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Abstract

This study empirically investigates the trade effects of the 2022 Russia–Ukraine conflict. Specifically, we examine the impact of multinational enterprises (MNEs) from Western countries (sanctioning countries) on exports to Russia from neutral countries (non-sanctioning countries). To do this, we examine exports from 32 neutral countries. As a result, we found that, on average, neutral countries significantly increased their exports to Russia after its invasion, but the increase in exports to Russia was smaller in neutral countries with a greater presence of MNEs from Western countries. Furthermore, exports to Russia even decreased from neutral countries with the highest presence of MNEs from Western countries. This result implies that even for countries that did not impose any export restrictions, the export restrictions taken by Western countries can affect those countries' exports to Russia.

Keywords: Economic sanctions, Trade, Russia, Ukraine
JEL classification: F15, F53

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Trade Effects of the Russia–Ukraine Conflict: Can Neutral Countries Really Fish in Troubled Waters?

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***Abstract*:** This study empirically investigates the trade effects of the 2022 Russia–Ukraine conflict. Specifically, we examine the impact of multinational enterprises (MNEs) from Western countries (sanctioning countries) on exports to Russia from neutral countries (non-sanctioning countries). To do this, we examine exports from 32 neutral countries. As a result, we found that, on average, neutral countries significantly increased their exports to Russia after its invasion, but the increase in exports to Russia was smaller in neutral countries with a greater presence of MNEs from Western countries. Furthermore, exports to Russia even decreased from neutral countries with the highest presence of MNEs from Western countries. This result implies that even for countries that did not impose any export restrictions, the export restrictions taken by Western countries can affect those countries' exports to Russia.

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1. Introduction

The Russian invasion of Ukraine in February 2022 was an additional source of negative economic shocks to the global economy during the COVID-19 pandemic. Since 2014, Russia and Ukraine have engaged in hostilities over the status of Crimea and the Donbas. The extent of the conflict escalated significantly after the full-scale Russian invasion of Ukraine in February 2022. After this conflict, many developed countries, including the United States (US), the European Union (EU), the United Kingdom (UK), Japan, Australia, and others (referred to in this paper as "Western counties"), imposed various sanctions against Russia. Sanctions range from financial to trade to other measures aimed at specific

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individuals associated with the Russian government. Western countries have also imposed similar sanctions on Belarus for its military assistance to Russia. These sanctions have decreased these countries' trade with Russia and Belarus.

On the other hand, other countries have not formally endorsed either side and have not sanctioned Russia (referred to in this paper as "neutral countries"). Following the start of the 2022 Russia-Ukraine conflict, these neutral countries have "fished in troubled waters," attempting to increase their exports to Russia and Belarus and replace the exports from Western countries. However, the presence of multinational enterprises (MNEs) from Western countries in neutral countries may decrease their exports with Russia and Belarus by following trade restrictions imposed in their home countries in order to avoid reputational risk. Extraterritorial export control regulations, especially US foreign direct product rules (FDPRs), also restrict exports by MNEs in neutral countries. In developing countries, the main players in trade tend to be MNEs. Therefore, if MNEs from Western countries account for a significant share of the economy, neutral countries may also decrease their exports to Russia and Belarus.[1]

Against this backdrop, we empirically investigate how the presence of MNEs from Western countries changes the effect of the 2022 Russia-Ukraine conflict on exports from neutral countries to Russia. To do this, we examine bilateral exports from neutral countries in manufacturing industries from 2020 to 2023. The presence of MNEs from Western countries is measured by using the share of their sales out of total production value in a neutral country. Then, we estimate a gravity equation with the interaction term of this share with a dummy variable that takes a value of one for exports to Russia in the years 2022 and 2023. We control for country pair, importer-year, and exporter-year fixed effects to account for many additional variables that affect international trade (e.g., the COVID-19 pandemic). Then, we estimate this gravity equation using the Poisson pseudo-maximum likelihood (PPML) method.

Our findings can be summarized as follows. First, we found that neutral countries significantly increased their exports to Russia after the Russian invasion of Ukraine. Second, consistent with our expectation above, the increase in exports is smaller in neutral countries with a higher sales share of MNEs from Western countries. This result is robust in that we obtain the same result even if we drop China or India as exporters, drop Western countries as importers, or control for other elements. Third, we also examine how the presence of MNEs from Western countries is associated with exports to Russian-friendly countries. Here we obtained mixed results. Neutral countries with a higher sales share of MNEs from Western countries have smaller exports to countries with a similar political stance to Russia, while exports to the Commonwealth of Independent States (CIS) are not associated with the

[1] For example, according to the exporter list database by the Ministry of Commerce in Thailand, Thailand was the third largest exporter of vehicles to Russia among neutral countries in 2021. Most of those exports were done by Japanese car makers in Thailand. However, their exports to Russia have completely stopped since 2022.

sales share. Thus, for those neutral countries, exports to CIS countries are different from exports to other Russia-friendly countries.

Our study is related to the literature on the trade effects of political conflicts or economic sanctions.[2] For example, Fuchs and Klann (2013), Heilmann (2016), Du et al. (2017), Li et al. (2021), and Luo et al. (2021) have investigated the trade effects of political disputes involving China. Recent research on the trade effects of economic sanctions has focused primarily on sanctions imposed on Iran around 2010 (e.g., Haidar, 2017; Felbermayr et al., 2020; Crozet et al., 2021; Larch et al., 2022) and Russia around 2014 (e.g., Crozet et al., 2020; 2021; Larch et al., 2024). Cheptea and Gaigné (2020) also investigated the effects of Russian retaliatory measures on the agri-food trade. The sanction instruments examined in these studies include export restrictions, import restrictions, asset freezes, and travel bans. Moreover, Fuhrmann (2008) and Afesorgbor (2019) examined the effect of restrictions on exports. The former found that democratic states received more dual-use exports from the US, whereas the latter examined global trade from 1962 to 2014 and showed no significant effects of export restrictions on trade.

Some studies have explored the trade effect of economic sanctions in the Russia–Ukraine conflict initiated in 2022. For instance, Borin et al. (2024) investigated this effect using the synthetic control method. Their data cover monthly exports using data on 80 to 150 countries from January 2020 through August 2022. They showed that both exports from sanctioning and non-sanctioning countries were considerably affected in the initial phase. In particular, exports from sanctioning countries were below 50% of the corresponding benchmark. Chupilkin et al. (2023) conducted regression analyses using the EU, UK, US, Turkey, and China export data between January 2017 and August 2022. They demonstrated that exports from the EU and the UK not only decreased to Russia but also increased to Armenia, Kazakhstan, and the Kyrgyz Republic. The latter result suggests the trade rerouting through these countries to Russia. Furthermore, these changes are larger for sanctioned goods.[3]

The paper closest to ours is Li et al. (2024). They investigate the aforementioned role of MNEs from Western countries at the firm-level. Namely, using transaction-level bill of lading data, they showed that firms in non-sanctioning countries significantly reduced exports of sanctioned products to Russia if their headquarters are located in sanctioning

[2] Morgan et al. (2023) is one of the recent survey papers in this literature.

[3] Some studies examine the effect of the 2022 Russia–Ukraine conflict on non-trade variables. For instance, Deng et al. (2022), Federle et al. (2022), and Huang and Lu (2022) have all investigated the war's effect on stock markets. Specifically, a number of studies examined the impact of a company's withdrawal from the Russian market on firm-level stock market values (Balyuk and Fedyk, 2023; Basnet et al., 2022; Berninger et al., 2023; Huang et al., 2022; Sonnenfeld et al., 2022; Tosun and Eshraghi, 2022). Meanwhile, Itskhoki and Mukhin (2022) and Lorenzoni and Wrning (2023) discussed the effect of the conflict on exchange rates. Astrov et al. (2022) conducted a more comprehensive discussion of economic impacts. Lastly, Borin et al. (2023) quantified the welfare cost of decoupling from Russia and demonstrated a welfare loss in Russia of 4.8%.

countries. Thus, they examined the same issue by using more detailed data in a few countries, namely, India, Mexico, and Vietnam. Our paper complements their study. While we use country-level data, our study includes 32 neutral counties, strengthening the external validity of this result. In addition, Li et al. (2024) showed that exports by sanctioning MNEs to CIS countries increased after the start of the war, while we did not find a significant association between exports to CIS countries and the sales share of MNEs from Western countries. Thus, the increase in exports to CIS countries may not be a robust result.

The rest of this study is organized as follows. Section 2 provides an overview of the economic sanctions against Russia and Belarus. Section 3 presents our empirical framework to examine the impact of those sanctions on trade, and Section 4 reports the estimation results. Section 5 concludes the paper.

2. Background

This section briefly explains the trade-related sanctions imposed by Western countries on Russia and Belarus. In particular, we focus on regulations on exports, which may affect export behaviors by Western MNEs in neutral countries. The following paragraphs discuss the major sanctions and provide a timeline of when they were imposed.[4]

The first series of sanctions was introduced immediately after Russia's military invasion of Ukraine on February 24, 2022. The US prohibited the exportation of semiconductors, luxury goods, and construction machinery to Russia. FDPRs were extended to Russia, requiring foreign companies using US-origin technology to obtain US government licenses before exporting high-tech products to Russia. Additionally, the UK prohibited exporting manufactured goods with potential military applications to Russia, including telecommunications equipment and aviation-related components. On February 25, 2022, the EU banned the export of dual-use goods such as semiconductors and other high-tech and luxury goods to Russia. Concurrently, Japan imposed export restrictions on Russia for dual-use products, including semiconductors, truck diesel engines, communications equipment, and 3D printers.

From March 2022 to May 2022, Western countries expanded the coverage of the Entity List (EL), which is a list of parties of concern. On March 2, 2022, the US imposed sanctions on Belarus. Specifically, the US extended the same FDPRs that had been applied to Russia on February 24, 2022, in response to Belarus's enabling of Russia's invasion of Ukraine. On April 1, 2022, the US added 120 firms from Russia and Belarus allegedly supporting the invasion of Ukraine to the EL. On April 6, 2022, the UK banned exports of oil refining

[4] A detailed and comprehensive information of Western sanctions imposed on Russia and Belarus is available from "Russia's war on Ukraine: A sanctions timeline" by Peterson Institute for International Economics. See the following website:
https://www.piie.com/blogs/realtime-economics/russias-war-ukraine-sanctions-timeline.

equipment and catalysts to Russia. The US extended the license requirements for all categories of items on the Commerce Control List to Russia and Belarus on April 9, 2022. By this measure, the US government has thoroughly covered the exports of nearly all sensitive dual-use goods. On May 9, 2022, the UK announced an export ban on chemicals, plastics, rubber, and machinery to Russia and Belarus.

Meanwhile, the G7 nations imposed additional sanctions on Russia and Belarus on June 27, including restrictions on Russia's access to critical industrial inputs. The US further strengthened export restrictions on industrial and commercial items to Russia and Belarus on September 15, 2022. The measure included expanding the scope of the Russian industry sector under sanctions to add items potentially useful for the production of Russian chemical and biological weapons and items needed for advanced manufacturing in Russia. The US also imposed controls on hardware, software, and technology related to quantum computing. The US expanded the targets under the FDPR to entities outside Russia and Belarus that supply Russian entities. Meanwhile, on October 11, 2022, New Zealand implemented new trade restrictions on the exports of luxury goods to Russia. On December 21, 2022, the US applied export controls on the Russia-based private military company Wagner.

On February 24, 2023, one year after Russia invaded Ukraine, the leaders of the G7 countries held an online meeting and reaffirmed their commitment to strengthening coordinated sanctions against Russia. The main enhancements were to include more entities and more industries on the sanction list. On the same day, the US strengthened sanctions on Russia. The measures included restricting exports to Russia by adding approximately 90 Russian and third-country companies, including in China, to the EL to prevent backfill activities supporting Russia's defense sector.

On February 25, 2023, the EU member countries imposed further export bans on electronics, specialized vehicles, machine parts, and spare parts for trucks and jet engines for Russia. The list of restricted items was expanded to those contributing to the technological enhancement of Russia's defense sector and dual-use goods. Next, 96 entities that support the Russian military and 7 Iranian entities that provide drones to Russia were included in the list of restricted entities. On June 23, 2023, the EU member countries strengthened sanctions against Russia, including the prohibition of transit through Russian territory of additional goods and technology that can contribute to Russia's military and technological enhancement. It also added more entities, including entities from third countries, to tighten export restrictions on dual-use goods.

These restrictions on exports are expected to decrease exports from Western countries to Russia (and Belarus). Furthermore, MNEs from Western countries in neutral countries may change their exports to Russia. First, the above-mentioned restrictions are also applied to re-exports of restricted items from neutral countries to Russia. Second, MNEs producing high-tech goods are subject to the FDPR imposed by the US against Russia. The 37 Western countries were exempted from its application on April 8, 2022, because these countries have

their own strict export control rules to Russia and Belarus, comparable to those in the US. Third, even if overseas affiliates of MNEs from Western countries do not engage in re-exports of restricted items, they must follow their home country's regulations because they can suffer significant social penalties if violations are disclosed.[5] Fourth, violating regulations in neutral countries will lower MNEs' reputation and affect their business in Western countries.[6] In sum, MNEs from Western countries in neutral countries may decrease their exports to Russia.[7]

3. Empirical Framework

This section presents the empirical framework to investigate the impact of MNEs from Western countries on exports to Russia from neutral countries to Russia. In our empirical analysis, the Western countries are defined as countries or economies included in the Russia-unfriendly list. In addition to 27 EU member countries, the following 21 countries or economies are included: Albania, Andorra, Australia, the Bahama, Canada, Iceland, Japan, Republic of Korea, Liechtenstein, Monaco, Macedonia, Micronesia, Montenegro, Norway, New Zealand, Singapore, San Marino, Switzerland, Taiwan, Ukraine, the UK, and the US. Then, we examine exports to 220 countries from 2020 to 2023 from 32 countries, which are not included in the Russia-unfriendly list and are called "neutral countries": Argentina, Armenia, Bahrain, Bosnia and Herzegovina, Brazil, Chile, China, Columbia, Costa Rica, Egypt, India, Indonesia, Israel, Jordan, Kazakhstan, Kenya, Malawi, Malaysia, Mexico, Moldova, Morocco, Pakistan, Peru, the Philippines, Saudi Arabia, South Africa, Sri Lanka, Tanzania, Thailand, Turkey, Vietnam, and Zimbabwe. To simplify our analysis, we exclude trade with Belarus or Ukraine. Also, Hong Kong is integrated into China. Although all products are not necessarily subject to export restrictions, we examine exports in the whole manufacturing industry for consistency with the FDI variable, which is explained below. We obtain the trade data from the Global Trade Atlas managed by S&P Global.

We begin with the estimation of a basic equation, which is specified as follows:

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[5] As for the case of Japan, see the following statement by the Minister of Economy, Trade, and Industry: https://www.cistec.or.jp/export/keizaishou_tsutatu/2-060303dantai.pdf.

[6] See, for example, https://www.jetro.go.jp/ext_images/en/reports/survey/pdf/2023/russia2023.pdf.

[7] Another cause of reduced trade is exclusion of Russia's banks and firms from the Society for Worldwide Interbank Financial Telecommunication (SWIFT) system. SWIFT connects 11,000 banks and institutions in over 200 countries to facilitate the smooth and rapid transfer of funds across borders. The US, the EU, the UK, Canada, France, Germany, and Italy announced a joint statement on February 26, 2022, to remove some Russian banks from the SWIFT system. Similarly, Australia, Japan, and South Korea announced that selected Russian banks will be removed from the SWIFT system by the end of February 2022. Due to the exclusion of many Russian banks from the SWIFT system, it will be difficult for MNEs from Western countries to receive trade financing from banks in their home countries when trading with Russia.

$$Export_{ijt} = \exp\{\alpha_1 \cdot RUS_j \cdot D2022_t + \delta_{it} + \delta_{ij}\} \cdot \epsilon_{ijt}. \quad (1)$$

$Export_{ijt}$ represents the manufacturing exports of country i to country j at year t. RUS_j takes a value of 1 if importing country j is Russia, whereas $D2022_t$ does so if year t is 2022 or 2023. Thus, the coefficient for $RUS_j \cdot D2022_t$ (i.e., α_1) indicates how the neutral countries change their exports to Russia after its invasion of Ukraine. We control for two kinds of fixed effects. One is exporter-year fixed effects, δ_{it}, which control for exporters' supply capacity and multilateral resistance effects, in addition to the supply effect of the COVID-19 pandemic. The other is exporter-importer fixed effects, δ_{ij}, which control for standard gravity variables, including linguistic similarity and geographical distance. Lastly, ϵ_{ijt} is the error term. We estimate this equation using the PPML method.

Next, we examine the role of MNEs from Western countries by estimating the following equation:

$$Export_{ijt} = \exp\{\alpha_1 \cdot RUS_j \cdot D2022_t + \alpha_2 \cdot FDI_i \cdot RUS_j \cdot D2022_t + \delta_{it} + \delta_{ij}\} \cdot \epsilon_{ijt}. \quad (2)$$

FDI_i is a ratio of sales by manufacturing MNEs from Western countries to total manufacturing production in country i. Sales data are obtained from the Multinational Revenue, Employment, and Investment Database (MREID), developed by Ahmad et al. (2023). Production data are drawn from INDSTAT, developed by the United Nations Industrial Development Organization. To avoid simultaneity bias, we measure this FDI variable using the data in the pre-sample period. Furthermore, to reduce the effect of idiosyncratic shocks, we use its average between 2018 and 2019. A higher FDI ratio indicates a larger sales share for MNEs from Western countries within total manufacturing. Thus, the coefficient for $FDI_i \cdot RUS_j \cdot D2022_t$ (i.e., α_2) indicates how neutral countries with a greater presence of MNEs from Western countries change their exports to Russia after its invasion to Ukraine. Due to the data limitation in the FDI variable, we cannot disaggregate manufacturing industries.

It is worth comparing the empirical model specified in equation (2) with the one in Li et al. (2024). The latter study conducted their analysis at the firm level, which enables them to examine directly how MNEs from Western countries have changed their exports to Russia. On the other hand, our framework does not directly capture Western MNEs' exports. We reasonably *assume* that the sales share of MNEs from Western countries is positively associated with their export share in the pre-invasion period. Nevertheless, while our study covers the 32 neutral countries, only three countries are examined in Li et al. (2024). In short, our framework is rougher but is useful in examining the external validity of findings in Li et al. (2024).

After estimating the basic equation above, we estimate some extended equations. First, we introduce importer-year fixed effects (δ_{jt}) to further control for time-variant importer-specific effects as follows:

$$Export_{ijt} = \exp\{\alpha_2 \cdot FDI_i \cdot RUS_j \cdot D2022_t + \delta_{it} + \delta_{jt} + \delta_{ij}\} \cdot \epsilon_{ijt}. \quad (3)$$

This type of fixed effect controls for importers' demand sizes and multilateral resistance effects. Country-level demand changes in Russia after its invasion of Ukraine are also included here. Due to the perfect multicollinearity, we drop $RUS_j \cdot D2022_t$ in this specification.

Second, we add two more variables to equation (3) as follows:

$$Export_{ijt} = \exp\{\alpha_2 \cdot FDI_i \cdot RUS_j \cdot D2022_t + \alpha_3 \cdot Agree_i \cdot RUS_j \cdot D2022_t + \alpha_4 \cdot Air_{ij} \cdot D2022_t + \delta_{it} + \delta_{jt} + \delta_{ij}\} \cdot \epsilon_{ijt}. \quad (4)$$

The neutral countries are not homogenous in terms of their political stance toward Russia. To control for this heterogeneity, we introduce an interaction term with exporter's political friendship with Russia ($Agree_i$), which is measured by the similarities in state preferences inferred from voting behavior in the United Nations General Assembly. Like the FDI variable, we use the average of this similarity index between 2018 and 2019. We obtain this index from the updated version of Bailey et al. (2017).

Air_{ij} takes the value of 1 if the air route over Russian airspace originally connects trading countries i and j. With the interaction term between this variable and the year dummy, we examine the effects of blockages of flight corridors over Russian airspace. More specifically, *Air* takes the value of 1 if the great circle route between the two countries' capitals clearly passes through Russian airspace. We created this binary variable using Geographic Information System software. The great circle routes between the capital cities of all possible country pairs were plotted on a map, and those routes were visually inspected. Although our primary objective was to identify country pairs with obstructed air transportation, the country pairs using the Trans-Eurasia Logistics railway connecting China and Europe via Russia were also included.

Last, following Chupilkin et al. (2023) and Li et al. (2024), we also investigate the possibility of trade rerouting to Russia through its friendly countries. In particular, like Li et al. (2024), we examine the role of MNEs from Western countries in this trade circumvention. In this examination, we drop exports to Russia from the study observations. We explore two kinds of Russia-friendly countries in the following equations:

$$Export_{ijt} = \exp\{\beta_1 \cdot FDI_i \cdot Agree_j \cdot D2022_t + \beta_2 \cdot Air_{ij} \cdot D2022_t + \delta_{it} + \delta_{jt} + \delta_{ij}\} \cdot \epsilon_{ijt}. \quad (5)$$

In equation (5), like equation (4), we use importers' voting similarities with Russia ($Agree_j$). Then, we examine the interaction of this variable with the FDI variable and the year dummy, for which the coefficient indicates how neutral countries with a greater presence of MNEs from Western countries change their exports to Russia-friendly countries after the Russian

invasion of Ukraine.

$$Export_{ijt} = \exp\{\beta_3 \cdot FDI_i \cdot CIS_j \cdot D2022_t + \beta_2 \cdot Air_{ij} \cdot D2022_t + \delta_{it} + \delta_{jt} + \delta_{ij}\} \cdot \epsilon_{ijt}. \quad (6)$$

In equation (5), following Li et al. (2024), we define CIS countries as Russia-friendly countries. CIS_j takes a value of one if importer j is a CIS country (Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, and Uzbekistan). We also control for the effects of blockages of flight corridors over Russian airspace.

4. Empirical Results

Before reporting our estimates, we review our variables. Figure 1 depicts our FDI variable, that is, the sales share of MNEs from Western countries. Southeast Asian countries have relatively high shares. Thailand has the highest share, followed by the Philippines, Vietnam, and Malaysia. In contrast, Central and Latin American countries seem to have relatively low shares. Figure 2 shows the changes in average exports to Russia in neutral countries and Western countries. Both groups experienced a decrease in exports after the Russian invasion, but exports from Western countries showed a greater decrease than those from neutral countries. Figure 3 focuses on changes in average exports to Russia from neutral countries. We classify them into two groups according to the magnitude of the FDI variable, namely, greater or lower than the median. While exports from neutral countries with a lower FDI share do not change much, those from neutral countries with a higher FDI share experience a greater decrease.

=== Figures 1-3 ===

We report our estimation results by the PPML method. The standard errors are clustered by country pairs. Column (I) in Table 1 displays the estimation results of equation (1). The coefficient for $RUS_j \cdot D2022_t$ is significantly positive, indicating that on average, neutral countries significantly increased their exports to Russia after its invasion. In column (II), we show the estimation results of equation (2). $RUS_j \cdot D2022_t$ again has a significantly positive coefficient. The coefficient for $FDI_i \cdot RUS_j \cdot D2022_t$ is significantly negative. For observations where $RUS_j \cdot D2022_t = 1$, the mean, median, and maximum of $FDI_i \cdot RUS_j \cdot D2022_t$ are 0.085, 0.050, and 0.421, respectively. Thus, the resulting impacts (i.e., $\hat{\alpha}_1 \cdot RUS_j \cdot D2022_t + \hat{\alpha}_2 \cdot FDI_i \cdot RUS_j \cdot D2022_t$) are 0.287, 0.408, and -0.848, respectively. In sum, these results imply that the increase in exports to Russia is smaller in neutral countries with a greater presence of MNEs from Western countries. Exports to Russia even decrease overall in those neutral countries with a particularly high presence of MNEs from Western countries.

=== Table 1 ===

Next, we estimate equation (3), which controls for importer-year fixed effects. The results are shown in column (III). We again obtain a significantly negative coefficient for the triple interaction term. We conduct three kinds of robustness checks. First, due to their special relationships with Russia (e.g., military support or common confrontation with the US), China and India may behave differently than other neutral countries. Thus, in column (IV), we exclude exports from China and India but still obtain a significantly negative coefficient. Second, in neutral countries, exports to other neutral countries may be qualitatively different from exports to Western countries. In column (V), we exclude exports to Western countries. The result is again significantly negative. Third, the effect of the Russia-Ukraine conflict would be smaller in January and February 2022 than later on. In other words, the year 2022 contains both before and after the Russian full invasion of Ukraine. In columns (I)-(III) in Table 2, therefore, we drop observations in 2022 but still obtain significantly negative coefficients.

=== Table 2 ===

The estimation results of equation (4) are shown in columns (IV)-(VI). While the coefficients for $FDI_i \cdot RUS_j \cdot D2022_t$ are again significantly negative, other two variables have insignificant results. The insignificant result in $Agree_i \cdot RUS_j \cdot D2022_t$ implies that the political distance with Russia did not affect exports to Russia after the Russian invasion. Russia-friendly countries may hesitate to increase their trade with Russia to avoid reputational risks. Also, closed flight corridors over Russian airspace did not have significant effects on trade.

Last, we estimate equations (5) and (6). The results are shown in Table 3. In columns (I)-(III), the coefficients for $FDI_i \cdot Agree_j \cdot D2022_t$ are estimated to be significantly negative. Thus, neutral countries with a greater presence of MNEs from Western countries decreased their exports to Russia-friendly countries after the Russian invasion of Ukraine. This result may indicate that MNEs from Western countries engaged less in trade rerouting to Russia through its friendly countries than domestic firms or other MNEs in neutral countries. Columns (IV)-(VI) show that $FDI_i \cdot CIS_j \cdot D2022_t$ have insignificant coefficients. These results are not consistent with the one in Li et al. (2024). In India, Mexico, and Vietnam, Li et al. (2024) found a significant increase in exports to CIS counties by MNEs from Western countries, which was greater than the increase in exports by domestic firms. Although our analysis is based on more aggregated data, the greater increase in exports to Russia-friendly countries by MNEs from Western countries may not necessarily be found in other neutral countries.[8]

[8] In equations (5) and (6), we also introduce the interaction term of $FDI_i \cdot Agree_j \cdot D2022_t$ or $FDI_i \cdot CIS_j \cdot$

=== Table 3 ===

6. Concluding Remarks

This study empirically investigated the impact of MNEs from Western countries on exports from neutral countries to Russia during the Russia-Ukraine conflict. To do this, we examined exports from 32 neutral countries. As a result, we found that, on average, neutral countries significantly increased their exports to Russia after its invasion, but the increase in exports to Russia was smaller in neutral countries with a greater presence of MNEs from Western countries. Furthermore, exports to Russia even decreased overall for neutral countries with a particularly high presence of MNEs from Western countries. These results, which are based on exports from 32 countries, reinforce the external validity of similar findings in Li et al. (2024) based on a more detailed analysis of three countries. These results indicate that export restrictions taken by Western countries could affect exports to Russia even for countries that did not impose any export restrictions. However, relative to Li et al. (2024), we found different results concerning exports to other neutral countries. Thus, a detailed analysis of other neutral countries is necessary to further understand their role in trade.

$D2022_t$ with a dummy variable taking a value of one if exporter is either India, Mexico, or Vietnam. However, the coefficient for this interaction term was insignificantly estimated. Namely, we could not find the differences between the three countries and other neutral countries.

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Table 1. Baseline Estimation Results

	(I)	(II)	(III)	(IV)	(V)
	All	All	All	CN&IN	West
RUS * D2022	0.254***	0.575***			
	[0.058]	[0.152]			
FDI * RUS * D2022		-3.378**	-3.512**	-3.441**	-3.283*
		[1.647]	[1.703]	[1.653]	[1.685]
Exporter-year FE	X	X	X	X	X
Importer-year FE			X	X	X
Country pair FE	X	X	X	X	X
Number of obs.	22,960	22,960	22,960	21,240	18,320
Pseudo R-squared	0.998	0.998	0.999	0.997	0.998

Notes: Estimation results were obtained using the PPML method. The dependent variable is manufacturing exports defined at the country pair-year level. ***, **, and * denote statistical significance at levels of 1%, 5%, and 10%, respectively. Standard errors clustered by country pairs are shown in brackets. In column (IV), we exclude exports from China and India. In column (V), we exclude imports from Western countries.

Table 2. Estimation Results with Robustness Checks/Exclusions

	(I) All	(II) CN&IN	(III) West	(IV) All	(V) CN&IN	(VI) West
FDI * RUS * D2022	-3.356*	-3.311*	-3.245*	-3.602**	-3.954**	-3.282*
	[1.815]	[1.782]	[1.843]	[1.826]	[1.817]	[1.735]
Agree * RUS * D2022				0.445	2.607	-0.008
				[1.263]	[1.643]	[1.224]
Air * D2022				-0.004	0.023	0.049
				[0.040]	[0.055]	[0.046]
Excluding 2022	X	X	X			
Exporter-year FE	X	X	X	X	X	X
Importer-year FE	X	X	X	X	X	X
Country pair FE	X	X	X	X	X	X
Number of obs.	16,900	15,610	13,429	22,960	21,240	18,320
Pseudo R-squared	0.999	0.997	0.998	0.999	0.997	0.998

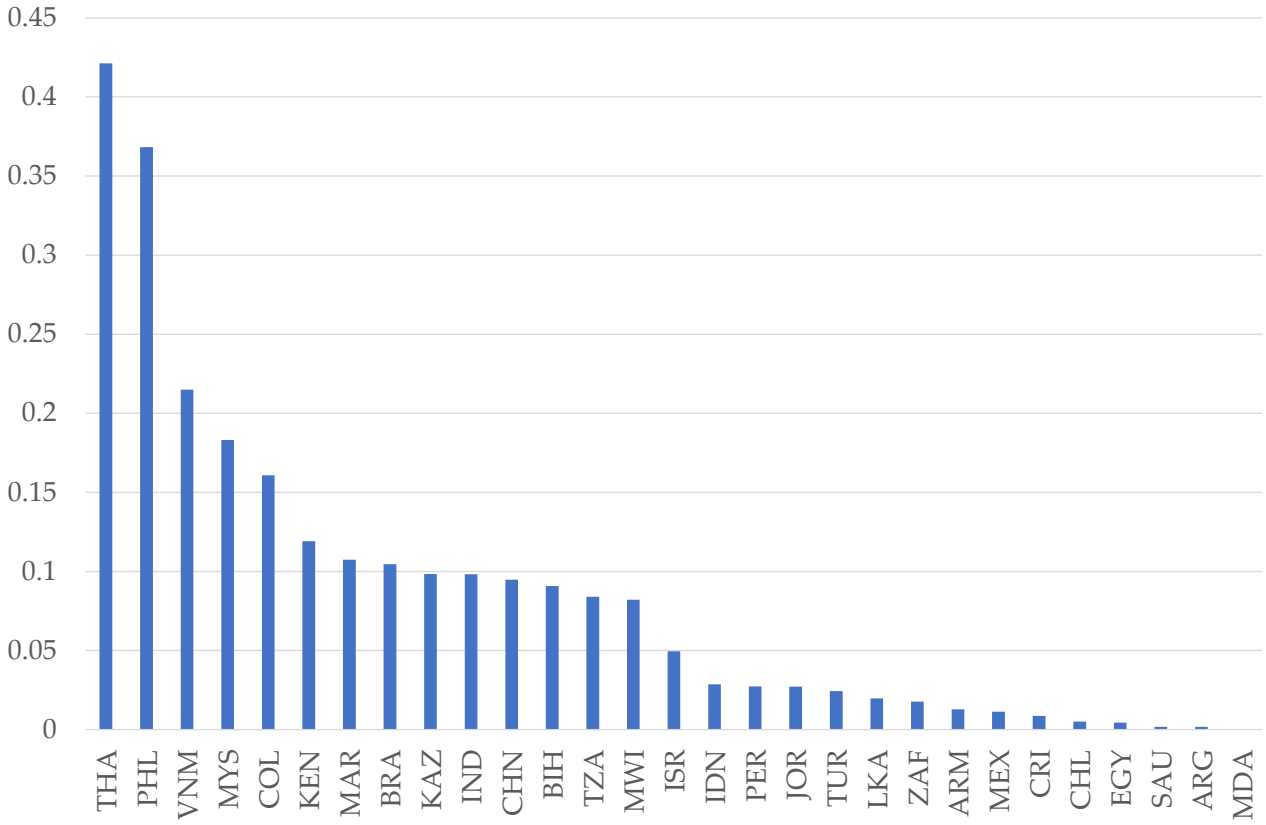
Notes: Estimation results were obtained using the PPML method. The dependent variable is manufacturing exports defined at the country pair-year level. ***, **, and * denote statistical significance at levels of 1%, 5%, and 10%, respectively. Standard errors clustered by country pairs are shown in brackets. In columns (II) and (V), we exclude exports from China and India. In columns (III) and (VI), we exclude imports from Western countries. In columns (I)-(III), we exclude the year 2022.

Table 3. Estimation Results for Exports to Russia Friendly Countries

	(I) All	(II) CN&IN	(III) West	(IV) All	(V) CN&IN	(VI) West
Importer's Agree * FDI * D2022	-1.262***	-1.101***	-2.326**			
	[0.360]	[0.364]	[1.182]			
CIS importers * FDI * D2022				0.947	-0.24	0.605
				[1.245]	[0.878]	[1.118]
Air * D2022	-0.025	-0.016	0.037	-0.002	0.025	0.045
	[0.038]	[0.053]	[0.043]	[0.040]	[0.055]	[0.045]
Exporter-year FE	X	X	X	X	X	X
Importer-year FE	X	X	X	X	X	X
Country pair FE	X	X	X	X	X	X
Number of obs.	19,665	18,097	15,546	22,789	21,077	18,149
Pseudo R-squared	0.999	0.998	0.998	0.999	0.997	0.998

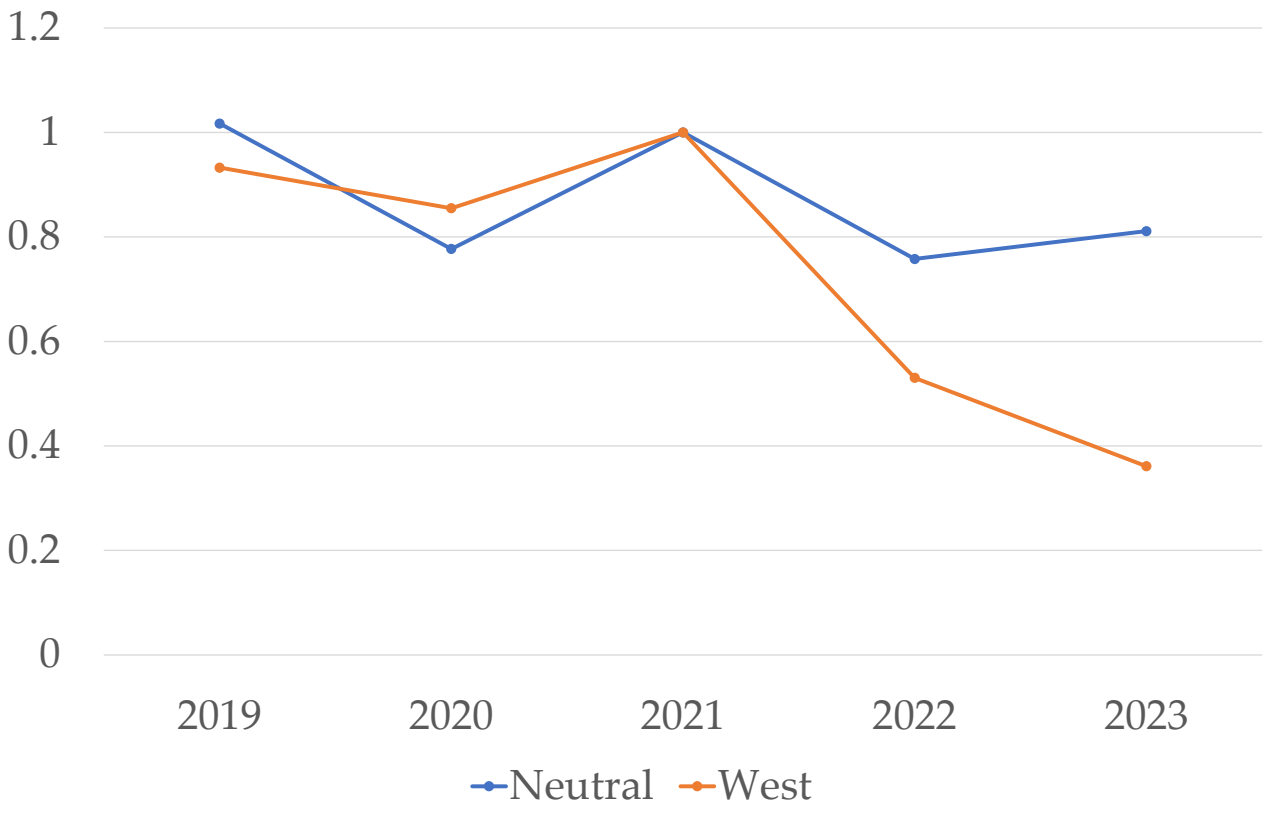
Notes: Estimation results were obtained using the PPML method. The dependent variable is manufacturing exports defined at the country pair-year level. ***, **, and * denote statistical significance at levels of 1%, 5%, and 10%, respectively. Standard errors clustered by country pairs are shown in brackets. In columns (II) and (V), we exclude exports from China and India. In columns (III) and (VI), we exclude imports from Western countries.

Figure 1. Sales Share of MNEs from Western Countries



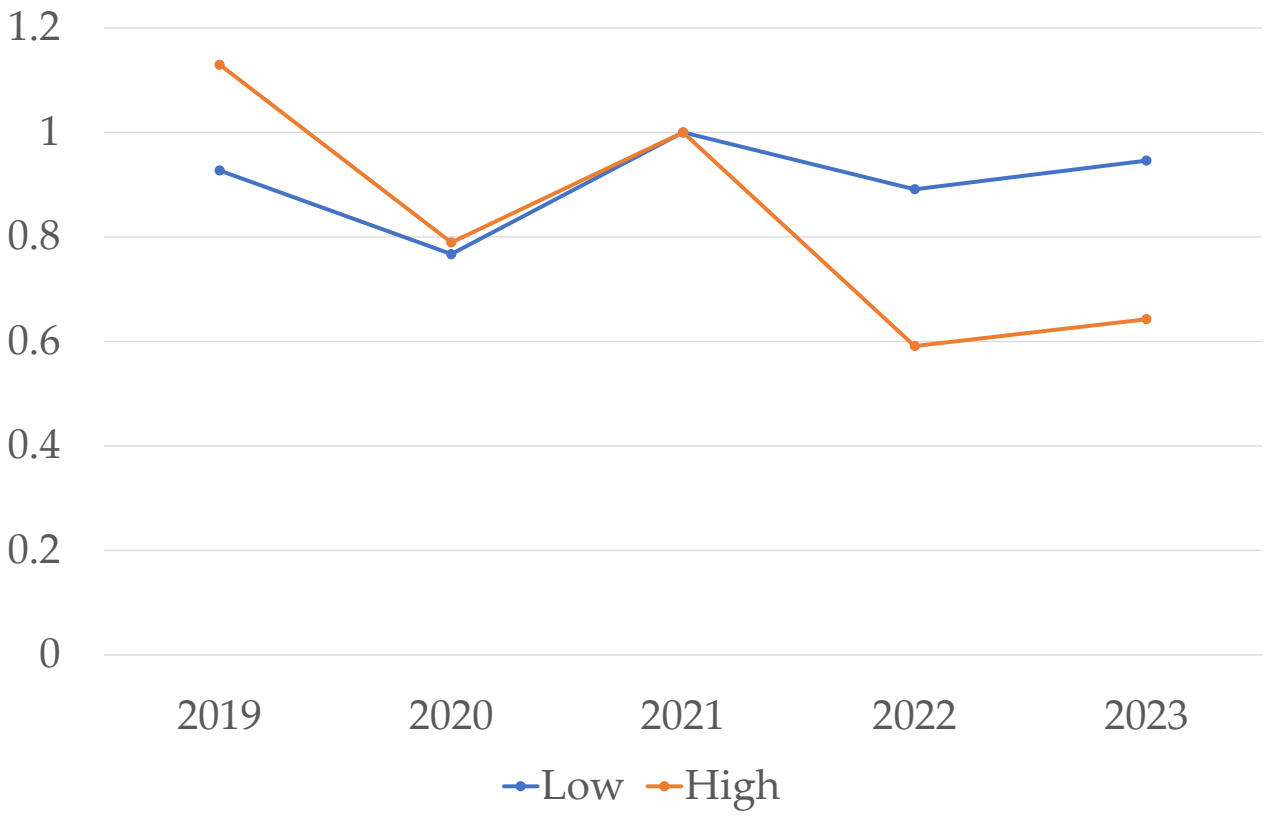
Sources: MREID (Ahmad et al., 2023) and INDSTAT (UNIDO)

Figure 2. Average Exports to Russia (2021 = 1)



Source: Global Trade Atlas.

Figure 3. Average Exports from Neutral Countries to Russia (2021 = 1)



Source: Global Trade Atlas.

Note: We classify neutral countries into two groups according to the magnitude of the FDI variable, that is, greater or lower than its median.