

Less Than Nine Percent of Western Firms Have Divested from Russia¹

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Abstract:

The Russian invasion of Ukraine in February 2022 and the corporate decisions that followed offer insights into the extent to which Western firms are willing and able to sever commercial ties with nations now viewed as geopolitical rivals by their governments. We gathered extensive data on equity investments made by foreign companies headquartered in the European Union (EU) and G7 nations and checked whether following the outbreak of armed conflict divestment of their Russian subsidiaries could be confirmed. At the end of November 2022, our analysis shows that 8.5% of EU and G7 companies had divested at least one of their Russian subsidiaries. We performed extensive robustness checks that confirm our overall findings while also revealing some notable variation in divestment rates.

JEL codes: F23, F51 and F52.

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1. Introduction.

Intensifying geopolitical rivalry has led some policymakers to advocate decoupling national economies, even though reducing commercial ties is estimated to be costly (Bekkers and Goes 2022; Felbermayr, Mahlkow, and Sandkamp 2022; Javorcik, Kitzmueller, Schweiger and Yıldırım 2022). Meaningful decoupling must have a counterpart in the decisions of internationally-active firms. Furthermore, the form of decoupling must be tied to the manner in which an overseas market was supplied—and abandoning some of those modes of supply is more expensive than others. Verifying corporate decoupling requires granular information on commercial presence.

The Russian invasion of Ukraine in February 2022 and the corporate decisions that followed offer insights into the extent to which Western firms are prepared to sever commercial ties with nations now viewed by their governments as geopolitical rivals. In a way, it is the perfect test case. The Russian government's actions in Ukraine have been condemned so vividly by some foreign governments that Western firms that continue commercial operations in Russia could be accused of “trading with the enemy.”⁴ Furthermore, Russia's economy is large enough to be a credible test of the willingness to decouple while at the same time not large enough that the scale of potentially stranded corporate assets or Russia's future growth prospects are decisive determinants of global strategies for the majority of companies, in particular for the world's largest multinationals.

We gathered information on equity investments made by foreign companies headquartered in either an EU member state or a G7 nation at the time of the invasion of Ukraine relying on the internationally-recognized ORBIS database. In April 2022, a total of 2,405 subsidiaries owned by 1,404 EU and G7 companies were active in Russia. We then checked how many of these companies had entirely divested at least one of their Russian subsidiaries by late November 2022. Our findings show that less than 9% of this pool of companies had divested at least one of their subsidiaries in Russia. We compared our results with the ones obtained by a team from the Kyiv School of Economics that had undertaken a similar research endeavour. We also performed extensive robustness checks. These checks confirmed our overall conclusion and revealed further findings that better contextualize corporate divestitures from Russia.

The remainder of this paper is organised as follows. The next section outlines the specific question addressed in this paper and justifies its focus. The third section provides additional information about the database used and the analysis performed. The fourth section summarises the headline finding concerning the percentage of divestments of EU and G7 firms from Russia and reports other commercially-relevant metrics of the footprint of these exiting firms in the Russian economy. Reference is also made here to the numerous robustness checks made. Section five of the paper identifies the location of the headquarters of the EU and G7 firms that have not completed or attempted to exit Russia. Reflection on our findings plus a discussion of their business and policy relevance in the current geopolitical climate can be found in the final section of this paper.

⁴ An overview of the competing pressures facing Western companies with operations in Russia can be found in this 18 March 2022 Financial Times [article](#) on Western pharmaceutical firms. The case of pharma firms is particularly interesting as medicines and associated medical supplies were exempted from sanction regimes imposed on Russia. Thus, pharma firms faced pressure to “scale back its presence in Russia” even though their products were not on sanctions lists.

2. Focus and research approach.

Faced with official and media campaigns at home to halt their Russian operations and divest from the country, Western firms may nevertheless fail to exit. This can happen for multiple reasons. For instance, a Western firm operating in a sector excluded from official sanctions may decide that it is inappropriate to abandon its Russian customers, who may have played no part in the decision to invade Ukraine or in the prosecution of the armed conflict. In other cases, Western firms may not want to abandon long-term relationships with employees or suppliers or decide to cease operations because of the societal relevance of their products and services (for instance, the supply of life-saving medicines).

Even when a Western firm has decided to exit and committed to do so publicly, it may still ultimately fail to do so. For instance, it may not be able to find a buyer for its subsidiary that is prepared to pay a high enough price. And even when a buyer is found and the price agreed, the Russian government may have put in place obstacles that impede or anyway delay the sale, or ultimately prevent transfer of proceeds abroad.⁵

For all these reasons we may observe Western companies not divesting their assets from the Russian economy. Thus, the research question we address is: how many EU and G7 firms that had active equity investments in Russia at the beginning of the conflict have divested at least one of their subsidiaries by the end of November 2022?

Two features characterize our research approach. First, we confine our analysis to subsidiaries of firms headquartered in the EU and G7 nations. This is because we are interested in tracking the propensity to divest of those companies that may have been under pressure to leave Russia. This focus reflects the high-profile joint initiatives by governments of those nations to sanction Russia for invading Ukraine, the notable attempts by Western governments to persuade national firms to exit Russia, as well as the campaigns in those nations' media to encourage exit and condemn those companies that fail to do so.

Second, we confine our research to divestment of equity stakes. Non-equity commercial ties—such as arms-length exporting, licensing, and franchising—typically involve smaller capital investments than acquiring or building equity stakes. The loss of sales and any capital write-offs are also likely to be lower—and therefore easier to bear—in the case of non-equity ties. Finally, exit regulations tend to be relatively less stringent for non-equity commercial ties.

Conversely, equity stakes often involve higher costs associated with abandoning both profit-making assets and relationships with distributors, employees, and suppliers. For example, Danone, the French consumer goods company, expects to write off one billion euros as it disposes of 13 factories that manufacture dairy products in Russia ([Financial Times](#), 14 October 2022).

In short, some corporate retreats from the Russian market are harder and more expensive to pull off than others. Our focus on divestment of equity stakes is intended to shed light on the extent to which Western firms have actually exited the Russian market when the exit costs are expected to be higher. If we find that large percentages of Western equity investments were divested, then this would reveal much about the

⁵ Difficulties in leaving the Russian market have been reported in the [Wall Street Journal](#) and in the [Financial Times](#). Interestingly, the latter article was cited by [TASS](#), an official Russian news source.

willingness and ability of companies based in the EU and G7 nations to abandon commercial operations in the nine months since the invasion of Ukraine.

We are not the first to track the foreign corporate reaction to Russia's invasion of Ukraine. A group of researchers at Yale University has collected information on the responses of about 1,400 individual foreign companies and classified them into five categories, one of which is withdrawal (Sonnenfeld et al. 2022). Another group of researchers at the Kyiv School of Economics (KSE) has assembled a list of foreign company responses from a number of sources, including that compiled by the group at Yale University.⁶ Both studies represent very valuable research efforts that contribute to our understanding of the responses of international companies following Russia's invasion of Ukraine.

As noted above, the focus of our research is restricted to equity investments made by EU and G7 firms. We compare our results with KSE's for three reasons: (1) KSE research has tracked the largest number of international companies (2,956) doing business in Russia since the beginning of the conflict;⁷ (2) KSE has assembled their dataset from multiple sources, including from official registries and the Yale initiative;⁸ and (3) they have categorized international companies' responses into four distinct categories, namely "stay," "wait," "leave," and "exited." Given that our study focuses on completed exits, it is both relevant and appropriate for us to compare our findings against the list of international companies that KSE deemed have "exited."

To summarize, our research approach was to take a reputable database of foreign equity investments (ORBIS), extract the information on the subsidiaries operating in Russia and owned by EU and G7 firms, and then, using additional pertinent information, check how many of these companies have actually divested at least one of their Russian subsidiaries by the end of November 2022.

Having obtained a list of confirmed exits, our goal is to compare the commercial footprint of exiting firms with the entire population of Western equity investments in Russia at the time of the invasion. Additionally, we perform additional robustness checks to further validate our results and provide a comparison with the results obtained by KSE. Ultimately, this will enable us to assess how significant confirmed G7 and EU corporate exits have been in the nine months since the invasion of Ukraine. This approach also allows us to check whether firms from certain sectors or from certain Western nations have divested relatively more than others.

⁶ A detailed description of the KSE project can be found on the following website: <https://kse.ua/about-the-school/news/>. Extensive weekly updates of their data gathering are provided. At the time of circulating our paper, the latest available update was on 5 December 2022: <https://kse.ua/about-the-school/news/30th-issue-of-the-weekly-digest-on-impact-of-foreign-companies-exit-on-rf-economy/>.

⁷ The complete list of companies tracked by the KSE study can be found here and is updated regularly: <https://leave-russia.org/companies-that-exited?flt%5B147%5D%5B%5D%5B%5D=9061>

On 8 December 2022, a total of 2,956 international companies were tracked and their decisions to the armed conflict reported on the website. As also stated in their website, "the KSE database is more complete and comprehensive and contains ~40 percent more information than most other similar databases."

⁸ The list of sources used by KSE is reported in their website: "KSE database is partly based on the Yale's School of Management database, epravda.com.ua, squeezingputin.com, leave-russia.org websites and other open sources. Data is verified and KSE status is assigned." Source: URL <https://kse.ua/about-the-school/news/32nd-issue-of-the-weekly-digest-on-impact-of-foreign-companies-exit-on-rf-economy/>

3. Data and methodology.

To identify the population of Western equity investments in Russia, we use the internationally-recognized ORBIS database, which contains detailed information on over 400 million (public and private) companies across the globe and is thus widely regarded as one of the most comprehensive and reliable record of equity investments by foreign firms. The extensive coverage of this database accounts for it being a workhorse in international business research—with a total of 5,680 citations in the Google Scholar database. The Baker Library of Harvard Business School describes this database in these terms: “ORBIS, a global company database, produced by Bureau van Dijk, is unique in breadth of geographies and extent of companies covered as well as the availability of private company financial information.”⁹

Data on approximately 36,000 firms with active operations in the Russian Federation was downloaded from the ORBIS database on 22 April 2022. To be included in our analysis, a firm must have had at least one million USD of operating revenue in Russia for at least one of the years 2017 to 2021, years that precede any economic disruption to the Russian economy that followed the invasion of Ukraine.

Once Russian-owned firms were removed, this left 3,444 subsidiaries of foreign companies for which information was available in the ORBIS database. Of those 3,444, a total of 2,405 were subsidiaries of companies located in members of the G7 group of nations or in member states of the EU.

Some foreign companies have more than one subsidiary that are commercially active in Russia. For example, Renault has 22 subsidiaries listed in the ORBIS database that met the operating revenue filter mentioned above. For this reason, we distinguish between the total number of EU and G7 “subsidiaries” and the total number of EU and G7 “foreign companies” that own them. A total of 1,404 foreign companies headquartered in the EU and G7 countries with commercial activities in Russia were found in the ORBIS database. To replicate the construction of this database of EU- and G7-based firms with commercially active equity stakes in the Russian Federation, please consult *Annex 1*.

For each and every one of the 2,405 EU and G7 subsidiaries that were commercially active in Russia, we checked if any post-invasion exit from Russia could be confirmed. We separately searched relevant company websites for announcements and, where available, their financial statements. Particular weight was given to statements concerning completed sales of subsidiaries where the buyer was named and other pertinent transaction details mentioned (such as reporting the value of the transaction.)

Of the total of 1,404 EU and G7 companies with commercially active equity investments in Russia before the invasion of Ukraine, we could confirm that, by the end of November 2022, a total of 120 (8.5%) have actually left. *Figure 1* summarises these findings. The 120 confirmed exits are listed in *Annex 2*. Of the 2,956 foreign companies tracked, the KSE study has found that 143 of them have “exited”. Put differently, the KSE study shows that 4.8% of all foreign companies they have tracked

⁹ The Baker Library of Harvard Business School provides further information related to ORBIS here: <https://www.library.hbs.edu/find/databases/orbis>
ORBIS database regularly appears as reliable data source in academic articles published in top-ranked academic journals in international business, strategy, and management. Examples of recently published peer-reviewed papers using the ORBIS database include Yan, Li and Zhang (2022), Dwenger and Treber (2022), and Rios (2021).

have left Russia. That the percentage we find is higher is unsurprising given we confine our analysis to EU and G7 companies which have faced pressure at home to leave.¹⁰

We further compared our list of 120 confirmed exits with KSE's list of exits, again see **Annex 2** for such comparison. A total of 69 exits on our list appear on the KSE's list as "Exited". For the other 51 companies on our list, we provide links to publicly available information corroborating their equity divestiture from Russia. In the robustness checks (reported in **Annex 3** and detailed in the following section) we discuss further checks that we performed on the 74 companies that are included in the "exited" category of the KSE list but did not qualify for inclusion on our list of 120 confirmed exits.

4. Commercial footprint of those EU and G7 firms exiting Russia.

In principle, the 8.5% of exiting Western firms with equity investments could constitute the lion's share of Western investment in Russia. This is not the case, as the statistics reported in **Figure 2** reveal.

Confirmed exits by EU and G7 firms that had equity stakes in Russia account for 6.5% of total profit before tax of all the EU and G7 firms with active commercial operations in Russia for which information is available in the ORBIS database, 8.6% of tangible fixed assets, 8.6% of total assets, 10.4% of operating revenue, and 15.3% of total employees.¹¹ These findings imply that, on average, the exiting Western firms tended to underperform in terms of profitability and had larger workforces (which in turn may have contributed to their higher public profile).¹²

Since the ORBIS database reports the type of foreign investor, the nation their headquarters is located in, and the sector of economic activity, it is possible to conduct a barrage of robustness checks as well as to report additional information on the commercial footprint of exiting firms. The checks and associated evidence are presented in **Annex 3**. The key findings are as follows:

- Excluding from the analysis equity investments by individuals, state owned enterprises, and foundations does not alter the findings.
- Excluding from the analysis foreign investments made by foreign companies headquartered in Cyprus or Luxembourg (potential locations for Russians investing back home) does not alter the qualitative findings. Although excluding Cypriot-headquartered firms does raise to 21.4% the percentage of employees of Western firms in Russia working at firms where exit has been confirmed.

¹⁰ The likely inclusion in the KSE study of firms supplying the Russian market before the invasion through non-equity means is another potential reason why our results diverge.

¹¹ Recall a foreign company may have more than one subsidiary in Russia. Some of those subsidiaries may have been divested, some not. As the ORBIS database provides financial information at the subsidiary level, then this was used in the calculations underlying **Figure 2** and **Annex 3**.

¹² Our overall findings are comparable with those obtained by the KSE researchers. According to their research published on 5 December 2022, the companies that exited Russia "employed almost 22.0% of the personnel employed in foreign companies," "owned about 11.2% of the assets," and "generated revenue of \$35.4 billion or 12.0% of total revenue". Source: <https://kse.ua/about-the-school/news/30th-issue-of-the-weekly-digest-on-impact-of-foreign-companies-exit-on-rf-economy/>. Note: KSE provides these statistics using 142 companies that exited up to 5 December 2022. While it is important to keep in mind the differences in the samples employed – the sample for the KSE study comprised all international companies doing business in Russia – the similarity in our reported summary statistics should further increase the confidence in our findings.

- There are more confirmed exits by foreign firms headquartered in the United States than those based in the EU and Japan. Still, our results imply that fewer than 18% of US subsidiaries have actually divested. In other words, while US companies have divested more often than their EU and G7 counterparts, to date fewer than one in five have completed exits.
- EU and Japanese firms that have exited to date tend to have very low levels of profitability.¹³
- There are fewer confirmed exits by EU and G7 firms in the agricultural and resource extraction sectors than in manufacturing and services sectors. Those firms from the former two sectors that did leave had above-average levels of profitability. The commercial footprint of exiting firms in the latter two sectors are broadly in line with the findings for the entire sample. The profitability of the exiting manufacturing firms is very low.¹⁴

We also performed additional checks relating to the companies included in the KSE list. First, relative to our **Annex 2**, we reviewed the 51 companies that are included in our list of 120 completed exits but do not appear in the KSE “exited” list: 46 of them do still appear in the KSE inventory but in a different category, primarily in the “Leave” category.¹⁵ The remaining five are not included in the KSE list—implying that they are firms whose exits we confirmed independently.

We also checked the 74 companies that are included in the KSE “exited” list (143) which do not appear in our list of 120 confirmed exits. Eleven of them are companies that are not headquartered in the EU or a G7 nation. A further 56 of them are companies that are not associated with any of the 1,404 EU and G7 companies and, moreover, for most of them we were not able to find any information on an equity divestment. Finally, 7 of them could be linked to companies included in our sample of 1,404 EU and G7 companies but, based on our assessment of the information retrieved, were not deemed to be included in our list of confirmed exits.

The latter check led to the conclusion that in 53 cases¹⁶ our assessment of “completed exit” differed from the one made by the KSE study—which represents just 4% of the 1,404 foreign companies included in our sample. Hence, differences in interpretation of available information do not markedly change the headline percentage (8.5%) reported here. Indeed, a sensitivity analysis of how much the overall percentage of confirmed exits would vary if we were to use KSE list shows that the percentage could

¹³ One Japanese company made significant losses and this has pulled down the average for that country.

¹⁴ This raises the possibility that pressure on EU and G7 firms to exit Russia may have provided the pretext to sell underperforming manufacturing operations.

¹⁵ The different categorization of these 46 companies is related to the way in which we deemed a subsidiary’s exit from Russia to be confirmed. If we were to remove these 46 companies from our list of completed exits, our overall percentage of confirmed exits would fall to 5.2% (almost entirely eliminating the gap between KSE’s headline percentage of 4.8%). Having said that, we considered that the information currently available to us regarding these companies’ exit was sufficient to deem them confirmed exits.

¹⁶ The 53 cases correspond to the sum of 46 cases discussed beforehand and the 7 cases mentioned in the previous paragraph. The 46 cases correspond to companies that we categorized as confirmed exit but in the KSE list they are reported in a category other than “Exit Completed”. The 7 cases correspond to companies that we could associate with one of the companies included in our sample of 1,404 EU and G7 companies but, based on our assessment of the information retrieved, were not deemed to be included in our list of confirmed exits.

range from approximately 5% to 13%, with both extremes being very unlikely.¹⁷ This lends further confidence to our overall finding, namely, that few Western firms have actually divested from Russia.

To summarise, our analysis shows that those EU and G7 firms that exited by the end of November 2022 accounted for small shares of the Western corporate footprint in Russia. Put differently, when weighted by sensible metrics of commercial activity, the overwhelming majority of EU and G7 firms operating in Russia have stayed put or have not completed any plans to divest.

5. Which Western foreign firms have not divested from Russia?

The left-hand panel of **Figure 3** shows the countries of origin of those foreign companies that have divested at least one of their Russian subsidiaries to date. The top 9 such economies are reported along with a catch-all category for the others. The right-hand panel reveals the countries of origin of those foreign companies that are still active in Russia—i.e., that have not divested any of their Russian subsidiaries. Comparing across the panels is revealing. American and Finnish firms constitute considerably higher percentages of exiting firms than those that remain. To a lesser degree that is true for British, Danish and French firms.

Italian-headquartered firms are more heavily represented among remaining than exited firms, and to a lesser degree so are Japanese firms. A sixth of subsidiaries remaining in Russia have parent companies that are formally headquartered in Cyprus. Some of the latter may be Russian-owned and this was one reason why we conducted a robustness check dropping all Cypriot-headquartered firms from the sample.

It should be evident, then, that the propensity to exit and to remain in Russia differ across G7 and EU members. As multiple factors can, in principle, determine the propensity to sever commercial ties with economies now deemed geopolitical rivals, it would be inappropriate to automatically conclude from these findings that American, British, Danish Finnish, and French multinationals are especially susceptible to pressure from home governments.

6. Assessment and implications.

The sharp adverse reaction by Western governments to Russia's invasion of Ukraine presents an opportunity to examine how willing, able, and quickly Western companies are prepared to sever overseas commercial ties in the face of acute geopolitical risks. Many Western companies have spent decades and billions of US Dollars and Euros

¹⁷ The 5% figure is obtained removing the 46 companies that according to the KSE list have not "exited" from our list of 120 confirmed exits (hence $(120-46)/1,404 = 0.053$). The 13% figure is obtained by adding to our list of 120 confirmed exits (a) the 56 companies that according to the KSE list have exited but that we were not able to link to any of the 1,404 subsidiaries included in our sample (thus assuming that were missed out from our list of 120 exits because of the incompleteness of the ORBIS sample); and (b) the 7 companies that could be linked to companies included in our sample of 1,404 EU and G7 companies but, based on our assessment of the information retrieved, were not deemed to be included in our list of confirmed exits ($((120 + 56 + 7)/(1,404 + 56) = 0.125$).

building up operations in economies now deemed geopolitical rivals. How ready are those firms to turn the clock back on globalisation?

The pressures on companies to decouple from geopolitical rivals are growing. National security experts have criticised Western firms as being naïve in their dealings with autocratic regimes (Inskter 2021).¹⁸ On 30 November 2022, making specific reference to American companies operating in China, US Treasury Secretary is [reported](#) to have said “we are seeing a range of geopolitical risks rise to prominence, and it's appropriate for American businesses to be thinking about what those risks are.” Proponents of reshoring production, friend-shoring and the like have had the wind in their sails since the onset of the COVID-19 pandemic. Ultimately, the question is whether such pressures are translating into changes in the international footprint of companies.

In this paper, the fallout from Russia’s invasion of Ukraine in February 2022 was used as a prism to answer this question. We found that 8.5% of EU and G7 companies with equity investments have already exited Russia. Arguably, such exits take time and are typically more complex to unwind than non-equity ties. So, this percentage is likely to rise as those companies that have announced their intention to leave follow through.¹⁹

How best to interpret the headline 8.5% finding? In principle, we could have missed reports confirming the completed divestment of other G7 and EU firms that were commercially active in Russia. Additionally, while ORBIS remains a high-quality and reliable source of data, it could be the case that some equity investments made by EU and G7 firms have not been captured in that database. However, given the extensive checks that we have done and the overall comparability of our findings with the ones obtained by researchers at the KSE, the likelihood that this headline finding represents a substantial underestimate of the true percentage is low.

To the contrary, our headline finding almost certainly overstates the degree of completed divestment. That is because, for the purposes of calculating the headline percentage, we counted a foreign company as completely exiting if one or more—but not necessarily all—of its subsidiaries in Russia have been divested. In essence, to keep the message as clear as possible, we treated partial divestments as if they were full divestments.

Furthermore, in the process of divesting, some Western firms have inserted “buy-back” clauses in contracts with buyers of their Russian subsidiaries. For example, Nissan [reportedly](#) sold its Russian subsidiary to state-owned NAMI with a six year buy-back provision. It appears that McDonalds can buy-back its Russian operations within 15 years, according to this [report](#) on a statement by Russia’s Federal Anti-Monopoly

¹⁸ In July 2022 the heads of the FBI and MI5 issued a joint [warning](#) concerning the growing threat from China. FBI Director Wray is quoted as arguing that the Chinese government “poses an even more serious threat to Western businesses than even many sophisticated businesspeople realize,” and is “set on stealing your technology.”

¹⁹ Recall that KSE researchers have found a significant number of firms that fall into this category. Having written this, charts produced by the KSE team reveal that in the final three months of 2022 the total number of firms indicating their intention to leave and the total number of firms that “exited” have changed little; see the chart in the middle panel of <https://kse.ua/about-the-school/news/35th-issue-of-the-weekly-digest-on-impact-of-foreign-companies-exit-on-rf-economy/>. The chart suggests that a relatively limited number of companies moved from the “intention to leave” category into the “exited” category during the final three months of 2022.

Service. It would seem that even a completed divestment does not mean leaving Russia forever.

Should the share of exiting Western firms not rise significantly in the coming year or two, then it would call into question the willingness or the ability of many Western firms to decouple from jurisdictions their governments have deemed geopolitical rivals. What is really going on here? Perhaps countervailing pressure and obstacles erected by the Russian government have limited divestment—a factor that may have been underestimated in Western activists, commentators, and officials—or anyway delayed exit.

Alternatively, perhaps Western policymakers and business leaders are not that aligned on the merits of decoupling. Should geopolitical tensions intensify between China and Western governments and their allies in the Asia Pacific, divergence on decoupling will matter more—for every US dollar of foreign direct investment in Russia there is just under \$8 invested in China.²⁰ If the write-offs announced by publicly traded Western companies are anything to go by, divestment, decoupling, and supply chain reconfiguration are likely to be costly to firms, their employees, and their shareholders. If those costs must be borne on geopolitical grounds, who should bear them? Answering this question is of the essence since to date Western corporate retreat from Russia has been limited.

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²⁰ This calculation based on a comparison of the value of the inward stock of foreign direct investment in the Russian Federation in 2021 and the sum of that inward stock for mainland China, Hong Kong, and Macao. The source for the data used in this calculation is Annex table 2 of UNCTAD’s *World Investment Report* 2022.

Figure 1. How our headline finding (<9%) was determined.

Foreign Companies With an Equity Stake in Russia

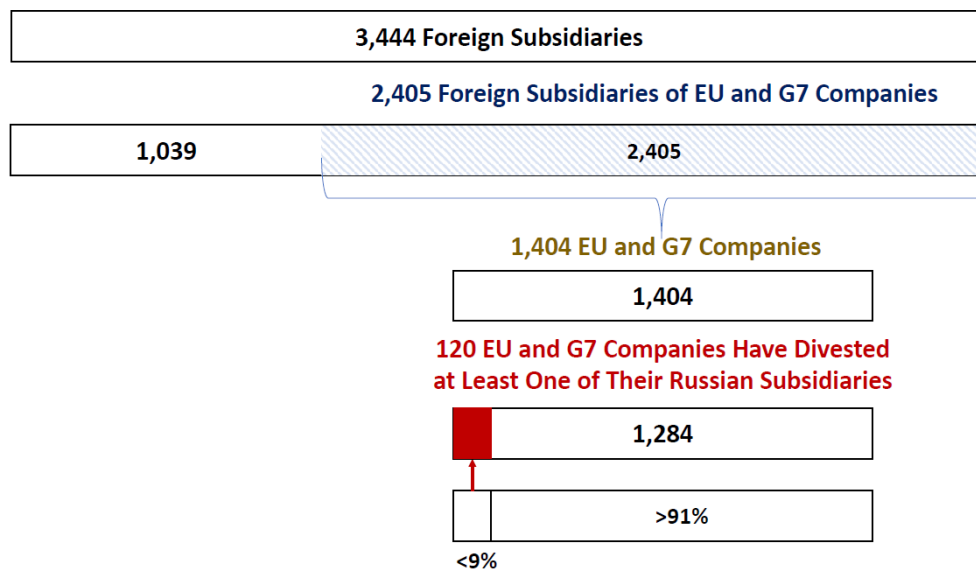
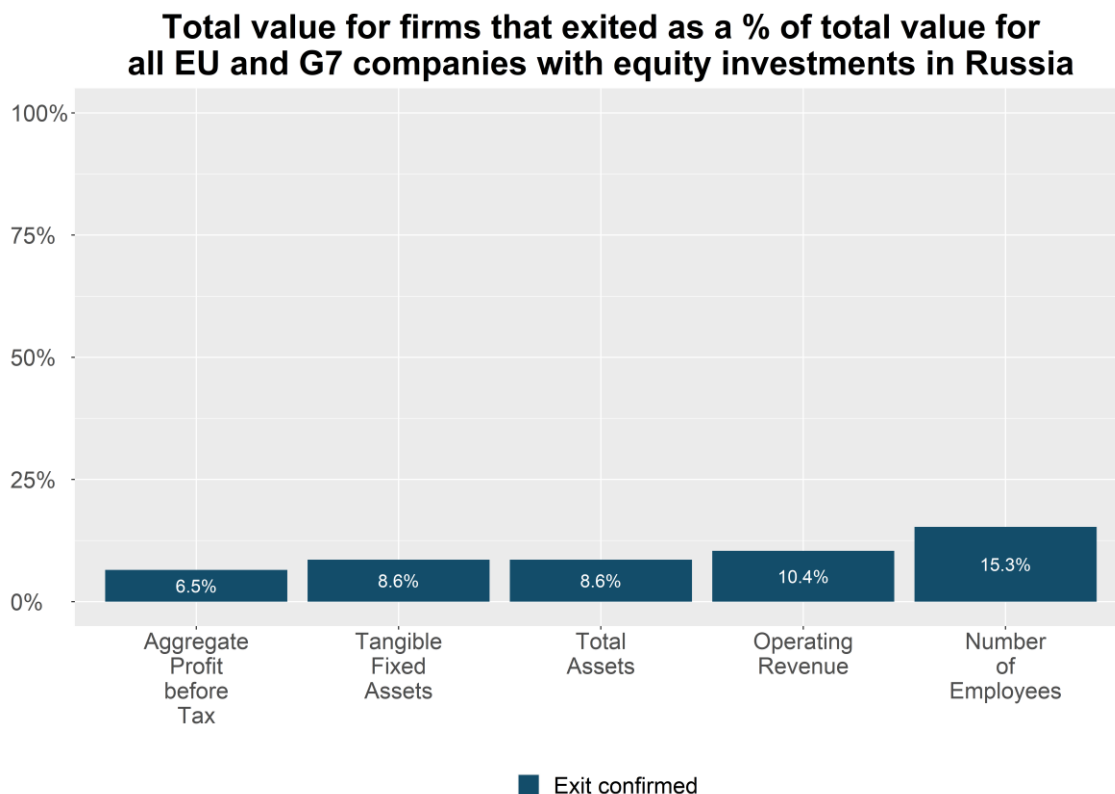


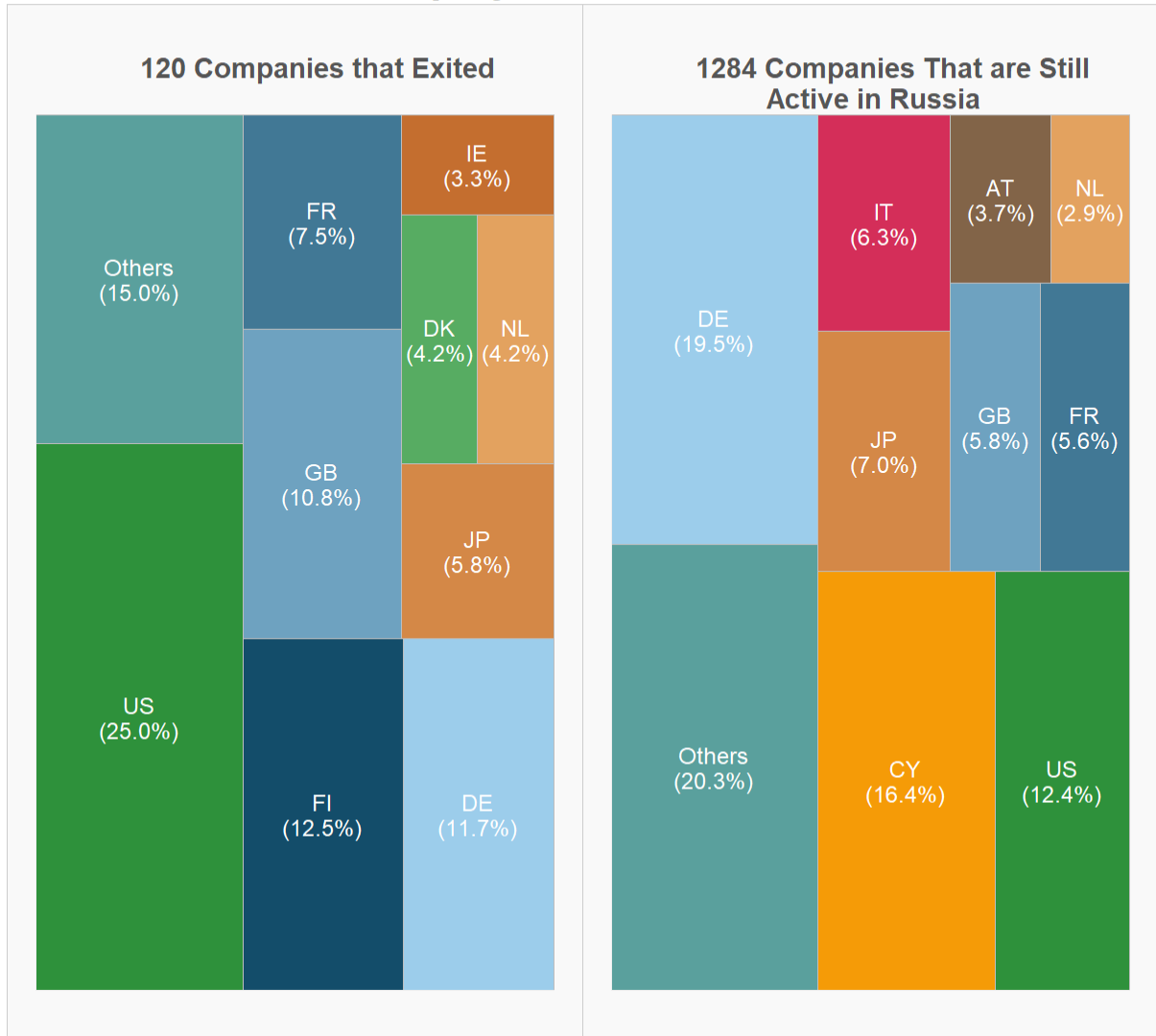
Figure 2. Commercial footprint of confirmed exits from Russia.



Note: ORBIS database does not report the financial metrics (shown in Figure 2) for all subsidiaries included in our analysis. Still, for each reported statistics it was possible to rely on information from over 97% of exiting subsidiaries. The exact number of subsidiaries for which information was available is reported in Annex 3.

Figure 3. Location of headquarters of foreign companies that exited versus those that are still active in Russia.

Country of origin of EU and G7 Companies with an Equity Stake in Russia



Annex 1. Construction of the population of Western equity investments in Russia.

- The original data for this analysis was downloaded from the ORBIS database on 22 April 2022. It consists of **36,000 companies** operating in Russia. The criteria to retrieve this sample from ORBIS was:
 - **1. Status:** Active companies
 - **2. World region/Country/Region in country:** Russian Federation
 - **3. Consolidation code:** LF (Limited financial), U1 (unconsolidated accounts with no consolidated companion), U2 (unconsolidated accounts with a consolidated companion).
 - **4. Subsidiaries with Ultimate Owners (UO) by profile:** UO is one of the following types: Banks and Financial companies, Insurance companies, Corporate companies, Private Equity firms, Hedge funds, Venture capital, Mutual & Pension Funds/Nominees/Trusts/Trustees, Foundations/Research Institutes, Public authorities, States, Governments, One or more named individuals or families, Employees/Managers/Directors; GUO and DUO.²¹
 - **5. Operating revenue (Turnover) in Russia:** minimum of one million USD for at least one of the following years 2017-2021; exclusion of companies with no recent financial data and Public authorities/States/Governments.
- Next, only information on foreign companies operating in Russia were retained. That is, entries whose **GUO - Country ISO code** != "RU". This yields a dataset with a total of **3,444** companies.
- Lastly, only EU and G7 companies are included in the dataset. This reduces the sample to **2,405** foreign subsidiaries. Here we filter for companies whose **GUO - Country ISO code** belong to the EU or G7 countries:
 - **EU countries:** AT, BE, BG, HR, CY, CZ, DK, EE, FI, FR, DE, GR, HU, IE, IT, LV, LT, LU, MT, NL, PL, PT, RO, SK, SI, ES, SE.
 - **G7 countries:** CA, DE, FR, GB, IT, JP, US.
- Out of the 2,405 companies, there are **1,404** unique EU and G7 GUOs.
- The total number of confirmed exits found in this analysis is **120** i.e., 120 unique GUOs are confirmed to have exited Russia.

²¹ According to ORBIS, foreign companies are identified as **GUOs**, i.e., "global ultimate owner" (GUO): the individual or entity at the top of a corporate ownership structure, or **DUOs**, i.e., "domestic ultimate owners": the highest owning entity in a country. Definition of the UO: min. path of 50.01%, known shareholder. Hence, several companies can be associated with the same GUO (or DUO). As information on firms' performance is provided in ORBIS at the subsidiary-level, it is necessary to focus on subsidiaries to calculate the operating revenue, profits, total assets, and number of employees in the dataset.

Annex 2. Our list of 120 foreign companies that exited.

Our list of 120 foreign companies that exited	Foreign companies included in the KSE list of 143 companies that "Completed Exit"	Publicly available information documenting companies' exit
AB ELECTROLUX	AB ELECTROLUX	https://www.europapress.es/comunicados/internacional-00907/noticia-
AB SKF	AB SKF	https://leave-russia.org/skf
ACCENTURE PUBLIC LIMITED COMPANY	ACCENTURE PUBLIC LIMITED COMPANY	https://www.fnlondon.com/articles/accenture-russia-looks-to-set-up-successor-
ARLA FOODS AMBA	ARLA FOODS AMBA	https://www.just-food.com/special-focus/ukraine-crisis/arla-quits-russia-selling-
ATOS SE	ATOS SE	https://atos.net/en/2022/news_2022_04_05/atos-confirms-managed-exit-of-our-
ATRIA OYJ	ATRIA OYJ	https://leave-russia.org/atria
BALL CORP	BALL CORP	https://www.foodbev.com/news/ball-corporation-sells-russian-packaging-
BITTEN OG MADDS CLAUSENS FOND		https://www.reuters.com/article/ukraine-crisis-danfoss-russia-idUKL1N2YW0YH
BP PLC		https://www.bp.com/en/global/corporate/news-and-insights/press-releases/bp-to-
CAVERION CORPORATION		https://www.caverion.com/globalassets/investors/en/bond-issue-
COMCAST CORPORATION		https://gagadget.com/en/kin/142490-the-end-universal-pictures-is-finally-leaving-
COMPASS GROUP PLC	COMPASS GROUP PLC	https://www.thecaterer.com/news/compass-group-russia-exit-withdrawal-
CUSHMAN & WAKEFIELD PLC		https://ir.cushmanwakefield.com/news/press-release-details/2022/Cushman-
DENTSU GROUP INC.		https://www.adweek.com/agencies/dentsu-reveals-new-leadership-structure-and-
DEUTSCHE BANK AG		https://www.bloomberg.com/news/articles/2022-03-11/deutsche-bank-says-it-s-
DEUTSCHE TELEKOM AG	DEUTSCHE TELEKOM AG	https://techmonitor.ai/technology/deutsche_telekom_ends_russian_adventure_wit
DR. AUGUST OETKER KG	DR. AUGUST OETKER KG	https://interfax.com/newsroom/top-stories/78017/
DXC TECHNOLOGY COMPANY	DXC TECHNOLOGY COMPANY	https://www.crn.com/news/managed-services/dxc-is-pulling-out-of-russia-
ELKO GRUPA AS	ELKO GRUPA AS	https://leave-russia.org/elko-group
EMERSON ELECTRIC CO		https://www.emerson.com/en-us/news/corporate/russia-business-divestiture
ENEOS HOLDINGS INC		https://www.scmp.com/week-asia/economics/article/3190717/more-half-japanese-firms-russia-ignore-calls-withdraw-over-too
ENI S.P.A.	ENI S.P.A.	https://leave-russia.org/eni
EPAM SYSTEMS, INC.		https://www.sec.gov/Archives/edgar/data/1352010/000135201022000029/epam-20220407.htm
FANUC CORPORATION		https://www.fool.com/earnings/call-transcripts/2022/11/03/epam-systems-epam-g-3-2022-earnings-call-transcript/
FISKARS OYJ ABP	FISKARS OYJ ABP	https://www.scmp.com/week-asia/economics/article/3190717/more-half-japanese-firms-russia-ignore-calls-withdraw-over-too
FLOWERVE CORP		https://www.marketscreener.com/quote/stock/FISKARS-OYJ-ABP-1412457/news/Fiskars-To-Exit-Russian-Market-39684315/
FMC CORP	FMC CORP	https://ir.flowserve.com/news-releases/news-release-details/flowserve-corporation-reports-first-quarter-2022-results-updates#:~:text=Flowserve%20to%20Exit%20All%20Russian%20Operations&ext=This%20includes%20commencing%20the%20necessary,terminating%20other%20related%20contractual%20commitments.
HAYS PLC	HAYS PLC	https://leave-russia.org/fmc-corporation
HEMPEL FONDEN		https://leave-russia.org/hays-plc
HEWLETT PACKARD ENTERPRISE COMPANY		https://www.european-coatings.com/articles/2022/06/either-a-sale-of-our-business-or-liquidation
HP INC.		https://www.hpe.com/us/en/newsroom/statement/2022/06/hpe-announces-intention-for-orderly-exit-of-russia-belarus.html
HOWMET AEROSPACE INC.	HOWMET AEROSPACE INC.	https://sundries.com.ua/en/hp-spent-23-million-to-exit-russia/
HUHTAMAKI OYJ		https://press.hp.com/us/en/blogs/2022/hp-statement-on-russia-market-operations.html
HYVE GROUP PLC	HYVE GROUP PLC	https://www.reuters.com/markets/deals/arconic-corp-sells-its-russian-operations-230-million-2022-11-15/#:~:text=Nov%2015%20(Reuters)%20%2D%20Arconic.products%20maker%20said%20on%20Tuesday.
IMCD N.V.		https://www.huhtamaki.com/en/media/media/press-release/2022/huhtamaki-divests-its-operations-in-russia/
IMI PLC		https://www.marketscreener.com/quote/stock/HYVE-GROUP-PLC-4001832/news/Hyve-to-exit-Russia-39770345/
IMPERIAL BRANDS PLC	IMPERIAL BRANDS PLC	https://www.imcdgroup.com/en/media-centre/press-releases/imcd-stops-its-business-in-russia
INCHCAPE PLC	INCHCAPE PLC	https://www.imiplc.com/sites/imiplc-rev2/files/interim-results-2022.pdf
INTERNATIONAL BUSINESS MACHINES CORP		https://panmure.com/insights/imperial-brands-takes-400mn-hit-to-profits-as-it-pulls-out-of-russia/#:~:text=15%20November%202022&text=In%20April%2C%20Imperial%20became%20the,a%20group%20of%20local%20investors.
INTRACOM HOLDINGS S.A.		https://www.thisismoney.co.uk/money/markets/article-10763225/inchcape-agrees-sell-Russian-business-large-loss.html
ISS A/S		https://www.reuters.com/technology/ibm-winding-down-russian-operation-laying-off-employees-memo-2022-06-07/
J. RUCKDESCHEL & SÖHNE GMBH & CO. KG	J. RUCKDESCHEL & SÖHNE GMBH & CO. KG	https://newsroom.ibm.com/Update-on-IBMs-Business-Operations-in-Russia
JABIL, INC.		https://www.intracom-telecom.com/en/news/press/press2022/2022_09_09.htm
JOH. VAILLANT GMBH & CO KG		https://ml-eu.globenewswire.com/Resource/Download/83c6e7c9-df22-4fe4-afc8-880964448afa
JONES LANG LASALLE INC		https://leave-russia.org/ireks
KELLNEROVA RENATA		https://tadviser.com/index.php/Company:Jabil_Russia#:2A_Dismissed_from_telecom_equipment_plant_in_Tver_transferred_to_Aquarius
KEMIRA OYJ		https://www.vaillant-group.com/news-stories/vaillant-group-terminates-business-activities-in-russia.html
KERRY GROUP PLC	KERRY GROUP PLC	https://seekingalpha.com/article/4509177-jones-lang-lasalle-incorporated-jl-ceo-christian-ulbrich-on-q1-2022-results-earnings-call
KINGSPAN GROUP PLC	KINGSPAN GROUP PLC	https://interfax.com/newsroom/top-stories/82587/
KINROSS GOLD CORPORATION	KINROSS GOLD CORPORATION	https://leave-russia.org/kipf
LAMB-WESTON/MEIJER V.O.F.		https://leave-russia.org/kipf
LINDSTROM OY		https://leave-russia.org/kipf
LPP S.A.	LPP S.A.	https://leave-russia.org/kipf
MARSH & MCLENNAN COMPANIES INC		https://leave-russia.org/kipf
MAXINGVEST AG	MAXINGVEST AG	https://leave-russia.org/kipf
MCDONALD'S CORPORATION	MCDONALD'S CORPORATION	https://leave-russia.org/kipf
MCKINSEY & CO INC	MCKINSEY & CO INC	https://leave-russia.org/kipf
MORGAN ADVANCED MATERIALS PLC		https://leave-russia.org/kipf
MR GEIGER REYNOLD		https://www.morganadvancedmaterials.com/en-gb/news-events/russian-ukrainian-conflict/
MR GEORG RUDOLF OTTO HAUB	MR GEORG RUDOLF OTTO HAUB	https://group.loccitane.com/sites/default/files/2022-06/220603_LOCCITANE%20Russia%20Statement_en.pdf
		https://leave-russia.org/obi

Annex 2. Continued.

Our list of 120 foreign companies that exited	Foreign companies included in the KSE list of 143 companies that "Completed Exit"	Publicly available information documenting companies' exit
MR JAN BRAND	MR JAN BRAND	https://leave-russia.org/brunei-international
MR PIERRE BELLON	MR PIERRE BELLON	https://leave-russia.org/sodexo
MRS KAARINA SALASTIE PAULA	MRS KAARINA SALASTIE PAULA	https://leave-russia.org/teknos
NCAB GROUP AB (PUBL)	NCAB GROUP AB (PUBL)	https://leave-russia.org/ncab-group-ab
NIKE INC		https://www.dw.com/en/nike-leaves-russian-market/a-62236345
NIPPON TELEGRAPH AND TELEPHONE CORPORATION	NIPPON TELEGRAPH AND TELEPHONE CORPORATION	https://leave-russia.org/ntt-data-3
NIPPON YUSEN KABUSHIKI KAISHA		https://www.nippon.com/en/news/kd952519658781179904/
NISSAN MOTOR CO., LTD.	NISSAN MOTOR CO., LTD.	https://www.automotiveworld.com/news-releases/nissan-completes-sale-of-russian-operations/
NVENT ELECTRIC PLC		https://www.insidebeer.com/news/detail/russia-pentair-leaves-the-country/#:~:text=%E2%80%9CEXiting%20the%20business%20resulted%20in,our%20exit%20were%20material%20amounts.%E2%80%9D
OMNICOM GROUP INC	OMNICOM GROUP INC	https://leave-russia.org/omnicom-group-inc
OPENWAY HOLDINGS LIMITED		https://www.openwaygroup.com/new-blog/2022/6/2/openway-group-is-leaving-russia
OTIS INVESTMENTS, L.L.C.	OTIS INVESTMENTS, L.L.C.	https://leave-russia.org/otis
OWENS CORNING	OWENS CORNING	https://www.roofingcontractor.com/articles/97725-owens-corning-completes-sale-of-russian-operations
PARKER DRILLING COMPANY	PARKER DRILLING COMPANY	https://leave-russia.org/parker-drilling-company
PARKER HANNIFIN CORP		https://www.parker.com/portal/site/PARKER/menuitem.31c35c58f54e63cb97b11b10237ad1ca?vgnextoid=2ad43b28c2f10810VqVCM100000e6651dacRCRD&vgnextchannel=9383fbd71fd7310VqVCM100000200c1dacRCRD&vgnextfmt=EN&newsroom=Y&vgnextcat=News%20Release%20Details https://www.parker.com/us/en/about-parker/newsroom/news-release-details/parker-statement-on-ukraine-and-russia.html
PETRO WELT TECHNOLOGIES AG	PETRO WELT TECHNOLOGIES AG	https://leave-russia.org/petro-welt-technologies
PHOENIX CONTACT GMBH & CO. KG	PHOENIX CONTACT GMBH & CO. KG	https://leave-russia.org/phoenix-contact
PHX ENERGY SERVICES CORP.		https://www.globenewswire.com/news-release/2022/08/02/2490230/0/en/PHX-Energy-Announces-Withdrawal-from-Russia.html#:~:text=The%20disposition%20of%20our%20Russian,urther%20on-going%20business%20in%20Russia
POLAR SEAFOOD DENMARK A/S	POLAR SEAFOOD DENMARK A/S	https://leave-russia.org/polar-seafood-group
PONSSE OYJ		https://www.ponsse.com/company/news/a_p/P4s3zYhpxHJ0/c/ponsse-divests-its-subsidiary-in-russia/
PPG INDUSTRIES INC	PPG INDUSTRIES INC	https://leave-russia.org/ppg
PRIMO WATER CORPORATION	PRIMO WATER CORPORATION	https://leave-russia.org/primowater
PUBLICIS GROUPE S A	PUBLICIS GROUPE S A	https://leave-russia.org/publicis-group
RAG-STIFTUNG		https://corporate.evonik.com/en/investor-relations/reports/quarterly-reports/q3-2022/attachment/149342?rev=5ad36232f9016c35cabe16726655e1ef
RAISIO OYJ	RAISIO OYJ	https://leave-russia.org/raisio
RENAULT	RENAULT	https://leave-russia.org/renault-group
RETHMANN SE & CO. KG	RETHMANN SE & CO. KG	https://leave-russia.org/buchen-group
REXEL	REXEL	https://leave-russia.org/rexel
SAMSONITE INTERNATIONAL S.A.	SAMSONITE INTERNATIONAL S.A.	https://leave-russia.org/samsonite-international
SCHMITZ CARGOBULL AKTIENGESELLSCHAFT	SCHMITZ CARGOBULL AKTIENGESELLSCHAFT	https://leave-russia.org/schmitz-cargobull
SCHNEIDER ELECTRIC SE	SCHNEIDER ELECTRIC SE	https://leave-russia.org/schneider-electric
SHELL PLC	SHELL PLC	https://leave-russia.org/shell
SIEMENS AG		https://www.aa.com.tr/en/economy/siemens-sells-financial-and-leasing-business-in-russia/2741221
SOCIÉTÉ GÉNÉRALE	SOCIÉTÉ GÉNÉRALE	https://leave-russia.org/societe-generale
SONY GROUP CORPORATION	SONY GROUP CORPORATION	https://leave-russia.org/sony-music-group
STADT DÜSSELDORF	STADT DÜSSELDORF	https://leave-russia.org/messe-duesseldorf
STANLEY BLACK & DECKER, INC.		https://www.hartfordbusiness.com/article/stanley-black-decker-shutting-down-russian-business-over-war-in-ukraine https://newsroom.stanleyblackanddecker.com/2022-10-27-Stanley-Black-Decker-Reports-3Q-2022-Results
STARBUCKS CORP	STARBUCKS CORP	https://leave-russia.org/starbucks
STORA ENSO OYJ	STORA ENSO OYJ	https://leave-russia.org/stora-ens0
STRABAG SE		https://www.reuters.com/article/strabag-at-russia-termination-idCNL5N2V12AI https://www.strabag.com/databases/internet/_public/content.nsf/web/EN-STRABAG.COM-russland.html#:~:text=STRABAG%20was%20operating%20in%20Russia,up%20the%20business%20in%20Russia,&text=Follow%20the%20link%20to%20the%20website%20in%20Russian
STUDIO MODERNA HOLDINGS B.V.	STUDIO MODERNA HOLDINGS B.V.	https://leave-russia.org/studio-moderna
SUOMEN OSUUSKAUPPOJEN KESKUSKUNTA	SUOMEN OSUUSKAUPPOJEN KESKUSKUNTA	https://leave-russia.org/sokotal
SYLVAMO CORP	SYLVAMO CORP	https://leave-russia.org/sylvamo
TECHNIPFMC PLC	TECHNIPFMC PLC	https://leave-russia.org/technip-energies
TELIA COMPANY AB		https://www.ft.com/content/0f2bed31-6f9b-393a-9338-5ca6807f6e81
TERADATA CORPORATION		https://www.theregister.com/2022/05/06/teradata_takes_60m_hit_withdrawing/#:~:text=Teradata%20CEO%20Steve%20McMillan%20said,chair%20from%20Rusia%20or%20Ukraine https://de.marketscreener.com/kurs/aktie/TERADATA-CORPORATION-61176/news/Transcript-Teradata-Corporation-Presents-at-6th-Annual-Wells-Fargo-TMT-Summit-Nov-30-2022-42447756/
THALES	THALES	https://leave-russia.org/thales-gemalto
TIETOEVRY OYJ	TIETOEVRY OYJ	https://leave-russia.org/tietoevry
TÖNNIES HOLDING APS & CO. KG		https://www.agrarzeitung.de/feedmagazine/feedmagazine-news/russia-toernies-dropped-out-just-in-time-99797
UNIVAR SOLUTIONS INC	UNIVAR SOLUTIONS INC	https://leave-russia.org/univar-solutions
UNIVERSAL MUSIC GROUP N.V.		https://www.wsj.com/livecoverage/russia-ukraine-latest-news-2022-03-08/card/universal-music-suspends-business-in-russia-wyKjM2X77bqzmt9VCz
VALIO OY		https://www.valio.com/news/valio-to-sell-its-russian-operations/
VITOL HOLDING II S.A.		https://edition.cnn.com/2022/04/13/business/vitol-russian-oil/index.html https://news.bloomberglaw.com/mergers-and-acquisitions/vitol-advances-with-sale-of-stake-in-giant-russian-oil-project?utm_source=rss&utm_medium=MRNW&utm_campaign=00000181-d920-d5b2-a381-f97b15560001
WARGAMING GROUP LIMITED	WARGAMING GROUP LIMITED	https://leave-russia.org/wargaming
WARTSILA OYJ	WARTSILA OYJ	https://leave-russia.org/wartsila
WEIR GROUP PLC (THE)		https://www.miningmagazine.com/plant/news/1428154/weir-group-withdraws-from-russia#:~:text=The%20Weir%20Group%2C%20a%20UK,it%20is%20keeping%20regular%20contact
WEWORK INC		https://www.heraldsctotland.com/politics/20100084-weir-group-exits-russia/
WHIRLPOOL CORP	WHIRLPOOL CORP	https://www.wework.com/newsroom/wework-statement-regarding-russia-operations
WHIRLPOOL CORP	WHIRLPOOL CORP	https://www.marketscreener.com/quote/stock/ARCELIK-ANONIM-SIRKETI-6494481/news/ArceLIK-Anonim-Sirketi-completed-the-acquisition-of-Russian-business-of-Whirlpool-Corporation-from-W-42068918/
WPP PLC (NEW)	WPP PLC (NEW)	https://leave-russia.org/wpp-plc
YIT OYJ		https://www.yitgroup.com/en/news-repository/stock-exchange-releases/yit-withdraws-from-all-operations-in-russia-by-completing-the-sale-of-the-businesses#:~:text=YIT%20has%20completed%20the%20sale,announced%20on%201%20April%202022

Annex 3. Robustness checks.

	Operating Revenue	Aggregate Profit before Tax	Number of Employees	Tangible Fixed Assets	Total Assets
Full sample % (As Shown in Figure 2)	10,4%	6,5%	15,3%	8,6%	8,6%
Rob test 1 - Excluding Individuals	11,0%	7,3%	15,9%	9,0%	9,0%
Rob test 2 - Excluding Public Comp or Foundation	10,5%	6,7%	15,5%	9,1%	8,8%
Rob test 3 - Excluding Cyprus	13,1%	7,9%	21,4%	11,8%	10,9%
Rob test 4 - Excluding Luxembourg	10,6%	6,5%	15,8%	8,8%	8,8%
Rob test 5 - Only the USA	15,7%	19,0%	27,4%	22,9%	14,0%
Rob test 6 - Only Japan	12,3%	-4,3%	22,8%	12,3%	15,3%
Rob test 7 - Only the EU-27	8,5%	3,3%	13,1%	6,6%	7,2%
Rob test 8 - Only the G7	16,9%	8,9%	25,4%	16,4%	13,9%
Rob test 9 - Only Manufacturing Sectors	17,9%	2,2%	18,6%	15,1%	11,2%
Rob test 10 - Only Services Sectors	8,1%	7,2%	14,4%	5,0%	7,8%
Rob test 11 - Only Agri & Extractive Sectors	10,4%	13,9%	8,2%	4,3%	6,6%

	Operating Revenue		Aggregate Profit before Tax		Number of Employees		Tangible Fixed Assets		Total Assets		Full Sample Numbers	
	Total Number of Non-NA Observations	Total Number of Non-Na Real Exits	Total Number of Non-NA Observations	Total Number of Non-Na Real Exits	Total Number of Non-NA Observations	Total Number of Non-Na Real Exits	Total Number of Non-NA Observations	Total Number of Non-Na Real Exits	Total Number of Non-NA Observations	Total Number of Non-Na Real Exits	Total number of subsidiaries	Total number of Real Exits
Full sample (Corresponding to % Shown in Figure 2)	2349	248	2349	248	2312	248	2347	248	2349	248	2405	255
Rob test 1 - Excluding Individuals	1992	234	1992	234	1958	234	1990	234	1992	234	2039	241
Rob test 2 - Excluding Public Comp or Foundation	2305	244	2305	244	2275	244	2303	244	2305	244	2361	251
Rob test 3 - Excluding Cyprus	1886	247	1886	247	1866	247	1884	247	1886	247	1925	254
Rob test 4 - Excluding Luxembourg	2302	246	2302	246	2267	246	2300	246	2302	246	2357	253
Rob test 5 - Only the USA	296	50	296	50	295	50	296	50	296	50	307	54
Rob test 6 - Only Japan	164	23	164	23	163	23	164	23	164	23	165	24
Rob test 7 - Only the EU-27	1698	142	1698	142	1666	142	1696	142	1698	142	1738	145
Rob test 8 - Only the G7	1287	184	1287	184	1279	184	1286	184	1287	184	1316	189
Rob test 9 - Only Manufacturing Sectors	571	50	571	50	569	50	571	50	571	50	595	52
Rob test 10 - Only Services Sectors	1668	189	1668	189	1633	189	1666	189	1668	189	1696	194
Rob test 11 - Only Agri & Extractive Sectors	110	9	110	9	110	9	110	9	110	9	114	9

Note: All numbers and calculations are done at the subsidiary level, as discussed in the paper.