the withdrawal. This variable was significant (p-val. < 0.05 in all models except model 6, where it had p-val. <0.1), so it is robust to adding the other variables. This evidence supports Hypothesis 1, which states that institutional investors drive companies to withdraw from Russia. The data did not support hypotheses H2.1 and H2.2. Moreover, the share of revenue received in Russia and the number of employees in Russia showed a positive effect, opposite the expectations. This effect was significant (p-val. <0.1) in models 3 and 6. This phenomenon is hard to explain

using previous literature. However, this could be explained by boycott campaigns and their targeting strategies. If they picked big companies with a high presence in Russia, this could be a strong negative incentive for the companies with these parameters to leave the country. However, this question needs to be investigated further, as the present literature on boycotts indicated mostly size as the main factor of this risk. Hypothesis H3 (about the positive influence of corporation size on the withdrawal probability) is supported by all models with the highest conventional confidence interval (p-val. <0.001), as the logarithm of global revenue had a positive effect in all models. This fact supports previous research and provides evidence of the importance of boycotting negative incentives and public opinion on big corporations. Current ratio and net income in Russia were not significant factors. However, these indicators are not perfect, as many transnational corporations decrease income shown to the authorities (Evertsson 2016). A company's stock beta coefficient shows a substantial positive effect, which supports previous research on the topic (Kiesel and Kolaric 2023).

4.3 Logistic regressions with country and sector effects

The previous models did not consider country and industry influence on the dependent variable, so this part is dedicated to analyzing the fixed-effects logistic regression models, where these factors are taken as control variables. Model (1) from Table 2 in Appendix B tests Hypotheses H1 (institutional investors' influence), H2.1 (share of revenue in Russia), and H3 (global revenue). The model provides additional support for H1, as institutional investors had a significant (p-val. <0.05) positive effect on the probability of the withdrawal. The share of revenue in Russia still had a positive but insignificant impact. Global revenue had a significant (p.val. < 0.001) positive effect on the probability, supporting the third (H3) hypothesis.

The effect of the institutional investors is visualized below in Figure 5. The graph represents the probability of a company's leaving decision if it has a mean value for each control variable,

including mean global revenue and mean share of revenue in Russia. The modeled company is from the Basic Materials sector. The value on the left (blue point at 37%) is the probability of such a company leaving Russia if it has a lower than 50% proportion of institutional investor ownership. The blue point to the right (53%) represents the chance of this company exiting if it has 50%+ shares in institutional owners' portfolios. The red lines around the points are 95% confidence intervals from the model (1). So, institutional investors made withdrawal more likely by around 16%.



Figure 5. Predicted withdrawal probability for a company with and without institutional investors holding the majority of stocks

Model (2) in the table includes the same variables but a logarithm of the number of employees instead of the share of revenue in Russia, and tests H2.2. Global revenue and institutional investors had a positive significant effect as in the previous model, while the number of employees in Russia did not show significance. Models three (3) and four (4) repeat the first two models but include country effects. However, these two models suffer from

heteroscedasticity. Therefore, the standard errors of the coefficients are biased. Thus, I used Bayesian multilevel regression analysis in addition to these models.

4.4 Models with continuous dependent variable

For the robustness check, I have also used a continuous dependent variable (5 grades according to the Yale SOM list). The table with the results is provided in Appendix C. The first and the second models (Table 3) repeat Model (1) and (2) from Table 1, respectively, as they include the same factors. The only difference is the operationalization of the dependent variable and the model type. The previous two models (Table 2) were logistic regression models, while models from Table 3 are linear regression models (OLS). Both models show that institutional investors had a positive and significant (p-val. < 0.01) effect on the grade received by the company in the Yale Som List. If institutional investors owned the company by more than 50%, it had (on average) higher grades by 0.61 and 0.58 grade points in the first and second models, respectively. Moreover, both models show that the size of a company (measured as a logarithm of their global revenue) had a significant (p-val. <0.001) positive coefficient, meaning that companies with higher global revenue were more willing to leave Russia. The First model (1) tested the importance of revenue allocated (H2.1) in Russia. The results show that the share of revenue in Russia had positively influenced the level of withdrawal with a significant coefficient (p-val. <0.05). The second model (2) tested H2.2, the number of employees in Russia, operationalized as a logarithm of this number. The coefficient was also positive and significant (p-val. < 0.05).

These two models have important limitations, described in the previous chapter, such as a low number of values in the continuous variable and potential not linearity of the level progression. Therefore, the results might not be entirely reliable. Still, they show almost the same results as the previous binomial models, meaning that coefficients are robust to the other operationalization of the dependent variable. This analysis provides additional support for Hypothesis 1 (H1) and 3 (H3) while (in alignment with logistic regressions) contributing to the rejection of hypotheses H2.1 and H2.2.

4.5 Bayesian analysis

Bayesian multilevel regression models with adaptive intercepts can solve heteroskedasticity problems and help reduce the effects of multicollinearity (Kizilkaya and Tempelman 2005). Therefore, they were used to obtain less biased estimates than previous models.

Markow Chain Montre-Carlo (MCMC) was used on the data. Coefficients of countries and sectors are estimated using adaptive priors, which let the model regulate the influence of each intercept on the effects of the other variables. Priors of the variables were chosen to be informative, as this helps to get less biased results in case of present heteroskedasticity and multicollinearity in the data. Model specifications are provided in Appendix D.

The coefficients and their 95% credible intervals (Bayesian analog of the confidence interval, which show the range of the coefficient in 95% of random samples taken from the posterior distribution of the parameter) from the first and the second Bayesian model are presented in Figure 6 and Figure 7 respectively.



Figure 6. Bayesian regression 1. Posterior distribution of the coefficients (log odds) with 95% credible intervals

b_inst_hold – binomial variable with value 1 when a company has over 50% of institutional investors in the ownership structure. b_share_of_revenue – share of revenue received from Russia by a company. b_log_GR – logarithm of a company's global revenue. b_currat – current ratio of a company.



Figure 7. Bayesian regression 2. Posterior distribution of the coefficients (log odds) with 95% credible intervals

 $b_inst_hold - binomial variable with value 1 when a company has over 50% of institutional investors in the ownership structure. <math>b_log_StaffRF - logarithm of number of employees in Russia. <math>b_log_GR - logarithm of a company's global revenue. b_currat - current ratio of a company.$

The posterior distribution shows that the coefficient of the global revenue logarithm positively affected the probability of a company's withdrawal. 99% of randomly selected samples from the posterior lie to the right from the 0, meaning there is a lower than 1% probability of the coefficient being equal to or lower than zero. This supports hypothesis 3 (H3) and previous research on the topic, so size was essential in determining corporations' decisions. Other coefficients' posterior distributions cross the zero point, so there is a higher probability of them being insignificant. The posterior distribution of the coefficient for institutional investors had a positive effect. However, due to the wide range of parameters, accepting the first hypothesis (H1) is impossible. The logarithm of the number of employees and revenue share in Russia also had positive effects, in contrast to the initial expectations of Hypotheses H2.1 and H2.2. The effects of the control variables were positive, but their credible intervals also crossed zero points.

Countries' intercepts are presented below in Figure 8. According to the posterior distribution (with 95% of samples), Finland had a positive effect on the probability, while China had an adverse effect on the probability (their coefficients from the posterior distribution were negative in 95% of random samples). Companies from Germany, Japan, Netherlands, and Turkey were also less likely to withdraw, but only with a 90% credible interval, so their effect is less reliable.



Figure 8. Countries effects

Figure 9 represents intercepts for sectors and a 95% credible interval. Companies from the Consumer Cyclical and Technology sectors were more likely to leave Russia (with a 95% credible interval). By contrast, companies from Healthcare were less likely to do so.



Figure 9. Sectors effects

4.6 Summary of the results

Most models support hypothesis H1, as the binomial variable representing institutional investors' ownership had a positive and significant effect. However, the effect appears to be not robust, as the models with the introduced country effect had a positive but insignificant coefficient. This evidence partly supports shareholderism, as investors are the main actors according to the approach, and the change of interests of the investors leads to a company's higher concerns over sustainability.

Hypothesis H2.1 and H2.2 must be rejected as the share of revenue in Russia, and the number of employees in Russia had a positive, not negative (as was expected) effect on the leaving probability. This effect was significant in some models while lost in the country and sector fixed effects models. The rejection of the hypothesis and the fact that coefficients had the opposite effect to the expected could support Stakeholderism. At the same time, shareholderism might appear less reliable for companies' behavior analysis, as shareholders (all else being equal) would prefer to save the business with a higher number of employees and revenue.

Hypothesis H3 on the influence of the size of a corporation was supported in all the models with the highest conventional confidence (and credible in the case of Bayesian models) intervals (99.9%). The size of a company was the main predictor of the leaving decision. This evidence supports previous literature on the topic (Aaltonen 2023; Kanervisto and Rytsölä 2023; Kiesel and Kolaric 2023; Pajuste and Toniolo 2022).

Some control variables have also shown significance—mainly a company's stock beta coefficient in the models without controlling the sector. The effect of beta coefficient was also indicated as a positive significant factor (Kiesel and Kolaric 2023). However, in the case of the present analysis, the variable's effect was insignificant after introducing industry-fixed effects. Most likely, beta coefficient was a proxy to the industry effect. Current ratio and profitability of the business did not show significant influence. This also does not support shareholderism, as the ability to pay debts after selling part of the business must be important for a company. In contrast, data does not support the statement, meaning other factors related to other stakeholders could be more critical. Consumer Cyclical and Technology sectors had positive coefficients, by contrast, Healthcare had a negative influence on withdrawal probability. Countries were also an essential factor. Finland positively influenced the probability of withdrawal, while companies with headquarters in China and the Netherlands had shown the opposite trend.

Discussion and conclusion

The present thesis aimed to determine the factors which can explain the variability of corporations' withdrawal from Russia. The study used quantitative methods for the analysis. Logistic regression models were the main method, while Bayesian multi-level models were used for estimating models with country effects. Companies' withdrawal was a binary dependent variable. The sample consisted of 456 multinational corporations from the KSE Institute database (2023).

H1 argued that companies with a higher presence of institutional investors in the ownership structure were more likely to withdraw from Russia. This hypothesis was supported by most of the provided models, as companies with a 50%+ presence of institutional investors in the ownership structure were significantly (p-val. <0.05) more likely to withdraw. The effect was robust to the addition of control variables and sector effects but not robust for including country variables. This fact might be related to the highly unequal distribution of companies over different countries, as 20 out of 32 countries had less than five companies, so the model might generate too wide standard errors under such conditions. Moreover, the effect of institutional investors in the US are university endowment funds, which do not have that influence in other countries (Velte 2023). Simultaneously, these funds are highly concerned about ethical aspects and could be one of the leading forces pushing all other institutional investors towards more sustainable investing. Nevertheless, the coefficient of the variable representing institutional investors was positive in all models, which provide some support to the commitment of institutional investors to stakeholderism values.

H2.1 and H2.2 assumed that companies with a higher share of revenue received from Russia and a higher number of company employees working in Russia were less likely to withdraw. Both hypotheses must be rejected because of the opposite effect of the share of revenue in

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Russia and the number of employees working there. According to the expectations based on shareholderism assumptions, companies with a higher exposure Russia are supposed to have lower exit rate. However, the analysis has shown that these two variables had a relatively weak, but positive influence (p-val.<0.1 in some models) on the probability of withdrawal (all others equal). The effect was not robust to the inclusion of sector/country factors but maintained a positive coefficient.

H3 emphasized the positive role of corporation size on withdrawal probability. This was supported by all the models, as the logarithm of a company's global revenue had a positive significant effect, suggesting that the size of a corporation was one of the most critical factors determining the decision to leave. This study complements the work of Pajuste and Toniolo (2022), as both studies indicate that size is an important factor. Pajuste and Toniolo explained its influence through social media boycotts as large corporations were targeted more often.

The analysis also included control variables such as stock beta coefficients, current ratios, profitability of subsidiaries in Russia, and sector and country effects. Some control variables have shown significant coefficients, such as Healthcare, as companies from this sector were significantly less likely to withdraw from the Russian market. By contrast, Technology and Consumer Cyclical companies were more likely (with a 95% credible interval) to withdraw. This might be related to the sanction and reputational risks that companies from different sectors might face. Healthcare might be perceived as an essential sector, and sanctions against it would mean punishing ordinary people, not Putin's regime. At the same time, Technology and Consumer Cyclical goods and services are often dual-use (Seyoum 2017), meaning that they can be used for civil and military purposes. China, Germany, Japan, the Netherlands, and Turkey had significant (95% credible intervals for China and 90% for others) negative coefficients for probability, while Finland had the opposite effect (with 95% credible interval). Australia, Norway, Poland, and Sweden had strong positive effects, but their credible intervals

were too wide to draw any conclusions. Previous research on the topic did not indicate the negative influence of Germany and Japan on the withdrawal probability. Previous studies have emphasized the role of geographic proximity (Kanervisto and Rytsölä 2023), which was most likely the reason for the tendency among companies from Finland (and Norway, Poland, and Sweden to some extent). At the same time, countries with negative coefficients do not have much in common, as Germany, Japan, the Netherlands, and Turkey are part of the NATO and introduced sanctions against Russia, whereas China did not.

It is possible to argue that corporations' behavior was primarily determined by factors that do not have a direct relation to shareholders' profits (such as size). In contrast, factors that could be important for shareholders did not show a significant influence (such as company-level indicators, including the current ratio and profitability of their business in Russia). Moreover, one of the major factors, the share of revenue in Russia, which was supposed to have a negative influence on the probability of withdrawal, had a positive and significant (in some of the models) effect on withdrawal probability. These facts are also crucial, because large companies with a higher share of revenue and a higher number of employees in Russia are more likely to have a significant effect on the Russian economy because of the scale of their operations. At the same time, this could mean that pure shareholderism cannot explain corporate behavior. The positive influence of the share of revenue partly contradicts the previous findings of Pajuste and Toniolo (2022), who argued that companies' withdrawal might have a low effect on Russia, since companies with a high share of revenue in Russia were less likely to withdraw in the beginning. The difference in the results is probably related to the time scope of the analysis, as many companies with higher revenue allocated in Russia might have needed more time for exit, while Pajuste and Toniolo recorded the results only a few months after the beginning of the war.

An important limitation of the present study is the use of logistic regressions, which produce higher standard errors and coefficients for log odds, which cannot be easily interpreted. However, the analysis was supplemented by OLS regression analysis with companies' YALE Som list (Sonnenfeld, Tian, Zaslavsky, et al. 2022) grades as a dependent variable, which indicated the robustness of the studied variables. Another limitation of the study is that companies can continue operations in Russia through other subsidiaries, while claiming withdrawal from the country. At the same time, these companies had to face some difficulties and hide their operations, which might also be considered a relevant action. Moreover, part of the data was collected from open sources (such as Yahoo 2023), which could contain some mistakes.

Additionally, further research might explore the factors influencing the scale of a company's boycott, and if the share of revenue in Russia and the number of employees were essential determinants. If they were crucial for boycotting probability, it would provide additional evidence of the influence of negative incentives while undermining purely ethical considerations. However, the literature on boycotts needs to reconsider the role of social media boycotts in general, as they might be a signaling (voice) instrument rather than an exit. Previous research shows that social media boycotts do not decrease sales (Liaukonytė, Tuchman, and Zhu 2023). At the same time, they were one of the major factors predicting the probability of a company's withdrawal from Russia (Pajuste and Toniolo 2022). Thus, social media boycotts might work as an effective voice strategy for stakeholders, showing stakeholders' interests to the decision-makers in companies.

Conclusion

Overall, the present thesis complements the existing literature on corporations' withdrawal from Russia, testing new hypothesis on the influence of institutional investors on the leaving decision. Moreover, the research tested previously explored factors, such as the influence of

revenue allocated in Russia and the size of a corporation, but on the newest and broadest dataset, and used an additional method (Bayesian multilevel logistic regressions). Furthermore, the study contributes to the stakeholderism versus shareholderism debate, providing further evidence supporting strategic stakeholderism.

The analysis showed that institutional investors had a positive effect on withdrawal probability; however, they were not robust in the models with country variables. In contrast to the initial expectations related to shareholderism assumptions, companies with a higher share of revenue and higher number of employees in Russia were not more likely to stay in Russia, and the coefficients of the variables showed an opposite tendency in some of the models. The size of a corporation made withdrawal significantly more likely to occur according to all of the provided models.

Appendices

Appendix A. Sector classification.

Sector classification is provided below:

Basic Materials

Companies that manufacture chemicals, building materials and paper products. This sector also includes companies engaged in commodities exploration and processing. Companies in this sector include ArcelorMittal, BHP Billiton and Rio Tinto.

Communication Services

Companies that provide communication services using fixed-line networks or those that provide wireless access and services. This sector also includes companies that provide internet services such as access, navigation and internet related software and services. Companies in this sector include AT&T, France Telecom and Verizon Communications.

Consumer Cyclical

This sector includes retail stores, auto and auto parts manufacturers, companies engaged in residential construction, lodging facilities, restaurants and entertainment companies. Companies in this sector include Ford Motor Company, McDonald's and News Corporation.

Consumer Defensive

Companies engaged in the manufacturing of food, beverages, household and personal products, packaging, or tobacco. Also includes companies that provide services such as education & training services. Companies in this sector include Philip Morris International, Procter & Gamble and Wal-Mart Stores.

Energy

Companies that produce or refine oil and gas, oil field services and equipment companies, and pipeline operators. Companies in this sector include BP, ExxonMobil and Royal Dutch Shell.

Financial Services

Companies that provide financial services which includes banks, savings and loans, asset management companies, credit services, investment brokerage firms, and insurance companies. Companies in this sector include Allianz, J.P. Morgan Chase and Legg Mason.

Healthcare

This sector includes biotechnology, pharmaceuticals, research services, home healthcare, hospitals, long-term care facilities, and medical equipment and supplies. Companies in this sector include Astra Zeneca, Pfizer and Roche Holding.

Industrials

Companies that manufacture machinery, hand-held tools and industrial products. This sector also includes aerospace and defense firms as well as companied engaged in transportations and logistic services. Companies in this sector include 3M, Boeing and Siemens.

Real Estate

This sector includes mortgage companies, property management companies and REITs. Companies in this sector include Kimco Realty Corporation, Vornado Realty Trust and Westfield Group.

Technology

Companies engaged in the design, development, and support of computer operating systems and applications. This sector also includes companies that provide computer technology consulting

services. Also includes companies engaged in the manufacturing of computer equipment, data storage products, networking products, semi-conductors, and components. Companies in this sector include Apple, Google and Microsoft.

Utilities

Electric, gas, and water utilities. Companies in this sector include Electricité de France, Exelon and PG&E Corporation.

(Morningstar 2010, 6–7)

Appendix B. Results Table for Logistic Regression with Sector and Country Effects.

	Dependent variable:						
		E	Exit2				
	(1)	(2)	(3)	(4)			
inst_hold_b1	0.611***	0.576***	0.346	0.351			
	(0.217)	(0.216)	(0.332)	(0.332)			
ShareOfRevenue	3.322		0.810				
	(2.193)		(3.431)				
log_StaffRF		0.111		0.051			
		(0.072)		(0.087)			
log_GR	0.320***	0.219***	0.516***	0.481***			
	(0.081)	(0.082)	(0.101)	(0.109)			
current_ratio	0.041	0.050	-0.023	-0.019			
	(0.037)	(0.038)	(0.075)	(0.076)			
beta	-0.038	-0.054	0.227	0.240			
	(0.257)	(0.259)	(0.336)	(0.337)			
NetIncomeRF	0.0005	0.001	0.0002	0.0001			
	(0.002)	(0.002)	(0.002)	(0.002)			
sectorCommunication Services	0.358	0.346	0.746	0.718			
	(0.592)	(0.587)	(0.711)	(0.711)			
sectorConsumer Cyclical	0.899**	0.867^{**}	0.902^{*}	0.852^{*}			
	(0.404)	(0.407)	(0.466)	(0.474)			
sectorConsumer Defensive	-0.616	-0.694	-0.567	-0.605			
	(0.481)	(0.487)	(0.567)	(0.570)			
sectorEnergy	0.438	0.422	0.147	0.123			
	(0.746)	(0.748)	(0.855)	(0.854)			
sectorFinancial Services	0.180	0.062	0.489	0.427			
	(1.094)	(1.082)	(1.177)	(1.169)			
sectorHealthcare	-1.570***	-1.551***	-1.634***	-1.636***			
	(0.504)	(0.503)	(0.578)	(0.576)			
sectorIndustrials	0.281	0.259	0.277	0.249			
	(0.375)	(0.376)	(0.437)	(0.440)			
sectorReal Estate	-13.992	-13.899	-15.692	-15.647			
	(488.937)	(499.749)	(2,000.056)	(2,000.161			
sectorTechnology	0.848^{*}	0.906**	1.387**	1.390**			
2.	(0.445)	(0.447)	(0.552)	(0.552)			
sectorUtilities	0.869	0.786	0.856	0.821			
	(1.331)	(1.343)	(1.449)	(1.457)			

Table 2. Logistic Regression with Sector and Country Effects

countryAustralia	19.239	19.209		
	(1,656.901)	(1,652.806)		
countryAustria	0.270	0.246		
	(0.832)	(0.834)		
countryBelgium	0.595	0.587		
	(1.289)	(1.284)		
countryCanada	0.241	0.185		
	(1.896)	(1.871)		
countryChina	-2.996***	-2.956***		
	(1.135)	(1.132)		
countryCyprus	-17.449	-17.562		
	(3,956.180)	(3,956.180)		
countryDenmark	0.441	0.413		
	(0.961)	(0.956)		
countryFinland	3.395***	3.375***		
	(0.959)	(0.936)		
countryFrance	0.320	0.253		
	(0.522)	(0.535)		
countryGermany	0.055	0.019		
	(0.472)	(0.476)		
countryGreat Britain	0.835	0.796		
	(0.592)	(0.596)		
countryGreece	-16.821	-16.892		
	(2,613.996)	(2,580.912)		
countryHong Kong	-18.101	-17.983		
	(3,956.180) (3,956.180)			
countryIceland	-15.926	-15.947		
	(3,956.180)	(3,956.180)		
countryIndia	-14.229	-14.268		
	(1,656.928)	(1,654.759)		
countryIreland	1.165	1.176		
	(0.934)	(0.938)		
countryIsrael	-15.396	-15.511		
	(3,956.180)	(3,956.180)		
countryItaly	-0.105	-0.150		
	(0.879)	(0.873)		
countryLuxembourg	-0.104	-0.095		
	(1.516)	(1.508)		
countryMexico	1.491	1.453		
	(1.652)	(1.652)		
countryNetherlands	-2.018	-2.071		
	(1.295)	(1.296)		
countryNorway	19.931	19.919		
	(1,708.308)	(1,718.176)		

Note:		*p<	0.1; **p<0.0	5; ****p<0.01
Akaike Inf. Crit.	567.121	567.169	539.057	538.764
Log Likelihood	-266.561	-266.584	-220.528	-220.382
Observations	442	442	442	442
	(0.869)	(0.799)	(1.164)	(1.138)
Constant	-3.553***	-3.140***	-5.800***	-5.709***
			(0.461)	(0.469)
countryUSA			0.380	0.332
			(1,614.403)	(1,623.689)
countryTurkey			-16.534	-16.546
			(0.533)	(0.541)
countrySwitzerland			0.447	0.393
			(0.676)	(0.683)
countrySweden			2.193***	2.144***
			(1.614)	(1.636)
countrySpain			2.570	2.531
country bount refreu			(3,956.180)	(3,956.180)
countrySouth Korea			-16.686	-16.693
country you an Annea			(1.444)	(1.421)
country South A frica			0.541	0.534
countrySlovenia			-14.559	-14.271
a country Clayonia			14 220	14 271
countrySingapore			(2 770 383)	18.084
C'			(2,171.916)	18 084
countryPoland			18.715	18.749
acumtry Dolond			19 715	19 740

The logarithm of a company's global revenue (log_GR). The logarithm of a company's assets (log_assets). Share of Revenue in Russia (Revenue in Russia / Global Revenue) (ShareOfRevenue). Share of assets allocated in Russia (Assets in Russia / Total Assets) (ShareOfAssets). Share of employees working in Russia (Employees in Russia / Total number of employees) (ShareOfStaff). Binominal variable with value 1 if institutional investors own over 50% of shares (Inst_hold_b). Company's beta coefficient (stock risk indicator) (Beta). Current ratio of a company, measurement of bankruptcy risk (current assets / current liabilities) (Current ratio).

	Dependen	t variable:
-	Ex	cit5
	(1)	(2)
inst_hold_b1	0.610***	0.578***
	(0.148)	(0.147)
log_GR	0.478***	0.347***
	(0.076)	(0.084)
ShareOfRevenue	0.164**	
	(0.076)	
log StaffRF		0.185**
0_		(0.086)
beta	0.003	-0.004
	(0.083)	(0.082)
current ratio	0.110	0.132*
	(0.072)	(0.073)
sectorCommunication Services	0.217	0.205
	(0.423)	(0.423)
sectorConsumer Cyclical	0.686**	0.657**
•	(0.287)	(0.289)
sectorConsumer Defensive	-0.437	-0.492
	(0.332)	(0.335)
sectorEnergy	0.422	0.401
	(0.533)	(0.534)
sectorFinancial Services	-0.490	-0.593
	(0.783)	(0.786)
sectorHealthcare	-0.828***	-0.819***
	(0.315)	(0.315)
sectorIndustrials	0.196	0.172
	(0.270)	(0.271)
sectorReal Estate	-1.271	-1.208
	(0.894)	(0.895)
sectorTechnology	0.548*	0.588*
	(0.313)	(0.314)
sectorUtilities	1.283	1.206
	(0.899)	(0.899)
Constant	2.656***	2.686***
	(0.244)	(0.245)
Observations	442	442
R ²	0.207	0.207
Adjusted R ²	0.179	0.179
Residual Std. Error (df = 426)	1.492	1.492
F Statistic (df = 15; 426)	7.412***	7.406***
Note:	n<0 1. ** n<0	05: *** ~~0

Table 3.	OLS	regression	results
14010 5.		16916001011	results

The logarithm of a company's global revenue (log_GR). The logarithm of a company's assets (log_assets). Share of Revenue in Russia (Revenue in Russia / Global Revenue) (ShareOfRevenue). Share of assets allocated in Russia (Assets in Russia / Total Assets) (ShareOfAssets). Share of employees working in Russia (Employees in Russia / Total number of employees) (ShareOfStaff). Binominal variable with value 1 if institutional investors own over 50% of shares (Inst_hold_b). Company's beta coefficient (stock risk indicator) (Beta). Current ratio of a company, measurement of bankruptcy risk (current assets / current liabilities) (Current ratio).

Appendix D. Bayesian Analysis.

The modelling of Bayesian regressions was made according to the recommendations of

McElreath's textbook (2016) with using his "Rethinking" package in R. The code and output

are provided below.



Figure 10. R code for Bayesian model 1

Tabl	le 4	. Ba	ivesian	mod	lel	1
Iuo			ey conam	11100		

Factor	mean	sd	0.025	0.975	n_eff	Rhat4
Australia	1.47	1.23	-0.57	4.04	234.62	1.03
Austria	-0.63	0.76	-2.09	0.79	292.00	1.03
Belgium	-0.62	1.05	-2.83	1.37	411.87	1.01
Canada	-0.59	1.06	-2.78	1.48	723.30	1.01
China	-2.78	0.85	-4.57	-1.21	440.66	1.01
Cyprus	-1.09	1.29	-3.73	1.67	324.39	1.01
Denmark	-0.62	0.84	-2.24	1.03	462.59	1.02
Finland	1.62	0.82	0.07	3.27	304.98	1.02
France	-0.52	0.58	-1.77	0.57	235.26	1.03
Germany	-0.82	0.50	-1.86	0.10	180.22	1.04
Great Britain	-0.09	0.63	-1.37	1.16	159.63	1.03
Greece	-1.37	1.15	-3.84	0.77	939.45	1.00
Hong Kong	-1.36	1.31	-4.23	0.92	488.07	1.00

Iceland	-0.87	1.29	-3.60	1.53	996.91	1.00
India	-1.23	1.13	-3.72	0.78	1,186.08	1.00
Ireland	0.02	0.86	-1.60	1.74	396.54	1.02
Israel	-0.88	1.30	-3.48	1.69	445.96	1.01
Italy	-0.99	0.74	-2.43	0.40	484.16	1.01
Japan	-0.85	0.48	-1.83	0.10	196.93	1.03
Luxembourg	-0.63	1.13	-2.96	1.54	741.06	1.01
Mexico	-0.11	1.09	-2.29	2.14	633.07	1.01
Netherlands	-1.78	0.96	-3.79	0.04	554.10	1.01
Norway	1.38	1.24	-0.63	4.24	442.39	1.01
Poland	1.05	1.18	-0.92	3.66	470.07	1.01
Singapore	0.55	1.22	-1.59	3.08	510.36	1.01
Slovenia	-0.71	1.40	-3.63	1.90	684.33	1.01
South Africa	-0.49	1.03	-2.64	1.49	708.71	1.00
South Korea	-0.97	1.27	-3.68	1.43	1,163.99	1.00
Spain	0.48	1.02	-1.30	2.65	441.05	1.02
Sweden	1.00	0.68	-0.28	2.35	222.57	1.03
Switzerland	-0.58	0.55	-1.69	0.44	265.89	1.02
Turkey	-1.85	1.04	-4.11	0.12	631.61	1.01
USA	-0.43	0.56	-1.60	0.54	122.59	1.06
Basic Materials	-0.09	0.42	-0.95	0.74	721.09	1.00
Communication Services	0.20	0.49	-0.76	1.17	760.84	1.00
Consumer Cyclical	0.77	0.37	0.09	1.52	381.54	1.01
Consumer Defensive	-0.61	0.43	-1.49	0.15	487.97	1.00
Energy	0.07	0.54	-1.01	1.12	1,026.72	1.00
Financial Services	0.11	0.70	-1.25	1.45	694.60	1.01
Healthcare	-1.43	0.46	-2.41	-0.63	600.39	1.00
Industrials	0.11	0.34	-0.55	0.81	390.07	1.00
Real Estate	-0.41	0.84	-2.46	0.95	807.81	1.00
Technology	0.86	0.41	0.09	1.67	464.33	1.00
Utilities	0.25	0.68	-1.07	1.66	1,322.51	1.00
b_inst_hold	0.21	0.25	-0.20	0.75	145.39	1.06
b_share_of_revenue	0.08	0.11	-0.13	0.32	985.72	1.00
b_log_GR	0.65	0.14	0.40	0.93	791.64	1.00
b_betacoef	0.07	0.11	-0.14	0.32	808.90	1.00
b_currat	0.09	0.13	-0.12	0.41	1,273.84	1.00
a_bar	-0.44	0.46	-1.36	0.45	175.63	1.04

sigma_c	1.34	0.36	0.75	2.19	266.18	1.01
sigma_s	0.85	0.27	0.45	1.51	498.41	1.00
sigma_i	0.61	0.66	0.01	2.35	578.08	1.01
sigma_r	0.47	0.59	0.01	2.04	461.90	1.01
sigma_l	1.04	0.71	0.28	2.90	1,389.79	1.00
sigma_bc	0.41	0.51	0.01	1.86	1,511.96	1.00
sigma_cr	0.46	0.57	0.01	2.01	1,316.44	1.00

b_inst_hold – binomial variable with value 1 when a company has over 50% of institutional investors in the ownership structure. b_share_of_revenue – share of revenue received from Russia by a company. b_log_GR – logarithm of a company's global revenue. b_currat – current ratio of a company.

```
```{r, echo=FALSE, warning=FALSE, message=FALSE, results='hide'}
set.seed(11)
m_corp_varsecinst21 <- ulam(
alist(
 exit ~ dbinom(1, p),
 logit(p) <- a[country] + b[sec] + b_inst_hold * inst_hold + b_log_StaffRF * log_StaffRF + b_log_GR * log_GR +
 b_betacoef * betacoef + b_currat * currat,
 a[country] ~ dnorm(0, sigma_c),
 b_log_StaffRF ~ dnorm(0, sigma_1),
 b_log_GR ~ dnorm(0, sigma_c),
 b_log_GR ~ dnorm(0, sigma_c),
 b_currat ~ dnorm(0, sigma_c),
 b_currat ~ dnorm(0, sigma_c),
 b_scurrat ~ dorm(0, sigma_c),
 b_scurrat ~ dorp(1),
 sigma_c ~ dexp(1),
 sigma_c ~ dexp(1),
 sigma_cr ~ dexp(1),
 sigm
```

Figure 11. R code model Bayesian model 2

Table 5. Bayesian model 2

Factor	mean sd	0.025	0.975	n_eff	Rhat4
Australia	1.56 1.25	-0.71	4.21	546.18	1.01
Austria	-0.62 0.80	-2.32	0.92	554.21	1.00
Belgium	-0.56 0.98	-2.51	1.35	682.92	1.00
Canada	-0.49 1.19	-2.84	1.86	847.84	1.00
China	-2.77 0.88	-4.63	-1.22	319.10	1.00
Cyprus	-1.23 1.39	-4.06	1.39	713.57	1.00
Denmark	-0.61 0.88	-2.41	0.97	522.20	1.00
Finland	1.70 0.83	0.16	3.47	422.89	1.01
France	-0.54 0.61	-1.85	0.60	251.72	1.01

Germany	-0.82 0.55	-1.96	0.24	233.70	1.01
Great Britain	-0.08 0.67	-1.46	1.19	255.69	1.01
Greece	-1.33 1.25	-4.08	0.86	573.08	1.00
Hong Kong	-1.28 1.33	-4.11	1.10	778.45	1.00
Iceland	-0.88 1.33	-3.80	1.51	731.76	1.00
India	-1.27 1.26	-4.01	0.94	675.08	1.00
Ireland	0.11 0.86	-1.62	1.90	388.67	1.01
Israel	-0.85 1.39	-3.82	1.84	624.52	1.00
Italy	-0.97 0.75	-2.46	0.43	496.62	1.01
Japan	-0.82 0.50	-1.87	0.11	206.02	1.01
Luxembourg	-0.59 1.19	-2.80	1.82	489.16	1.00
Mexico	-0.09 1.16	-2.34	2.19	780.18	1.00
Netherlands	-1.87 1.05	-4.07	0.03	453.72	1.00
Norway	1.57 1.28	-0.67	4.35	492.63	1.02
Poland	1.20 1.20	-0.90	3.85	641.22	1.01
Singapore	0.72 1.25	-1.46	3.56	667.51	1.01
Slovenia	-0.72 1.40	-3.70	1.88	730.26	1.00
South Africa	-0.48 1.08	-2.68	1.69	734.17	1.00
South Korea	-1.01 1.32	-3.66	1.48	695.20	1.00
Spain	0.53 1.08	-1.43	2.85	595.91	1.01
Sweden	1.03 0.72	-0.41	2.47	281.93	1.02
Switzerland	-0.58 0.57	-1.70	0.52	288.55	1.02
Turkey	-1.88 1.13	-4.42	0.04	490.22	1.01
USA	-0.43 0.60	-1.75	0.67	196.02	1.02
Basic Materials	-0.11 0.43	-0.97	0.70	550.01	1.01
Communication Services	0.17 0.49	-0.77	1.11	816.53	1.00
Consumer Cyclical	0.71 0.38	-0.01	1.46	408.72	1.01
Consumer Defensive	-0.64 0.44	-1.53	0.21	446.67	1.01
Energy	0.07 0.57	-1.05	1.15	1,189.56	1.00
Financial Services	0.07 0.68	-1.35	1.46	1,192.73	1.00
Healthcare	-1.44 0.47	-2.43	-0.59	493.59	1.01
Industrials	0.09 0.35	-0.61	0.77	315.68	1.01
Real Estate	-0.41 0.80	-2.13	1.08	1,559.86	1.00
Technology	0.88 0.42	0.08	1.76	439.69	1.00
Utilities	0.23 0.72	-1.19	1.74	1,679.39	1.00

b_inst_hold	0.21 0.25	-0.18	0.76	266.70	1.01
b_log_StaffRF	0.09 0.13	-0.14	0.36	944.98	1.00
b_log_GR	0.60 0.15	0.30	0.90	748.22	1.00
b_betacoef	0.07 0.12	-0.16	0.33	990.00	1.00
b_currat	0.10 0.15	-0.12	0.46	608.74	1.00
a_bar	-0.41 0.50	-1.41	0.54	215.02	1.01
sigma_c	1.40 0.37	0.81	2.30	209.73	1.03
sigma_s	0.85 0.26	0.45	1.45	600.22	1.01
sigma_i	0.63 0.69	0.02	2.66	967.53	1.00
sigma_r	0.47 0.55	0.02	2.00	1,500.78	1.00
sigma_l	0.99 0.69	0.24	2.79	1,215.38	1.00
sigma_bc	0.46 0.58	0.01	2.08	1,777.77	1.00
sigma_cr	0.47 0.56	0.01	2.06	1,156.42	1.00

 $b_{inst_hold}$  – binomial variable with value 1 when a company has over 50% of institutional investors in the ownership structure.  $b_{log_StaffRF}$  – logarithm of number of employees in Russia.  $b_{log_GR}$  – logarithm of a company's global revenue.  $b_{currat}$  – current ratio of a company.

The first column of both tables (4 and 5) identifies the factor name. The second reflects the mean of a coefficient of the variable's posterior distribution. The third provides standard deviation of the posterior distribution. Fourth and fifth columns show the value of a coefficient at 0.025 and 0.975 percentiles of the posterior distribution. N\_eff and Rhat4 are playing role of diagnostics parameters of the model. The model is considered working properly if Rhat4 values are close to 1, and n\_eff are high (over 200) (McElreath 2016). Both models (Table 4 and Table 5) show that they satisfy these conditions, and factors are calculated in a proper way. a\_bar, sigma\_c, sigma\_s, sigma\_i, sigma\_r, sigma\_l, sigma\_bc, and sigma\_cr are hyper priors defining mean and standard deviation of the prior distribution of the variable. They do not directly define posterior, but rather provide the starting point for the MCMC calculation. They are defined by the model itself, which make them informative priors, which helps model to avoid underfitting and overfitting issues.

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