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Sanction Busting Within and Outside Regional Integration

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Abstract The trade balance of Russia with its top 20 trade partners has increased over the last few years till 2022 with few exceptions such as the United States and the United Kingdom. Even the Russian trade deficit with Germany till 2021 has turned to trade surplus in 2022. However, as a result of the strict sanctions imposed on certain trade products by European Union (EU) nations and the US, the total import values of Russia declined from $266 billion in 2021 to $199 billion in 2022. To explain if third countries, including Eurasian Economic Union (EAEU) nations, aid Russia by means of sanctions-busting, we offer several empirical tests. In this paper, we use annual cross-sectional data for 22,648 products exported to Russia along with tariff rates imposed on them in 2022. We first notice that even though the number of sanctioned exports is three times lower than that of non-sanctioned exports, the total import value from sanctioned exports is predicted to be larger than that from non-sanctioned exports on average by 0.36 percentage point. Second, the Russian import values from both EU and Rest of the World (ROW) exports are significantly greater than those from EAEU nations. Last but not least, EAEU nations, which are Russia's partners within the union, and EU nations, are more susceptible to activities such as sanction-busting compared to other third countries.

Keywords: sanction-busting, trade sanctions, Eurasian Economic Union, European Union

JEL Classifications: F13, F51, F53

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I. Introduction

The Russian invasion of Ukraine not only redefined the geopolitical landscape of Eurasia but also had profound implications on global politics and economics. Since the beginning of 2022, the world has watched with rapt attention as comprehensive sanctions were rolled out

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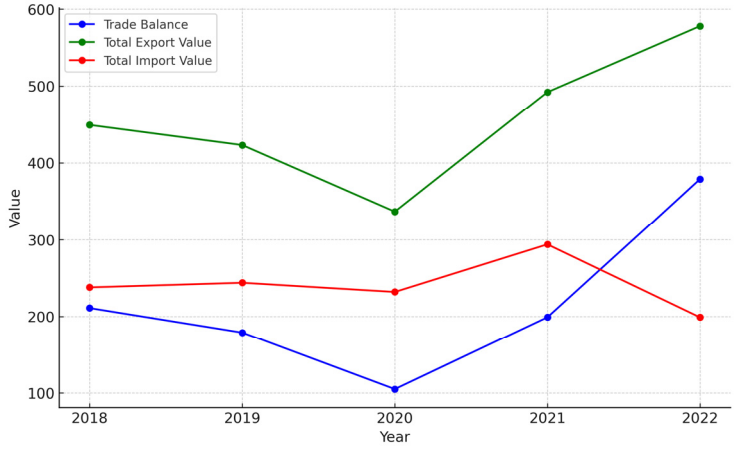
against Russia. Yet, in a twist of economic resilience, the Russian economy continued its growth trajectory. Sanctions have proven most effective if imposed by international institutions, the targets are partners rather than competitors, and if they inflict significant economic costs (Peksen, 2019). Russia as a member of the UN Security Council, a country with abundant resources and a rival of the collective west was able to maintain economic growth.

The primary focus of sanctions being electronic equipment, machinery, and other dual-use products intended to weaken Russia's advanced weapons production and military capacity. An analysis of 2022's trade data showed a decline in Russian imports of such items (Borin et al., 2023). However, Russia has found ways to partially substitute imports of the sanctioned goods. Herein lies the concept 'sanction busting' a term frequently discussed within the literature on sanction effectiveness.

Before further discussing the issue of sanction effectiveness it is useful to visually analyze the annual trade of Russia in the Figure 1 below. The provided graph presents a time series dataset depicting Russian total exports, total imports, and trade balance from 2018 to 2022 in billions of U.S. dollars. During the early phase of the COVID-19 pandemic, there was a decline in the trade balance, which subsequently rebounded. Upon sanctions imposed in 2022, the increase in export values is not as sharp as was in 2021. On the other hand, the direction of import values within 2022 is downward. The first impression is that one may say that anti-Russian sanctions worked. Thus, the trade balance improvement observed in 2022 can be attributed to an upsurge in total export values and a reduction in total import values. This outcome aligns with the conclusions drawn in Caruso (2003), suggesting that import sanctions may have had a more significant impact than export sanctions. This may indicate that policymakers

Figure 1. Russian annual trade (in billion USD)



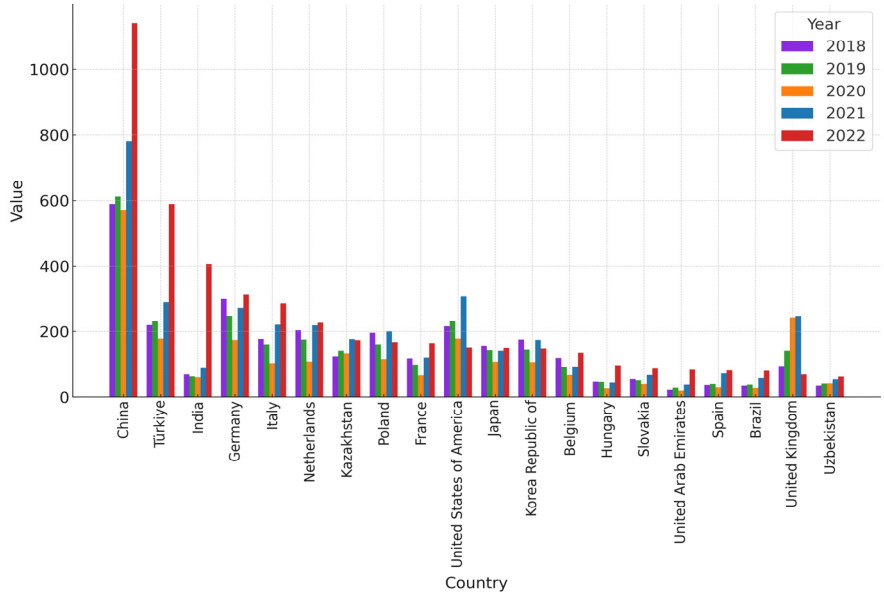
Source: Compiled by authors using the data from the Trade MAP.

should consider the potential effectiveness of import sanctions when formulating international trade and diplomatic strategies, especially during periods of economic and geopolitical challenges.

Sanction busting can manifest at both state and firm levels in third countries and at the firm level in the sanction-initiating states (Early, 2015). There are instances where companies from the states imposing sanctions leverage third-country distributors to navigate around these restrictions (Crozet et al., 2021; Morgan & Bapat, 2003). Similarly, third-country firms can misrepresent their dealings to compliant companies and subsequently re-export prohibited items to the target nations (Early, 2015). There are also arguments for third country state involvement in sanction-busting due to political reasons (Bove et al., 2023; Early, 2015; Felbermayr et al., 2021; Morgan et al; 2023).

The imposition of comprehensive sanctions on Russia Federation in 2022 and redirection of Russian trade and investment flows toward third non-sanctioned states, especially given its' primary role in Eurasian Economic Union and its increased ties with China and India, serve as an intriguing case to analysis using the concept of sanction busting. The latter is supported by the fact that highly populated India and China experienced a surge in imports of Russian oil in 2022 (Morgan et al., 2023). The close ties of Russia with China and India can also be confirmed by a sharp increase in Russian exported values to these countries in Figure 2 below. Moreover, China and India were the top two importers of Iranian oil in 2018 after the re-imposed US sanctions on Iran (Pelzman, 2020).

Figure 2. List of importing markets for goods exported by the Russian federation (in billion USD)

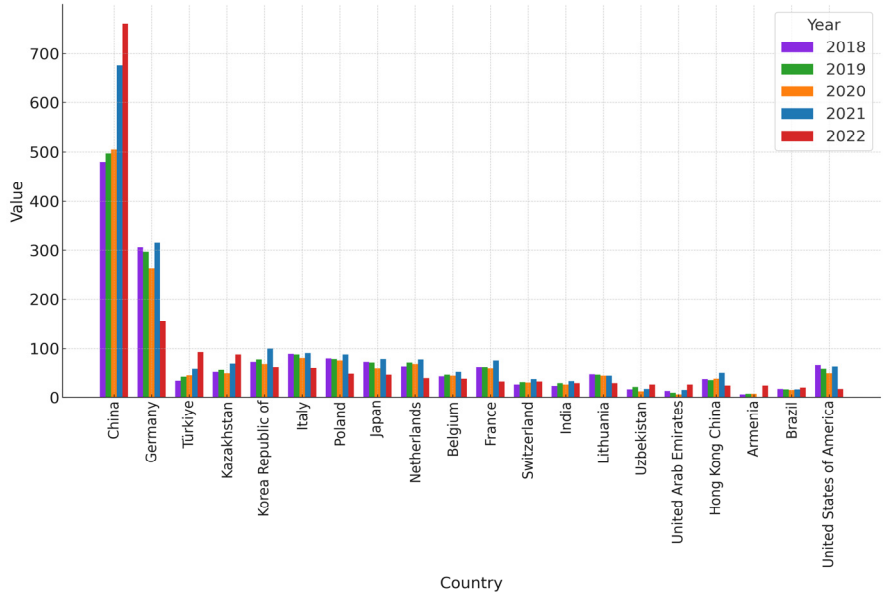


Source: Compiled by authors using the data from the Trade MAP.

Earlier studies mostly focused on the strategic interaction between targets and senders of sanctions (Slavov, 2007), the roles of allies and partners of senders in enforcement of sanctions (Early, 2012) or the possibility of Preferential Trade Agreements (PTAs) being signed with target states after sanctions to benefit from sanction busting (Su, 2021). Surprisingly, even according to the most recent study by Morgan et al. (2023), the academic literature on the impact of sanctions on third countries is scarce despite the extensive examination of it by policymakers and in the media. Summarizing the existing empirical works in this direction, they identified two distinct and opposing channels through which sanctions may affect third countries. The ambiguous impact of sanctions on third countries was also confirmed by Slavov (2007).

To identify the response of Russia's trading partners to sanctions, we also present the following two figures below. Despite the fact that Russia primarily engages in imports from China and exports to China, the trading partner with the largest trade balance value has remained to be Turkiye. Notably, in 2022, these top three trading partners are all from a group of neutral countries, neither part of the EU nor the EAEU. This indicates that in the short term, there is a stronger incentive for private firms or government officials from these neutral countries to benefit from evading sanctions rather than participating in multilateral sanctions. Although Germany has been the second-largest exporter to Russia, following China, over the past five years, export values almost halved in 2022 (See Figure 3). This led the Russian trade deficit with Germany to turn into a trade surplus in 2022 (See Figure 4). Moreover, the export cut by

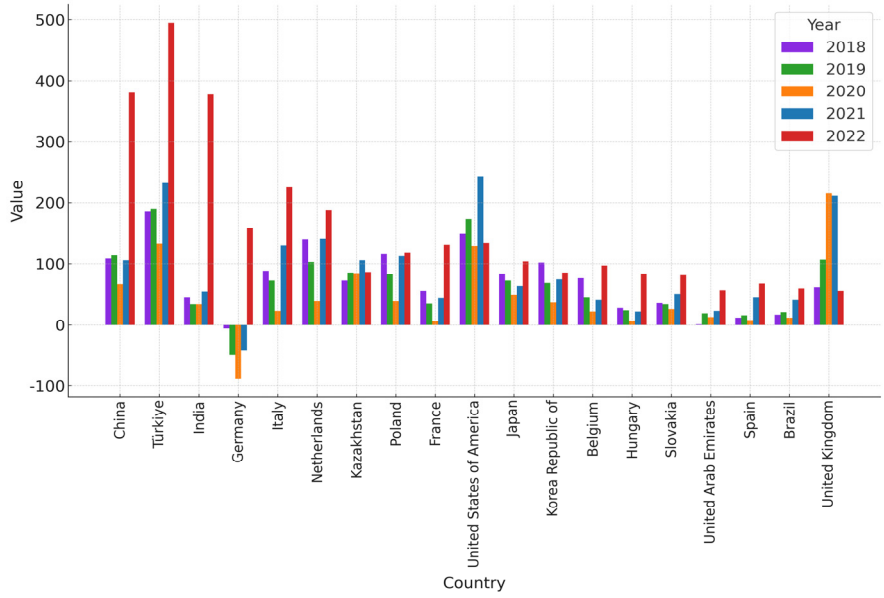
Figure 3. List of exporting markets for goods imported by the Russian federation



Source: Compiled by authors using the data from the Trade MAP.

EU nations to Russia is also observed by Chupilkin et al. (2023) using the monthly data in 2022.

Figure 4. List of partner markets for goods imported by the Russian federation



Source: Compiled by authors using the data from the Trade MAP.

This article seeks to contribute to sanction busting literature by examining Russia's imports of sanctioned products to identify potential sanction-busting activities originating from various countries by distinguishing among distinct groups: (1) sanction senders (EU), (2) neutral third countries (rest of the world countries), and (3) third countries that are partners with the target state in regional organization (EAEU). Moreover, our work differs from the existing empirical studies in that we implement cross-sectional data rather than panel data for at least two reasons. First, the available data for our research from Trade Map source is published annually.

Second, the latest year for all the trade data in the Trade Map is 2022. Hence, in that sense our model examines the "short-term" impact of sanction-busting on Russian import value.

The current study employs ordinary least squares (OLS) estimators to develop a predictive model for Russian imports, focusing on the impact of sanctions and membership in different trade organizations. More precisely, the main goal of our paper is to test whether the countries in the sample are complying to sanctions or suspected to sanction-busting activities. The benchmark model suggests that the total import value from sanctioned exports to Russia is predicted to be approximately $481 billion, which is 0.36 percentage points higher than that from non-sanctioned exports. A 1% increase in tariff rates is linked to between 0.008 and 0.056 percentage point decrease in total import values.

The extension of the model to incorporate dummy variables representing membership in trade organizations (EU, EAEU, ROW) reveals significant coefficients. Notably, import values from EAEU member countries are estimated to be 1.73% (1.79%) lower than those from EU (ROW) nations. Finally, the study assesses interaction effects between two dummy variables, shedding light on differential effects based on the status of sanctioned products and membership in specific organizations. Consequently, both the EU and EAEU nations are more likely to sanction-bust than ROW countries.

The rest of the paper is organized as follows: Section 2 discusses the literature review on effective sanctions and sanction busting. Section 3 presents the data and methodology, and shows the econometric results with interpretations and reflections on the findings. Section 4 concludes the paper with discussion and recommendations.

II. Literature Review on Effectiveness of Sanctions and Sanction Busting

Sanctions serve as corrective actions against entities or countries that engage in undesirable activities not endorsed by sanction imposing countries termed senders. Governments or global bodies enforce economic sanctions, essentially cutting off traditional financial and trade ties with a targeted nation, in pursuit of diplomatic or security objectives (Özdamar & Shahin, 2021). The growing adoption of these sanctions over the years can be attributed to the world's deepening economic ties and the perceived lower costs of sanctions when juxtaposed against more aggressive and perilous strategies like military interventions (Bove et al., 2023; Felbermayr et al., 2020).

The efficacy of sanctions is a point of contention among researchers and policy creators. Some studies infer that truly successful trade sanctions occur infrequently, with about 30% of them being fruitful (Hufbauer et al., 2007; Morgan et al., 2023). Hufbauer et al. (1990) suggest that most sanctions which have proven to be successful are due to the presence of contemporaneous military forces which have coerced the target to comply to the sender's demand. Studies have shown that the likelihood of economic sanctions successfully meeting their intended goals increases when several conditions are met. These include the sanctions being a collaborative effort led by international organizations, causing substantial financial hardship to the economy in question, focusing on allies instead of adversaries, having moderate rather than ambitious objectives such as regime change, and targeting regimes that are more democratic (Peksen, 2019). This is also consistent with Pelzman (2020) suggesting that the potential economic effectiveness of sanctions depends on senders' oligopoly power by means of restricting export sales or raising prices, creating a US-led "an export cartel".

The collaboration effort in the study of sanctions is also discussed by Joshi and Mahmud (2018) in a network context. In that framework, where the sender and target are connected to other agents, they theoretically demonstrate that the efficacy of sanctions depends on network structure that sustains cooperation and the utility function related to the size of the agent's component. This approach was further expanded by Joshi and Mahmud (2020), where they emphasize two critical factors: strategic complementarities between the sanctioning action and the sender's direct links, as well as externalities (sanction-busting) imposed by third parties. These factors influence the success of sanctions in reducing the violations by the target nation, considering both short-term and long-term scenarios, as well as unilateral and multilateral sanctions.

The most recent work by Joshi et al. (2023) considers three factors as key determinants of effectiveness of trade sanctions: a country's endowment, distance between countries, and network connectivity. The model explains how sanctions impose costs on both the sender and target, often being unsuccessful. Contrary to Caruso (2003) highlighting the greater effectiveness of import sanctions compared to export sanctions, Joshi et al. (2023) also showed that import sanctions and import plus export sanctions tend to be more effective than export sanctions alone. The extension of this model explores the retaliation by the target, the incentive for third countries to participate in multilateral sanctions or engage in sanction busting, and the consequences of different centralities of sender and target in a trade network.

However, even if sanctions meet their immediate goals, they might sow seeds of long-standing issues for the affected parties, leading to economic and societal turmoil, weak governance, and rampant illegal activities (Gordon, 2011; Pedersen, 2008; Wood, 2008; Joshi and Mahmud, 2020). Consequently, the short-lived benefits might be negated by the longer-term disturbances in economic and political landscapes, ushering in amplified challenges for the targeted nations, their neighbors, and the entities imposing sanctions (Peksen, 2019). Hence, the impacts of sanctions are long-lasting and persistent even after the sanctions are lifted, or even may change over time (Morgan et al., 2023). For instance, Joshi and Mahmud (2020) compares unilateral and multilateral sanctions both in the short run and long run. According to their findings, the prevalence of one over other depends on the governance of sender and target, as well as on strategic complementarity and substitutability of the sender's payoffs.

The effectiveness of sanction can be seriously undermined by sanction busting. Third country states and private companies may not align with senders and engage in sanction busting (Barry & Kleinberg, 2015; Caruso, 2003; Early, 2009; Joshi et al. 2023). Companies from the sanctioning countries often play a crucial part in evading sanctions. When these companies experience interruptions in profitable trade due to their own governments' sanctions, there's an inclination to retain those lucrative relationships. Given that businesses are primarily driven by profit motives, their interests might not align with their government's when sanctions are enforced (Early, 2015). While economic sanctions can lead to trade disturbances for third-party nations

and elevate the transaction costs associated with trading with sanctioned entities, they can simultaneously offer profitable avenues for those positioned to seize these opportunities (Early, 2009; Feldman, 2022; Rilea, 2012).

III. Data and Methodology

Our data collection was centered on top Russian trading partners for which annual trade data was available both at industry and product level on Trade MAP. More precisely, our sample consists of 11 countries exporting a tremendous number of products to Russia in 2022. These 11 countries include 4 EU nations (Italy, Germany, Netherlands, and Poland), 3 EAEU nations (Kazakhstan, Kyrgyzstan, and Armenia), and 4 other countries from the rest of the world (ROW) that are neither EU nor EAEU members such as China, Turkiye, India, and Uzbekistan.

Tables 1 and 2 present descriptive statistics for the research variables in the current study. The total import values of Russia and export quantities (6-digit Harmonised System) to Russia are represented in logarithmic form, while import tariffs are expressed as percentages. In 2022, Russia received a total of 22,648 imports, comprising 9,281 from EU nations, 4,184 from EAEU nations, and 9,183 from ROW. The range of import tariffs spans from 0% to 100%, with an overall mean of approximately 4.7% and a standard deviation of 4.65. It's worth noting that, as Russia is a member of the EAEU, the import tariffs for 4,148 goods exported by EAEU nations are set at zero. Despite the higher tariff range imposed on exports by ROW to Russia than that imposed on exports by EU to Russia, the mean tariff rates on exports by EU to Russia is larger than those by ROW countries to Russia. Also, regardless of the

Table 1. *Descriptive Statistics-1*

Variable	Obs	Mean	Std. dev	Min	Max
Overall log(ImpValue)	**22648**	**5.944**	**2.400**	**0**	**14.892**
from EU exports	9281	5.827	2.182	0	14.636
from EAEU exports	4184	5.152	2.280	0	13.761
from ROW exports	9183	6.424	2.549	0	14.892
Overall tariff	**22648**	**4.665**	**4.652**	**0**	**100**
from EU exports	9281	6.088	4.383	0	65
from EAEU exports	4184	0	0	0	0
from ROW exports	9183	5.354	4.641	0	100
Overall Log(quantity)	**22648**	**3.765**	**2.645**	**0**	**16.665**
from EU	9281	3.331	2.314	0	11.916
from EAEU	4184	3.202	2.612	0	16.665
from ROW	9183	4.461	2.815	0	15.106

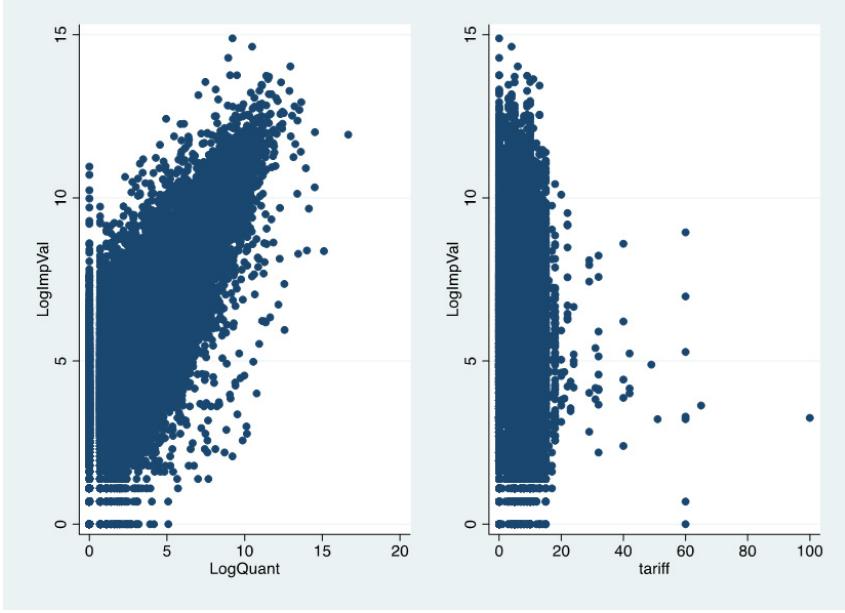
Table 2. *Descriptive Statistics-2*

Variable	Obs	Mean	Std. dev	Min	Max
Overall log(ImpValue)	**22648**	**5.944**	**2.400**	**0**	**14.892**
from busted exports	5597	6.176	2.380	0	14.292
from non-busted exports	17051	5.867	2.402	0	14.892
Overall HS2 products	**22648**	**58.093**	**25.980**	**1**	**97**
HS2 products busted	5597	69.479	20.614	25	96
Overall Log(quantity)	**22648**	**3.765**	**2.645**	**0**	**16.665**
from busted exports	5597	3.734	2.579	0	15.106
from non-busted exports	17051	3.775	2.667	0	16.665

wider range of exports by EAEU nations to Russia due to free trade than that by either EU nations or ROW countries, the range of total import values to Russia from either EU nations or ROW countries exceed that of EAEU nations.

Our rudimentary analysis of the total import values and exports relationship, and total import values against tariff rates can be observed in Figure 5. The scatter plots in that figure suggest that variations in the logarithm of Russian total import values are strongly explained by the logarithm of quantities of products exported to Russia. Furthermore, the density of the logarithm of total import values is concentrated within the tariff range of 0% to 20%.

Figure 5. Scatter plots of log of total import values against log of quantity exported and tariffs in 2022



Source: Compiled by authors using the data from the Trade MAP.

From the descriptive statistics in Table 2, we can see that out of 22,648 total imports to Russia, 5,597 are in the list of sanctioned goods. Notice that while the number of non-sanctioned exports is three times of the number of sanctioned exports, the mean of total import values from non-sanctioned exports to Russia is lower than that from sanctioned exports. This may imply the sanctioned exports, on average, are more expensive than non-sanctioned exports to Russia. Then one would wonder which industry products are prevalent in the list of sanctioned exports? And why? According to 2-digit HS products, the range of sanctioned goods (busted) at industry level is between 25 and 96.

In fact, we tend to test several hypotheses in this study. Namely:

1) Are the total import values of Russia in 2022 from sanctioned exports and non-sanctioned exports by other countries to Russia statistically different?
2) Are the total import values of Russia in 2022 responsive to import tariffs?
3) Are total import values of Russia in 2022 statistically different among the products exported by EU, EAEU and ROW nations?
4) Are there differential effects of busted exports and membership (EU, EAEU or ROW)?

From a methodological perspective, studying the impact of sanctions on the overall economy is problematic because of the endogeneity issue, though most of the existing works bypassed this issue (Morgan et al., 2023). However, on the other hand, this could be due to the difficulty of finding an appropriate instrument for an endogenous variable. Moreover, the potential endogenous variable which may have a joint effect with another exogenous regressor on the dependent variable, or differential impact with a dummy variable may also be correlated with error terms. This implies we need as many instruments as necessary for all endogenous regressors. In principle, if we had just one instrument for the endogenous variable, we could generate another instrument creating an interaction term of the instrument with another exogenous variable and use them as instruments. However, doing so may not work well because of collinearity among the instruments.

Before running a regression, we conducted diagnostic tests of heteroscedasticity, and noticed that our model suffers from heteroscedasticity. We applied the Breusch-Pagan test and obtained the calculated Chi-square (with 1 degree of freedom) as 8.30 with the corresponding p-value of 0.004. Hence, we use heteroscedasticity-robust standard errors.

Because for a predictive model the OLS estimators are fine, the empirical outcomes in all columns of Table 3 are received by OLS. Our benchmark population regression model is given by:

$$\log(Imp\,Value) = \alpha_0 + \alpha_1 Bust + u_1 \tag{1}$$

The corresponding fitted model for equation (1) given in column 1 of Table 3 is $\widehat{\log}(Imp\,Value) = 5.869^{***} + 0.307^{***}Bust$, where the dummy variable $Bust = 1$ if the export product is sanctioned and $Bust = 0$ if the opposite is true. Here 5.869 is estimated average log of total import values from non-sanctioned exports to Russia, which is the mean value in Table 2 (third row and second column). In level form it implies that in 2022 the total import value to Russia from non-sanctioned exports on average is \$353 billion ($\approx e^{5.869}$). With the addition of the control variables in subsequent columns of Table 3, the estimated intercept term still remained highly significant and didn't change in size dramatically. The estimated coefficient of dummy variable shows that the total import value from sanctioned exports is predicted to be larger than that from non-sanctioned exports on average by 0.36 ($\approx e^{0.307} - 1$) percentage point. In other words, the mean value of total imports from sanctioned exports to Russia is estimated to be roughly \$481 billion.

Table 3. *Dependent Variable: Log of Import Value*

	1	2	3	4
Constant	5.869***	5.907***	5.097***	5.051***
Bust	0.307***	0.299***	0.239***	0.438***
tariff		-0.008**	-0.056***	-0.056***
EU			1.007***	1.032***
ROW			1.567***	1.659***
EU*bust				-0.1107
ROW*bust				-0.382**
N	22648	22648	22648	22648
R^2	0.003	0.0033	0.049	0.049

The errors of regression coefficients are heteroskedasticity-robust. The corresponding p-values are denoted by *** if significant at 0.01, ** if significant at 0.05, * if significant at 0.10.

Our benchmark model is modified by adding the only control variable - tariff rates for each of these 6-digit exports - due to the availability of data as:

$$\widehat{\log}(Imp\,Value) = \alpha_0 + \alpha_1 Bust + \alpha_2 tariff + u_2 \tag{2}$$

The estimated outcomes of equation (2) are in column 2 of Table 3. The tariff coefficient is highly statistically significant. It implies, ceteris paribus, for an additional 1% tariff rate on goods exported to Russia, the total import values are predicted to decline by 0.008 percentage points.

We further extend our model by adding a dummy variable Member which consists of three categories EU, EAEU, and ROW in column 3 of Table 3 as:

$$\widehat{\log}(Imp\,Value) = \alpha_0 + \alpha_1 Bust + \alpha_2 tariff + \alpha_3 EU + \alpha_4 ROW + u_3 \tag{3}$$

We treat EAEU member countries as a benchmark category. The $EU = 1$ for EU members, and $EU = 0$ for non-EU members. Similarly, $ROW = 1$ if the country is a member of neither EU nor EAEU, and $ROW = 0$ if the country is a member of either EU or EAEU. All the regression coefficients are highly statistically significant, including tariff rates. The coefficient 1.007 implies that holding everything else constant, the total import values from EU exports is higher by 1.73% ($\approx e^{1.007} - 1$) than those from EAEU exports. Similarly, the coefficient 1.567 implies that holding everything else constant, the total import values from ROW exports are higher by 1.79% ($\approx e^{1.567} - 1$) than those from EAEU exports despite the strict sanctions on Russia imposed mostly by EU nations. These are also consistent with mean import values in descriptive statistics given by Table 2. Meanwhile, one may wonder whether there is a significant difference between the import values of Russia from products exported by EU countries and ROW. That is,

$$H_o: \ \alpha_3 = \alpha_4 \quad versus \quad H_A: \ \alpha_3 \neq \alpha_4 \tag{4}$$

The corresponding test statistic is given by $TS = 15.59$ and the p-value of the test statistic is 0.000, implying that we reject the null hypothesis stating that there is no difference between the import values of Russia from products exported by EU nations and ROW countries.

Finally, in column 4 of Table 3, we provide analyses of the dummy interaction terms to count for differential effects of status of sanctioned products and membership of certain organizations.

$$\begin{aligned}\widehat{\log}(Imp\,Value) = {} & \alpha_0 + \alpha_1 Bust + \ldots + \alpha_3 EU + \alpha_4 ROW + \alpha_5 (EU^{*} Bust) \\ & + \alpha_6 (ROW^{*} Bust) + u_4\end{aligned} \tag{5}$$

We take non-sanctioned exports by EAEU as a benchmark category. To better interpret the slope coefficient of two dummy interaction term, assuming for the moment that $tariff = 0$, the estimated model in column 4 will reduce to

$$\begin{aligned}\widehat{\log}(Imp\,Value) = {} & 5.051 + 0.438 Bust + 1.032 EU + 1.659 ROW + \\ & - 0.1107 (EU^{*} Bust) - 0.382 (ROW^{*} Bust)\end{aligned}$$

Then the contribution of

a) non-sanctioned exports by EAEU (benchmark) nations to log of total import value is
$\widehat{\log}(Imp\,Value \mid Bust = EU = ROW = 0) = 5.051$

b) sanctioned exports by EAEU nations to log of total import value is
$\widehat{\log}(Imp\,Value \mid Bust = 1,\ EU = ROW = 0) = 5.051 + 0.438$

Hence, 0.438 is a differential effect of exporting sanctioned products by EAEU to Russia. However, the more exact difference between the two is 0.55 ($=e^{0.438} - 1$). In other words, the busted exports by EAEU nations to Russia generate import values more by 0.55% than the non-busted exports by EAEU.

c) $\widehat{\log}(Imp\,Value|Bust = ROW = 0,\ EU = 1) = 5.051 + 1.032$

The 1.032 is a differential effect of exporting non-sanctioned products by EU nations to Russia. More precisely, it will be 1.81 ($=e^{1.032} - 1$). This implies the Russian import values from the non-busted exports by EU nations are higher than those by EAEU nations by 1.81%.

d) $\widehat{\log}(Imp\,Value|Bust = EU = 1,\ ROW = 0) = 5.051 + 0.438 + 1.032 - 0.1107$

The -0.1107 is a differential effect of exporting sanctioned products by EU nations to Russia, though the coefficient is not statistically significant. Put simply, the contribution of sanctioned exports by EU nations to the growth of Russian import values is lower by 2.12 ($=e^{-0.1107} - 1$) than the contribution of sanctioned exports by EAEU countries OR non-sanctioned exports by EU nations as compared with the benchmark category, which is non-sanctioned exports by EAEU nations.

e) $\widehat{\log}(Imp\,Value|Bust = EU = 0,\ ROW = 1) = 5.051 + 1.659$

This equation implies the contribution of non-sanctioned esports by EAEU nations to Russian imports is lower by 1.659 than those by ROW countries. More precisely, this difference is 4.25 ($= e^{1.659} - 1$).

f) $\widehat{\log}(Imp\,Value|Bust = ROW = 1,\ EU = 0) = 5.051 + 0.438 + 1.659 - 0.382$

The coefficient -0.382 is statistically significant at 1%. The economic intuition is the

contribution of sanctioned exports by ROW nations to Russian import values is lower by 0.382 than the contribution of sanctioned exports by EAEU countries OR non-sanctioned exports by ROW nations as compared with the benchmark category, which is non-sanctioned exports by EAEU nations. More exactly, it will be -2.46 ($e^{-0.382}-1$). Thus, the final outcome indicates that EAEU nations, which are Russia's partners within the union, are more susceptible to activities such as sanction-busting or smuggling compared to ROW nations.

In order to test whether there is a significant difference between the contribution of sanction-busted exports by EU nations to Russian import values and those of by ROW nations we perform the following:

$$H_o: \alpha_3+\alpha_5=\alpha_4+\alpha_6 \quad versus \quad H_A: \alpha_3+\alpha_5\neq\alpha_4+\alpha_6 \tag{6}$$

The corresponding test statistic for hypotheses in equation (6) is $TS=5.13$ with $p-values\ of\ 0.000$. It is remarkable that the EU nations are also susceptible to sanction-busting compared to ROW nations.

To repeat, the endogeneity issue is problematic in sanctions studies. Another drawback of our estimates is the potential for measurement errors, which could introduce bias into our calculations. To illustrate, we relied on cross-sectional data for all variables in 2022. The existence of a list of sanctioned products in 2022 doesn't necessarily mean that these exports were labeled as "sanctioned" throughout the entire year starting from February 2022. To put it differently, while the list of sanctioned products might have been disclosed, let's say, in October 2022, a significant portion of the products could have been exported or imported before October 2022. In such a scenario, it wouldn't be fair to suspect that some nations violated the sanctioned exports or imports with respect to Russia.

IV. Discussion and Conclusion

Previous studies found that allies of senders are more likely to engage in sanction-busting than other states (Early, 2009). However, there was a progress in increased monitoring and punishing sanction busters (Early & Preble, 2020). If in the early months after the full-scale Russian invasion, sender countries were mostly expanding the sanctions list, by late 2022 the focus shifted towards ensuring compliance with the sanction's regime. High level visits to EAEU member states by the U.S. responsible officials and imposition of secondary sanctions on Uzbek companies have also led to tightening of control from third country states.

Our goal in this paper has been to estimate the value of Russian imports for 2022 and

to test if some countries are subject to violate anti-Russian sanctions imposed by Western nations. The import values from exports by EU nations and ROW countries are estimated to be higher than those from EAEU nations. This is a sign that the greater number of variabilities in products exported to Russia comes from ROW nations such as China, India, Turkiye, and Uzbekistan, followed by EU nations. The impression is that in the short term these countries don't comply with sanctions imposed on Russia. Moreover, both the EAEU nations and EU nations are more susceptible to sanction-busting than China, India, Turkiye, and Uzbekistan. One explanation could be due to zero import tariffs among EAEU nations. Although the fact that EU countries are also violating sanction norms is suspicious, it is also impressive given the estimated outcomes. It is quite possible that most of their sanctioned products could have been exported to Russia quite ahead of time before being labeled as "sanctioned" within 2022. This is especially true since the list of sanctioned products is still being updated frequently.

One of the drawbacks in this study is that we employ cross sectional data for 2022. That is due to the difficulty in finding more frequent data, say monthly, for all 22648 products exported by countries in our sample. If that were possible, one could provide a better picture whether some countries at particular time within 2022 complied with sanctions imposed on Russia.

As for future extension, one could examine the updated annual data for all the products exported to Russia in 2023 from the Trade Map once it becomes available. For it is wondering what we see in 2022 is actually anticipating effects. Put simply, the firms should be aware that anti-Russian sanctions were coming so they really must have pumped up their exports before sanctions were imposed.

Still another way to further contribute to the literature on sanctions is to attempt a growing research methodology so-called an experimental approach which however requires collaborative efforts. For instance, a benevolent government of the exporting country may threaten to impose a penalty on firms engaged in sanction busting. It would be interesting whether a credible threat can serve as an effective instrument to stop sanction busting.

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