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**DEFLECTING ECONOMIC SANCTIONS: DO TRADE
AND POLITICAL ALLIANCES MATTER?**

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Abstract

Success of economic sanctions hinges on their impact on sanctioned countries' trade. This, in turn, depends on the sanctioned country's opportunity to divert trade to a third-party (country, not involved in sanctions). History is witness to third-parties facilitating trade diversion, thus busting sanction. Nonetheless, literature does not present conclusive evidence on trade diversion or on motivation for busting sanctions. Therefore, in this paper, we address the following. What bearing sanctions have on bilateral trade flows and trade diversion? Is diversion dependent on the political and trade alliance the third-party shares with the sanctioned and/or the sanctioning countries? We estimate a structural gravity model for globally representative country-dyads, during 1990-2019, using, inter-alia the Global Sanctions Database. We find that sanctions depress bilateral trade between sanctioned and sanctioning nations and cause trade diversion via third-party. The existence of trade alliance between third-party and country involved in sanction has additional impact on trade diversion. Furthermore, a political alliance between third-party and sanctioned country heightens trade between them. However, political alliance between third-party and sanctioning country doesn't explain trade between them. Our results have insight for India's evolving trade relations with Russia, since 2022, as Russia reels under Western sanctions.

Keywords: *Sanction, GSDB, Trade Agreement, Political Alliance, Structural Gravity Model*

JEL Codes: *F1, F14, F51, N4*

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INTRODUCTION

When Russia invaded Ukraine in February 2022, it impelled the United States (US) and its western allies, notably the G7 countries¹, to target Russia with a series of coordinated economic sanctions. Economic sanctions are diplomatic policy tools used by countries² to penalize state-supported political, military, or social misbehaviour such as nuclear proliferation, terrorism, military conflicts, human rights violation etc. (Hufbauer *et. al.*, 1997). While economic sanctions have evolved as a powerful foreign policy instrument since World War I, the popularity of economic sanctions, as alternatives to raging wars and military conflicts (Pape, 1997), have increased manifold, since World War II.

Economic sanctions imposed on Russia by the US and its allies are the most wide-ranging set of sanctions imposed against a major power since the World War II³. In order to cripple the Russian economy and deter Russia from waging war, the countries have resorted to various forms of restrictions such as trade sanctions, financial sanctions, travel sanctions and sanctions on individual Russian oligarchs supporting the Russian president in making war.

Other Indo-pacific countries such as Australia, New Zealand, S. Korea and Taiwan have also coordinated with US-led sanctioning efforts and stepped-up sanctions to weaken Russia's might at raging war against Ukraine. Russia's response has been that of retaliation as it has imposed counter sanctions on the US and its allies. Some major countries such as India and China have refused to sanction Russia. China has officially

¹ The G7 is grouping of advanced, western democracies including Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States, as well as the European Union, that serves as a forum to coordinate global policy

² Borrowing from literature (Hufbauer *et. al.*, 2007 and Early, 2009), we define sanctioning countries the *sender of sanctions or simply senders*; and the countries on which the sanctions are slapped are the *targets of sanction or simply targets*. We also define the countries that are neither senders nor targets of the sanction as the *third-party countries*, i.e., countries not directly involved in sanctions.

³ <https://www.piie.com/blogs/realtime-economics/russias-war-ukraine-sanctions-timeline>

supported Russia's stance on Ukraine. India has remained neutral and has repeatedly abstained from voting in United Nations'(UN) resolutions demanding an independent inquiry on Russian violations in Ukraine, while upholding the notion of territorial integrity and sovereignty of all states, and offering humanitarian assistance to Ukraine.

India's approach to Western sanctions on Russia has been unequivocal, with India raising oil imports from Russia⁴, acting almost as a *black knight or sanction-buster* (Hufbauer *et. al.*, 2007 and Early, 2009). The economic literature on sanctions identifies sanction busters as third-parties that increase their trade with the sanctioned state, thereby sabotaging the sanctioning efforts. This is not the first occasion of a third-party country subverting sanctions and multiplying its trade flows with the targets. There have been few instances of sanction busting in the past. For example, Soviet Union's support to Cuba (in 1960-90) and China's support to North Korea (1950-90) enabled the two targets to weather US sanctions without acceding to US' demands (Early 2009).

What explains the deflection of economic sanctions by third-parties? The strategic decision of the third-party country to undermine the sanctioning efforts of the sender is driven by a combination of economic and political ties the third-party shares with the sanctioning and the sanctioned nations (Hufbauer *et. al.*, 1990; Kaempfer and Lowenberg 1999; Morgan and Bapat 2003, Early, 2009). While historical instances of sanction-busting provide anecdotal evidence on the linkages between trade and political and/or economic ties, statistical evidence on the same is lacking. Hence, it is pertinent to rigorously quantify the strength of politico-economic ties between countries in influencing the effect of sanctions on trade flows and trade diversion.

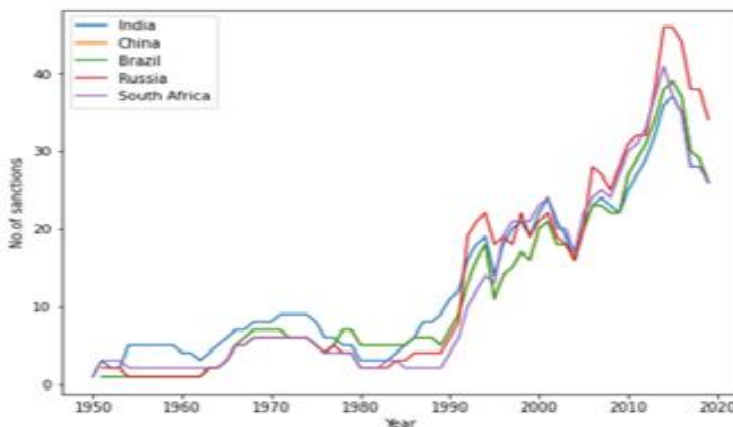
In this backdrop, the objective of our study is twofold. The first objective is to empirically examine the impact of sanctions on the

⁴ For detail account on India's oil imports from Russia, see Babina *et. al.* (2023): https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4366337

bilateral trade flows between senders and targets of sanctions as well as on trade diversion to third party countries. Secondly, we quantify the strength of political and trade alliances the third-party country shares with the sender and/or with the target, in explaining sanction-related trade diversion and sanction busting tendencies. Besides understanding India's trade dynamics with sanction-hit Russia and the G7, the motivation for our study emanates from three other compelling reasons.

First, most of literature studying trade effect of sanctions (Caruso, 2003; Hufbauer and Oegg, 2003; Hufbauer *et.al.*, 2007; Yang et al., 2004; Kohl, 2021) confine their analyses to the US as the only sender of sanctions. Although the US still remains the most frequent sender, data shows, increasingly other countries apart from the US, both developed and developing, are resorting to economic sanctions as a diplomatic tool. For instance, Figure 1 below shows that sanctions levied by BRICS nations have steadily increased in the last 65 years.

Figure1: Total number of Sanctions Levied by BRICS Nations During 1950-2019

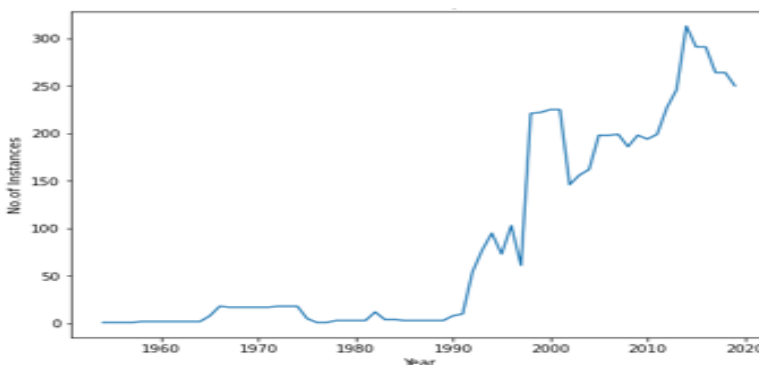


Source: Author's calculation using Global Sanctions Data Base (GSDB) Dataset

In recent years the handful of cross studies (Felbermeyer, *et. al.*, 2020; Dai, *et. al.*, 2021; Shingal, 2023) exploring trade effects of

sanctions have found diverging results depending on the type, period and the timing of sanctions imposed. Furthermore, there are multiple instances of counter sanctions, where the initially targeted country sanctions the initial sender country (Figure 2). Therefore, re-evaluation of sanction effects on trade flows in a dyadic set up, considering all pairs of senders and targets globally, is needed to ascertain the robustness of the findings.

Figure 2: Instances of Counter-Sanctions During 1950-2019



Source: Author's calculation using Global Sanctions Data Base (GSDB) Dataset

Second, empirical literature on trade diversion effect of sanctions is far and few (Yang et al., 2009; Jonas, 2017). Again, the focus is mostly on US sanctions; and there is no consensus on whether sanctions really lead to trade diversion. Lastly, the important issue that is obscure in sanctions literature is the role of political and trade alliance the third-party has with the sender and/or the target, in determining the extent of trade diversion and sanction-busting behaviour of third-party countries.

LITERATURE REVIEW

Economic sanctions have captured the attention of scholars since long and their ramifications have been extensively studied, as discussed in the previous section. The prime motive of sanctions is to make the targets toe the line and change its objectionable policies. In other words, the

effectiveness of sanctions as foreign policy instrument, depends on whether economic effects of sanctions⁵ translate into desired political outcome of sanction as is the very objective of the sender. In this context, most of the studies (Hufbauer *et. al.*, 1990; Bergeijk and Marrewijk, 1994, 1995; Kaempfer and Lowenberg, 1999; Tostensen and Bull, 2002; Hufbauer *et. al.*, 2007; Dijazi and van Bergeijk, 2013; Smeets, 2018; Boogaerts and Drieskens, 2020) find that sanctions have no or rather very short-term impact in persuading the targets to comply with the demands of the senders. Some case studies even find that sanctions may benefit the targets and strengthen their economy (Watanabe, 1987; Amuzegar, 1997; Park, 2014). This happens because of the coping mechanism of the targets whereby they mobilize their workforce, fuel industrialization and raise the productivity of the domestic economy. This in turn may contribute to greater political power of the target.

Another strand of literature argues that deeper the trade linkages between the sender and the target, higher the chance of sanctions' economic and political success (Hufbauer, *et. al.*, Schott, 1990; van Bergeijk, 1998, 1994, 1995). Furthermore, if the sender is well connected to global trade networks, commands high productive capability; and its dependence on bilateral trade with target is minimal, then the likelihood of target's acquiescence to sanctions is high (Gardner and Kimbrough, 1990; Peterson, 2018). Despite the fact that the sanctions' impact on economic and political outcome is squarely hinged on the impact of sanctions on trade flows, the impact of sanctions on trade has received limited academic attention. And most of these studies exhibit a limited scope with regard to both senders and targets.

Previous research on the impact of US sanctions on its bilateral trade with target (Caruso, 2003; Hufbauer *et. al.*, 2007; Yang *et al.*,

⁵ Such as economic growth and development (Drezner, 2000; Choi and Luo, 2013; Gharehgozli, 2017, etc.), inequality and poverty (Afesorgbor *et. al.*, 2016; Neuenkirch and Neumeier, 2016), currency stability (Peksen and Son, 2015; Dreger *et. al.*, 2016), financial flows (Yang *et. al.*, 2004; Besedes *et. al.*, 2017; Ahn and Ludema, 2020) etc.

2004; Kohl, 2021) found that while extensive and comprehensive sanctions had a large dampening effect on bilateral trade, no such effect was attributed to limited and moderate sanctions. However, given their exclusive focus on the US, the results may not have a broad appeal, although importance remains in inspiring further work with larger dataset.

A set of literature considering a wider set of senders and targets corroborate adverse impact of sanctions on bilateral trade between sender and target, conditional on the timing and type of sanction (Crozet and Hinz, 2020; Felbermeyer, *et. al.*, 2020; Dai, *et. al.*, 2021; Shingal, 2023). Another cross-country study by Afesorgbor (2019) suggest that imposed sanctions lead to a decrease in the trade flow between the sender and the target, but a threat of sanctions leads to an increase in the trade flow owing to pre-emptive efforts of the target country to stockpile traded commodities.

A separate study found no evidence of shrinking of trade in the target country due to threat (Morgan *et. al.*, 2014) or imposition of economic sanctions (Shin, *et. al.*, 2016). Supporting arguments for such a result can be found in the works of Kaempfer and Lowenberg (1999) and Bapat and Kwon (2015). If sanctioning countries' firms' long-term expectations of the target's market potential is high, they have the incentive to flout the sanctions and continue trading with targets' firms (Kaempfer and Lowenberg, 1999; Bapat and Kwon, 2015). Even if the sanctioning country is able to make its domestic firms abide sanction regulations (Early and Peterson, 2022), it may not be able to keep the target country from seeking alternative markets via trade diversions (Hufbauer *et. al.*, 2007; Bapat and Kwon, 2015).

The evidence on trade diversion also limited in extant literature and narrowly focussed on US sanctions. Also, there is no consensus. Few studies show trade diversion in the presence of sanctions (Caruso, 2003; Early, 2009, Haider, 2017), while other find mixed or no evidence on

diversion (Yang *et. al.*, 2009; Jonas, 2017; Kohl, 2021). Notably, some studies concur that sanctions are associated with lower third-party trade (Slavov, 2007; Lamotte, 2012; Peterson, 2021). Third-party countries may face unintended positive or negative consequences from sanctions due to network effects classified as 'spill-over' effects, 'prompter' effects and 'depressing' effects (Yang, *et. al.*, 2009). Spill-over effects refers to economic opportunities that may arise for countries that are in no way involved in the conflict. 'Promoter' effect arises when countries not involved directly in the conflict promote trade relations in support of the sender for political reasons. Finally, with the highly global nature of production and consumption across countries integrated via supply chains, the impact of economic sanctions on the target may dampen the overall economic activity of other countries due to depressed global demand.

To balance between the positive and the negative effects of sanctions, the third-party countries are faced with the decision to either support the sender countries in their sanction efforts or shield the target countries from the debilitating impacts of sanction. Early (2009) is perhaps one of the first studies that explored the motivation of the third-party countries to act as sanction busters, drawing from the realist and liberal schools of international relations. On the one hand, the realist school argues that sanction-busters are motivated by political and strategic considerations (Hufbauer, *et. al.*, 1990). On the other hand, the liberal school theorizes that commercial incentives drive sanctions-busting behaviour by the third-party countries (Kaempfer and Lowenberg 1999; Morgan and Bapat 2003). For a total of 77 US economic sanction cases for the period 1950-1990, the study by Early (2009) provided stronger support for the liberal explanation of sanction busting. Further, in the later work, Early (2015) argues that the third-party will extend cooperation to senders of sanctions only when the cost of cooperation is lower than cost of letting go of trade opportunities with the targets. Moreover, third-parties were found to use defence alliance with the US to cover sanctions busting behaviours while simultaneously appropriating commercial benefits of sanction busting.

We contribute to the above literature in a couple of ways. Since existing literature on direct trade and trade diversion effects of sanctions are mostly based on US sanction events, we re-examine this taking into account sanctions beyond that of the US' as well as the cases of countersanctions. To examine the direct and third-party trade effects of sanctions, we use the novel Global Sanctions Database (GSDB). The possibility that trade-diversion is predicated on political and trade alliances between sender/ target and the third-party country has not received much academic attention. Thus, our second contribution to literature is to investigate whether the strength of trade and political alliance determines third-party's decision to create trade diversion either via sender or via. Again, we undertake this research taking into account all possible trade pairs globally.

METHODOLOGY AND EMPIRICAL STRATEGY

In this paper we empirically examine the direct and the indirect effect (or the third-party effect) of sanctions on trade flows and the additional effect of economic and political alliance on trade. Specifically, our research questions are as follows:

- i. What is the impact of economic sanctions on bilateral trade flows and is there evidence of trade diversion?
- ii. Is trade diversion, if any, dependent on the political and trade alliance that the third-party country shares with the sender and/or with the target?

Our research methodology is based on the structural gravity framework, operationalized by Anderson and van Wincoop (2003)⁶. To assess the impact of sanctions on trade and trade diversion, we estimate a gravity equation of following form:

⁶ Anderson and Wincoop (2003) derived an operational gravity model utilizing CES expenditure system that can be empirically estimated. This model is theoretically consistent with a wide class of models, including Armington (Armington, 1969), monopolistic competition (Krugman, 1979), heterogeneous firms under monopolistic competition (Melitz, 2003), and heterogeneous firms under perfect competition (Bernard et al. 2003).

$$Y_{ij,t} = \exp [\alpha \text{Sanction}_{ij,t} + \beta \text{RTA}_{ij,t} + \gamma \text{PoliticalAlliance}_{ij,t} + \delta \text{Diversion}_{ij,t} + \partial \text{RTA} * \text{Diversion}_{ij,t} + \phi \text{PoliticalAlliance} * \text{Diversion}_{ij,t} + \mu_{ij} + \pi_{it} + \varphi_{jt}] + \epsilon_{ij,t} \quad (1)$$

Here, $Y_{ij,t}$ is the trade flow (either export or import⁷) of origin country, i , to destination country, j . *Sanction* is a dummy variable that takes value '1' if there is a sanction, of any type, in effect between country i and j at a given year t , and zero otherwise. Thus, the variable, *Sanction*, captures the overall direct effect sanctions have on trade flows.

$\text{RTA}_{ij,t}$ are binary variables, assuming values '1' if there exists a regional trade agreement between country i and j , else they assume values '0'. Countries signing an RTA and forming a regional trade area between them commit to apply lower tariffs on each other's tradeable items. In addition to removing trade barriers, the countries having an RTA between them also pledge to cooperate on a number of other policy areas that reduce overall bilateral trade costs, thereby enhancing trade between them. Hence, the estimated coefficient of $\text{RTA}_{ij,t}$ is expected to be positive and significant.

$\text{PoliticalAlliance}_{ij,t}$ are coded to take value one when there exists a defense pact between a dyadic pair for a given year, else they take value zero. Realist approach to trade emphasizes the importance of political ties, in the form of military and/or defence alliance, a country has with its allies in influencing its trade policy and trade relationship with allies (Pollins, 1989; Gowa and Mansfield, 1993, 2004; Long, 2003; Long and Leeds, 2006; Haim, 2016). According to the realist paradigm, trade openness is associated with security externalities. Trade partners accrue greater absolute wealth through trading, a part of this additional wealth may be utilized to bolster their military capabilities, in turn, to threaten trade partners. However political ties, in the form of defence or military alliances, between trading partners can reduce security externalities.

⁷ We estimate gravity equations for exports and imports separately.

Trade between members of a political alliance, instead of posing a threat, contributes to the potential military power for the members of the alliance as a unit (Gowa and Mansfield, 2004). Accordingly, the realist approach to trade predicts that political allies trade more with each other as compared to non-allies to minimise security externalities that arise through bilateral trade.

The variable, $Diversion_{ij,t}$, accounts for trade diversion, that is, trade between sender and a third-party or trade between target and third-party. In order to capture the trade diversion effect, we follow the methodology described in Magee (2008) and Jonas (2017) to create the variable, $Diversion_{ij,t}$. Accordingly, $Diversion_{ij,t}$ is a dummy variable that takes value '1' if only one of the two countries is affected by sanctions in year t , either as a sender or as a target. Otherwise, the variable takes value zero. A positive estimated coefficient, δ , provides the evidence of export diversion. The coefficients, ∂ and \emptyset , capture additional, interactive effects of regional trade agreement and political alliance for trade diversion, respectively.

In our specification, π_{it} and φ_{jt} denote the set of origin-country-time and destination-country-time fixed effects, respectively. These time-varying country-fixed-effects control for observable (such as national incomes, population sizes etc.) and unobservable country-specific aspects that may influence bilateral trade as well as inward and outward multilateral resistances⁸. Lastly, μ_{ij} denotes the set of country-pair fixed effects, which absorb any observable and unobservable time-invariant bilateral determinants of trade costs, such as distance, common language, common colonial links, common border etc.

⁸ The inward and outward multilateral resistance terms (MRTs) represent importers' and exporters' ease of market access (Anderson and van Wincoop, 2003). In the context of sanctions, the producers in both the sender and the target country will suffer higher outward multilateral resistance, consequently, higher trade costs (Felbermayr et. al., 2020).

Empirical literature based on realist approach to trade suggest that trade among political allies who have embedded trade policy cooperation in their political alliance agreements is higher than trade among political allies who have not committed to trade policy cooperation between them (Mansfield and Bronson, 1997; Gowa and Mansfield, 2004; Long and Leeds, 2006). Additionally, economic sanctions are endogenous in equation (1) since the impact of sanctions is often confounded with other effects (Kwon *et. al.*, 2022). Also, in situations of economic turbulence, such as war, there is a linkage between trade policy and sanctions (Kaempfer and Lowenberg, 2007). Thus, empirical estimation of gravity equation (4) would need to take into account endogeneity. The use of the three-way fixed effects ($\pi_{it}, \varphi_{jt}, \mu_{ij}$) help alleviate potential endogeneity issue, arising due to linkage between RTA, sanctions, political alliance and error term, $\epsilon_{ij,t}$ (Baier and Bergstrand, 2007).

Our second research objective is to estimate third-party country's trade diversion to the sender and the target respectively. We are also interested in exploring how the political and trade alliance the third-party country shares with the sender and the target determine its imports from and exports to these countries respectively, in the event of imposition of sanctions. Therefore, we set the following specification to understand the third-party country's stance in the event of sanction.

$$Y_{ij,t} = \exp [\alpha Sanction_{ij,t} + \beta RTA_{ij,t} + \gamma PoliticalAlliance_{ij,t} + \delta_1 DS_{ij,t} + \partial_1 RTA * DS_{ij,t} + \phi_1 PoliticalAlliance * DS_{ij,t} + \delta_2 DT_{ij,t} + \partial_2 RTA * DT_{ij,t} + \phi_2 PoliticalAlliance * DT_{ij,t} + \mu_{ij} + \pi_{it} + \varphi_{jt}] + \epsilon_{ij,t} \quad (2)$$

In equation (2), $DS_{ij,t}$ is a dummy variable that takes value '1' for a year t if in that year the cj is the third-party country and j is the sender, otherwise it takes value '0'. Similarly, $DT_{ij,t}$ is a dummy variable that takes value '1' for a year t if in that year the i is the third-party country and j is the target, otherwise it takes value '0'. In line with the arguments of the realist and the liberalist schools of international relations, we include interaction terms, such that they capture consequences of third-

parties' trade and political alliance with the sender and the target on the third-parties' trade with the sanctioned and sanctioning countries.

It is crucial to address probable econometric concerns of estimating gravity model in a panel dataset. First, our dataset has observations for which the values of bilateral trade flows are zero. Second, the trade data is always fraught with heteroscedasticity. As proposed by Silva and Tenreyo (2006), the Poisson Pseudo-Maximum Likelihood (PPML) estimator effectively handles the presence of "zero" trade flows and provides consistent estimates in the presence of heteroscedasticity as well as three-way fixed effects (Anderson et al., 2018; Larch and Yotov, 2016). Therefore, the gravity equations, (1) -(2), are estimated using the PPML method.

DATA

For our empirical analysis, we source data from three different datasets. The data on bilateral trade flows (exports and imports) is from United Nations Statistics Division's Comtrade⁹, as provided by the Centre d'Etudes Prospective et d'Informations Internationales (CEPII) database. The data on regional trade agreements (RTAs) is also from CEPII¹⁰. The data on sanctions is taken from the novel Global Sanctions Database (GSDB), put together by Felbermayr et al. (2020) and later updated by Kirilakha et al. (2021). The Kirilakha et al. (2021) edition of the GSDB database covers 1101 publicly traceable purely bilateral, multilateral, and plurilateral sanctions for the years 1950-2019¹¹. The dyadic structure of

⁹ The UNSD's comtrade data has the longest coverage and trade is measured in 1000 current United States Dollars.

¹⁰ CEPII has compiled data on RTAs from the Regional Trade Agreements Information System (RTA-IS) (2020) of World Trade Organization (WTO) (Conte et al., 2021).

¹¹ The GSDB classifies the sanctions based on their objectives (e.g., to change policy; to destabilize a regime; to resolve territorial conflict; to end war; to end human rights violations; to restore democracy, etc.), the degree of sanctions' success in achieving their objectives (ranging from complete failure to complete success), type (e.g., trade, financial, arms, military assistance, travel), extent of sanction intervention (partial sanctions, i.e., applied only to specific goods and/or sector(s) vs. complete sanctions, i.e., applied to all sectors); and region (e.g., unilateral vs. reciprocal sanctions). In our study, we do not distinguish sanction by type.

recorded sanctions in the database is particularly useful for our study as it will aid us in understanding the bilateral interactions between not just among the senders and targets of sanction, but also among third-party countries and senders, and third-party countries and targets.

Studies using the Global Sanctions Database (Felbermeyer, *et. al.*, 2020; Dai, *et. al.*, 2021; Kirilakha, *et. al.*, 2021) have very well documented the evolution of sanctions. During 1950-1990, there was a gradual and steady increase in sanctions. While the early 1990s saw a strong increase in sanctions, early 2000s witnessed a fall in the use of sanctions. However, the use of sanctions picked up after 2004 and has been continuously increasing till date (Falbermeyer *et. al.*, 2020). Moreover, there is a marked diversification in both the form and the implementation of economic sanctions.

Finally, the dyad-year¹² data on political alliance is taken from Alliance Treaty Obligations and Provisions (ATOP), version 5.1, created by Leeds (2020). The ATOP codebook defines alliance as “a formal agreement among independent states to cooperate militarily in the face of potential or realized military conflict”. The “agreement” between countries is classified into five types of non-mutually exclusive obligations¹³, viz. defense pact, offense pact, neutrality pact, nonaggression pact, and consultation pact, respectively. For our study, we use the information of defense pact to define our variable, *PoliticalAlliance*. The reason for choosing defense pact over other pacts is that countries are more invested in the military strength of allies who

¹² The ATOP database is available in three formats at state-year, dyad-year and directed dyad-year levels. The state-year dataset includes information about each state’s alliance commitments in a given year, the dyad-year dataset includes information about the commitments shared by a pair of states in a given year; and the directed dyad-year dataset provides information about the commitments made by one state to a specific dyadic partner in a given year. For our study, we will be using the dyad-year database.

¹³ It may be noted that obligations, as documented by ATOP, may not be unconditional or symmetrical; members commit to different obligations, and obligations are effective only under certain circumstances.

will come to their defense in the case of conflict Long (2003) and hence this pact is the strongest form of political alliance between countries.

Merging the data from all these sources, we get an unbalanced panel sample covering information on bilateral trade, regional trade agreements, sanctions, political alliances, as well as variables representing trade diversions and interactions. The final dataset contains panel information on 1 lakh country-pairs for the period 1990-2019. We take the time period from 1990 to 2019 because the usage of economic sanction as a foreign policy tool grew substantially after 1990. Descriptive statistics are provided in Table1.

Table 1: Descriptive Statistics

Variable	Mean	Std. Deviation	Min.	Max.
Export	525851.9	5290534	0.001	4.80E+08
Import	473741.6	4949460	0.001	5.63E+08
RTA	0.093	0.291	0	1
Political Alliance	0.007	0.085	0	1
Sanction	0.053	0.224	0	1
Diversion	0.880	0.325	0	1
DS	0.160	0.366	0	1
DT	0.089	0.285	0	1

RESULTS AND DISCUSSIONS

We begin with analyzing the direct trade (i.e., trade between senders and targets) and trade diversion (i.e., trade between third-parties and countries directly affected by sanctions, either as a sender or as a target) effects of sanction. In Table 2 we present the estimation results pertaining to equation (1). The dependent variables in Column (1) and (2) are exports from country i to country j and imports of country i from country j , respectively.

Table 2: Estimates of Direct and Indirect Impact of Sanction on Bilateral Trade Flows

	1	2
	Exports	Imports
RTA	0.1277*** (0.021)	0.1275*** (0.020)
Political Alliance	0.078* (0.042)	0.095 (0.068)
Sanction	-0.101*** (0.029)	-0.061** (0.031)
Diversion	1.126*** (0.126)	2.288*** (0.721)
Political alliance*Diversion	0.080** (0.042)	0.096* (0.068)
RTA*Diversion	0.125*** (0.021)	0.126*** (0.022)
No. of observations	112633	118086
Pseudo-R ²	0.996	0.995

Notes: The estimates are obtained using PPML estimator, with country-time fixed effects and country-pair fixed effects. The estimates of all fixed effects are omitted for brevity and are available on request. All standard errors are clustered by country pairs and reported in the parentheses. *** p < .01, ** p < .05, * p < .1

The estimated effects of RTA on bilateral trade flows are positive and significant, implying that a presence of RTA increases bilateral trade flows between the RTA signatories. The point estimates suggest that presence of an RTA between the two countries increases exports and imports by almost 13.5 per cent in both cases. This is aligned with earlier findings on the effect of RTA on trade between RTA members (Ghosh and Yamarik 2004; Lee and Park, 2005; Cipollina and Salvatici, 2010).

Next, we find that the coefficient of political alliance is positive in both columns. This suggests that political alliance between countries could facilitate trade between them, as firms take political relations between countries into account when establishing trade relations (Long, 2003; Gowa and Mansfield, 2004; Haim, 2016). Political alliance between countries acts as an assurance for the firms that a conflict is unlikely to

occur between their states, and, hence it is safe for the firms of allied states to build in long term trade relations with each other. In particular, investments made to cater to export markets are mostly relation-oriented; firms tend to be wary of potential opportunistic behaviour of trading partners (Long and Leeds, 2006). Consequently, the likelihood of exporting firms to build trading relationships with firms of countries that have political alliance to their government. Imports, on the other hand, depends more on demand (both consumer-led and production-led demand) and relative prices. These arguments perhaps explain the observed estimated coefficient on political alliance to be insignificant in case of imports and is weakly significant at 10 per cent level in case of exports.

A weaker impact of political alliance in explaining trade between countries suggests economic ties such as RTAs supersede political ties in explaining trade between countries. This is not surprising as the prime motivation of trade agreements is to increase bilateral trade between signatories by expanding the market access for the firms of the partner countries. The main objective of political alliance is to ensure security cooperation between signatories in the event of military conflict. Bilateral trade flow is, thus, a direct outcome of trade agreement and could be a potential bi-product of political alliance.

Aligned with our expectations, sanctions are found to depress bilateral trade –the estimated effects of sanctions on both imports and exports are negative and significant (Table 2). A negative impact of sanctions on exports reflects the tendency of senders of the sanction to limit their exports of commodities, such as intermediates and capital that may be required in the production processes of the targets or other essential consumer items, in order to reduce the welfare of the targets (Jeong, 2020). Similarly, the negative impact of sanctions on imports is a reflection of import restrictions of senders from targets, thus limiting targets' market access and squeezing its export earnings (Ferguson, et. al, 2022).

Interestingly, we find the coefficient of *Diversions* to be positive and significant (at 1 percent level of significance) in both the columns for exports and imports. This indicates that senders' and targets' trade with third-party countries increases. We find the coefficient of imports to be higher than that of exports. This could suggest that countries affected by sanctions may prioritize key imports that are crucial for their economy more than exports in case of political tensions and imposition of economic sanctions. Overall, the coefficients of *Diversions* are higher than coefficients of *Sanctions* which suggests that both sender and target countries seek alternate markets for trade. Thus, we find evidence that sanction affected countries seek to expand, intensify or diversify trade relations with third-party countries to manage their trade losses.

Is this diversion of trade by sender country to third-party countries accentuated by political relations or trade relations? We analyse this by focusing on trade between sanction-affected countries and third-party countries and measuring the interactive effect of *Diversions* with *RTA* and *PoliticalAlliance*. We find the estimated coefficient of interaction between trade diversion and political alliance to be positive and significant at 5 percent level in case of exports and insignificant for imports. But, the interaction between *Diversions* and *RTA* is found to be positive and highly significant for both exports and imports at 1 percent level of significance. Also, the interactive effect of trade alliance is higher than political alliance. This suggests that, overall, the power of political alliance to explain trade diversion, in the presence of sanctions, is lower as compared to that of an RTA. It is likely that RTAs exist between countries that are either politically neutral or close to one another, accounting for the same as we include both the variables in our gravity model. Again, economic ties appear to supersede political ties in case of trade diversion to third-party countries. Akin to Early (2009), our study finds greater support for liberal school of thought as compared to realist school of thought.

In Table 4, we examine the trade of third-party countries and how the imposition of sanctions influence their imports and exports with

the sender and the target countries. The estimated coefficient of *RTA* is positive and highly significant, echoing the findings in Table 3. Also, the coefficient of *Political Alliance* is positive for both imports and exports but significant only in case of exports. It is important to reiterate, from Table 3, that alliances only intensify the diversion and are not precondition for trade diversion.

Table 3: Impact of Sanctions on Third Party Countries' Trade with the Sender and The Target

	1	2
	Exports	Imports
RTA	0.125*** (0.021)	0.126*** (0.020)
Political Alliance	0.080** (0.042)	0.096 (0.068)
DT	0.213* (0.143)	0.163** (0.098)
DS	1.022*** (0.128)	2.205*** (0.740)
Political Alliance*DS	0.234 (0.274)	0.163 (0.218)
RTA*DS	0.193** (0.177)	0.127** (0.210)
Political Alliance*DT	0.613** (0.227)	0.245** (0.182)
RTA*DT	0.060* (0.150)	0.193* (0.132)
No. of observations	112633	118086
Pseudo-R ²	0.996	0.995

Note: DS is a dummy variable that takes value '1' for a year 't' if in that year the origin country is the third-party country and the destination country is the sender of sanction, otherwise it takes value '0'. Similarly, DT is a dummy variable that takes value '1' for a year 't' if in that year the origin country is the third-party country and the destination country is the target of sanction, otherwise it takes value '0'. The estimates are obtained using the PPML estimator, with country-time fixed effects and country-pair fixed effects. The estimates of all fixed effects are omitted for brevity and are available on request. All standard errors are clustered by country pairs and reported in the parentheses. *** p < .01, ** p < .05, * p < .1

Does the third-party countries' trade with the sender and the target change in similar or different ways? We discern this from the estimated coefficients of the dummy variables, DT (capturing third-party country's trade with target) and DS (capturing the third-party country's trade with sender). The estimated coefficient of DT is positive and significant for both imports and exports, implying the third-party country's bilateral trade with the target increases as the latter faces economic sanctions. In the same way, the coefficient of DS is positive and highly significant in case of both imports and exports, indicating that third-party countries increase their two-way trade with sender countries as well. This is not surprising as trade diversion happens irrespective of prior alliance the sender and the target might have with the third-party country. In particular, the trade diversion with respect to the senders is relatively higher because trade with targets might be a risky prospect due to uncertainty posed by sanctions.

The next set of variables encapsulates the role of trade alliances and political alliances in influencing the trade pattern of third-party countries with the sender and the target countries. The variables $RTA*DT$ and $RTA*DS$ portray the interactive effects of trade alliance of third-party countries with sanctioned countries and sanctioning country respectively. Expectedly, the estimated effects of trade alliance are significantly positive for trade (both imports and exports) of the third-party country with both the sender and the target country.

The interaction term *Political Alliance*DT* measures the impact of political closeness of the third-party country with the target country on the trade of the third-party country. The estimated coefficient of this interactive term is positive and significant for both imports and exports. This suggests that third party countries that have political alliance with the target countries may assuage the impact of economic sanctions by increasing exports and providing the crucial traded goods to their allies, as well as increasing imports such that trade-related income channel of the target countries is not disrupted. Our result resonates with the arguments put forth by Early (2012) – weakening of targets' economies

dents their military strength, consequently posing security threat to the third-party ally. Hence, it is in the interest of the third-party to mitigate the damage caused to their sanction-targeted allies.

The interaction term *Political Alliance*DS* measures the impact of political closeness of the third-party country with the sender country on the trade of the third-party country with the sender of sanctions. This coefficient is found to be positive but insignificant for both imports and exports, implying that political alliance between sender and third-party country is no assurance trade cooperation between them on sanction-related decisions.

In summary, amidst sanctions, the soaring trade between the third-party country and the target is a result of profit seeking behaviour of the third-party. A defense alliance between the two further fuels the ascent in trade between them. The third-party will honour the alliance with the target as it faces an economic crisis, arising from a political backlash, to prevent the resulting security concerns for its own country. However, trade(-diversion) between third-party and sender arises purely due to profit interests of the third-party country and political alliance between them doesn't have any additional impact.

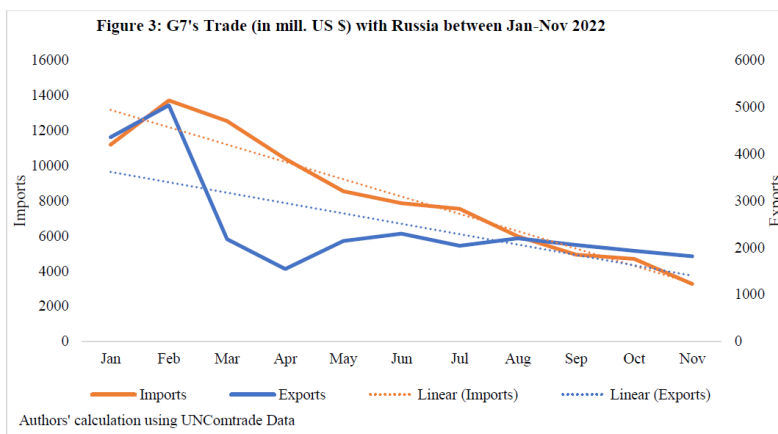
GRAVITY RESULTS: A MIRROR TO 2022 EPISODE OF SANCTIONS ON RUSSIA?

The US and its allies (sender) have slapped economic sanctions on Russia(target). Russia has struck back with countersanctions. India is the non-participating third-party country. In this section, we will analyze India's evolving trade relations, pre- and post- the incidence of sanctions, with the senders and the target. We will also discern what insights the estimation results, based on historical data, have for us to understand India's trade relations with sanction-hit Russia and the G7 nations, since 2022.

Specifically, we try to answer the following questions based on our statistical results. What is India's motivation to act as a sanction

buster? Is it to economically benefit from high discount on crude oil prices offered by Russia faced with sanctions¹⁴? Or is it due to India's long historic political alliance in terms of defense and security relationship with Russia? What about India's defence ties with the US and trade ties with other senders – do these ties explain senders' trade diversion to India?

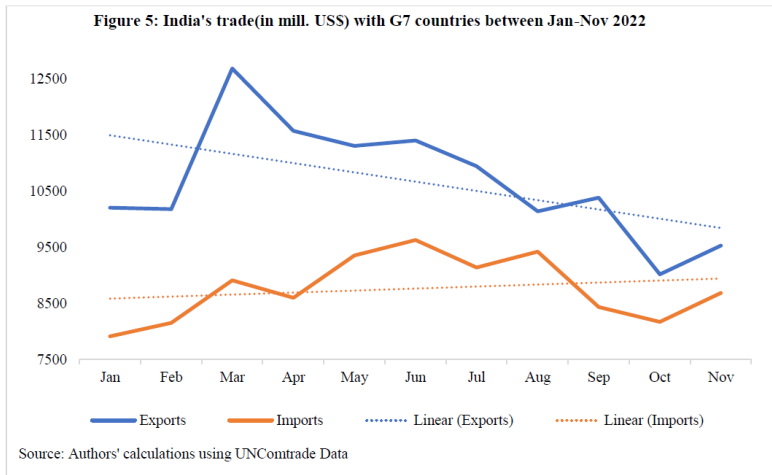
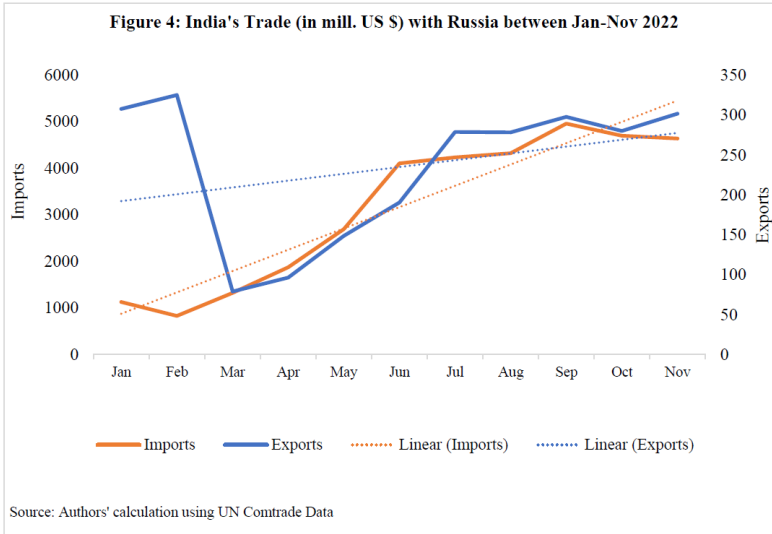
An analysis of trade data is presented in figures 3,4 and 5 below¹⁵. Figure 3 suggests that since the Russian invasion of Ukraine, the sanctioning countries' exports to and imports from Russia declined by 59 percent and 71 percent, respectively during January to November, 2022. India's imports from Russia have increased considerably (figure 4), almost by 312.1 percent, between January-November, 2022. Meanwhile, India's exports to Russia remained stable over the period. As per the data, India's export to Russia declined in organic and inorganic chemicals, but spiked substantially in essential commodities such as cereals and pharmaceuticals. It is the export of essentials to Russia that buoyed India's overall exports to Russia during the period¹⁶.



¹⁴ See Hilgenstock et. al. (2023): https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4430053

¹⁵ Figures 3, 4 and 5 are based on data downloaded from UN Comtrade on February 20,2023

¹⁶ See Table 4.



Therefore, it is evident that bilateral trade between Russia and G7 nations have plummeted owing to sanctions. Additionally, India's trade with Russia grew substantially while its trade with G7 countries was more or less maintained (figure 5). This phenomenon mirrors our gravity results on the direct effect of sanction on trade.

How much of this change in trade patterns, as depicted in figures 3, 4 and 5, was due to trade diversion? Table 4 and 5 below provide information on commodities that contributed the most to the change in trend in India's trade with Russia and G7 countries and those contributed to the downward trend in G7 countries' trade with Russia, respectively.

Table 4: Items that contributed the most to the upward trend in India's trade with Russia and G7 countries between Jan-Nov 2022

	India's Import	India's Export
Russia	Mineral fuels and oils (91%)	Pharmaceutical products and Cereals (764%)
USA	Semi-precious stones (40%)	Mineral fuels and oils (57%)
UK	Semi-precious stones (84%)	Ships, Boats, etc. (130%)
Japan	Semi-precious stones (54%)	Mineral Fuels and Oils (96%)
Italy	Miscellaneous chemical products (46%)	Mineral Fuels and Oils (38%)
Germany	Aircrafts and Spacecrafts (44%)	Pharmaceuticals (20%)
France	Mineral Fuels and Oil (40%)	Mineral Fuels and Oil (41%)
Canada	Fertilizers (453%)	Oilseeds (56%)

Source: Authors' calculation using UN Comtrade Data

Table 5: Items that contributed the most to the downward trend in G7 countries' trade with Russia in between Jan-Nov 2022

	Import from Russia	Export to Russia
USA	Mineral fuels and oils (49%)	Pharmaceuticals and Nuclear reactors etc. (57%)
UK	Mineral fuels and oils (51%)	Pharmaceuticals (49%)
Japan	Mineral fuels and oils (90%)	Vehicles (585%)
Italy	Mineral fuels and oils (45%)	Nuclear reactors etc. (121%)
Germany	Mineral fuels and oils (70%)	Pharmaceuticals (35%)
Canada	Rubber and Fertilizers (57%)	Dairy products (138%)

Source: Authors' calculation using UN Comtrade Data.

Note: Data for Germany and Japan's trade with Russia was available till December 2022, that for Italy's trade with Russia was available till October 2022. Data on France's trade with Russia was not available. Remaining countries' trade with Russia was available till November 2022.

The figures in Tables 4 and 5 are indicative of plausible trade diversion, where both senders and target divert their trade to the third-party (India) and the third-party facilitates the diversion. The US and its allies reduced oil imports from Russia as a part of sanction measures¹⁷. At the same time, Russian oil exports have found a market in India, as 91 percent of rise in India's import from Russia is due to the jump in oil imports. Moreover, India's oil exports to the US, Japan, Italy and France have escalated during the same period, contributing positively by 57, 96, 38 and 41 per cents¹⁸, respectively, to the change in trade with sanctioning countries. Thus, it is certain that some part of India's oil imports from Russia is becoming its exports to the sanctioning countries. Moreover, as sanctioning nations are curtailing their exports of essential commodities to Russia; and Russia's demand for such commodities are being met by imports from India. Hence, as predicted by our empirical results, based on gravity equations, the change in trade dynamics between India and Russia and that between India and G7 countries is precipitated by trade diversion, particularly in oil.

Our findings suggest that the existence of a trade alliance between a third-party country and sender and/or target will have additional impact on trade diversion. Furthermore, a political alliance between third-party country and target will accentuate trade between target and sender, amidst sanction. However, political alliance between third-party and sender doesn't explain trade between them in the event of sanctions. Thus, trade between the sender and the third-party country is purely motivated by economic benefits accrued to the latter. The trade between the sender and the third-party country happens because the latter takes advantage of the low price of commodities traded by the target and sends them to the sender.

¹⁷ Russia is the second-largest oil exporting country in the world and the EU is heavily dependent on Russian oil.

¹⁸ Unrelated to sanctions, India's exports in iron and steel (to US), mineral fuels and oils, (to UK), and organic and inorganic chemicals (to Germany and Canada) witnessed a dip during Jan-Nov 2022.

We find a similar dynamic playing out in the post-sanctions trade between India and Russia and between India and the G7 nations. Among the G7 nations, India has trade agreement only with Japan; and the US is India's long time trade partner, sans any trade agreement between them. Russia has not been India's major trading partner and has no trade agreement with India. In this case, therefore, trade alliance is not playing any additional role in intensifying trade diversion.

As far as political alliance is concerned, India has time-tested, institutionalized defense cooperation, since the Soviet era; and has recently enlarged its defense ties with Russia. Therefore, it is no surprise that India is honouring its long-standing defense alliance with Russia, by magnifying its trade with Russia. India has a couple of defense agreements with the US as well, but not as deep¹⁹. Nonetheless, a defense pact between a sanctioning state and its ally is no assurance of cooperation between them on sanction-related decisions, our empirical results suggest. This is especially true if the gains from trade with the sanctioned state is substantial for the sanctioning states' allies. It is but obvious that India has acted upon the opportunity, arising from the demand gap for Russian oil due to sanctions, to import oil at a discounted rate, and export a part of the imports to the West for economic gains (Table 1).

In a nutshell, we conclude that our statistical results have considerable strength to explain the current politico-economic trade dynamics between India and Russia and between India and G7 nations, as G7 nations target Russia with a slew of economic sanctions. By busting Western sanctions on Russia, India reaps both economic and political (security) gains, i.e., purchasing heavily discounted oil and continuing to receive Russian military cooperation. India's trade with the G7 nations, since Russia's conflict with Ukraine, is determined purely by tangible economic benefits, whereby India is tapping into the demand-supply gap in the global oil market.

¹⁹ See Lalwani and Byrne (2019) for details on India-US defense partnership.

CONCLUDING DISCUSSION

The effectiveness of economic sanctions relies on their influence on the trade of the targeted countries, which is contingent on those countries' ability to redirect trade to third party not affected by the sanctions. Historical instances reveal that third parties have indeed aided trade diversion, undermining the effectiveness of sanctions. However, existing literature lacks definitive proof regarding trade diversion and the motives behind undermining sanctions.

In this study, we examined the direct and third-party trade effects (i.e., trade diversion) of economic sanctions using the novel Global Sanctions Database in a structural gravity model set up. We contribute to the literature on trade and trade diversion effects of sanction in two distinctive ways.

First, our empirical model includes all possible pairs of senders and targets globally. That is, we re-examine the impact on sanctions on trade flows taking into account sanctions beyond that of the US' as well as the cases of counter sanctions. We find that sanctions depress the bilateral trade between the sender and the target of the sanction. This finding is in line with earlier studies on this issue, namely, Felbermeyer, *et. al.*, (2020) and Dai, *et. al.* (2021). Furthermore, our results support sanctions led trade diversion from sender/target to the third-party country.

Our second contribution lies in gauging whether having a political and/or trade alliances with sender/ target of the sanction impacts the third-party country's decision to support the sender in imposing sanction (i.e., cutting off trade ties with target) or to help the target in recouping from sanction effects (by enhancing trade channels with the target).

On the role of trade and political alliances in deflecting sanction, our findings suggest that alliances heighten trade-diversion, but they are

not pre-condition for diversion. This means countries affected by sanctions, either as a sender or as a target, will look for alternative markets in a third-party country, even if there was no prior trade or political alliance with the third-party economy. The third-party country in its stride will take the opportunity to fill in the demand and supply gap created in the global market, owing to sanctions. Alliances only help intensify this diversion.

We also find, in line with the arguments put forth by Early (2009,2015), that having a political alliance with a third-party country is no guarantee of its cooperation with the senders in sanctioning efforts. In other words, trade flows between the sender and the third-party country, amidst sanctions, solely arise due to prospects of economic benefit. Political alliance between a target and a third-party country ensures that the third-party country will support the target in alleviating losses due to sanction by keeping trade channels open. Interestingly, our results show that trade alliance is a stronger form of alliance a sender and a target can have with the third-party country. A trade agreement between a sender and third-party country encourages cooperation between them in sanctioning efforts. Similarly, a third-party country will come in aid of targets if it has a trade agreement with them.

Finally, we demonstrate that our empirical results aid our understanding of India's evolving trade relationships with Russia and G7 nations, as the latter sanctioned the former with a view to cripple Russia and its might to war against Ukraine. As indicated by our gravity results, bilateral trade between sanctioning and sanctioned nations, i.e., between Russia and G7 nations declined owing to sanctions. India's (which is the non-participating third-party country) trade with Russia grew substantially while its trade with G7 countries was more or less maintained. The change in trade dynamics between India and Russia and that between India and G7 countries is precipitated by trade diversion, particularly in oil.

What explains the deflection of economic sanctions by India while maintaining trade relations with G7 nations? By busting Western sanctions on Russia, India reaps both economic and political (security) gains, i.e., purchasing heavily discounted oil and continuing to receive Russian military cooperation. India's trade with the G7 nations, since Russia's conflict with Ukraine, is determined purely by tangible economic benefits, whereby India is tapping into the demand-supply gap in the global oil market.

Overall, while our study is able to explain the role alliances play in sanctions-related trade-diversion, certain limitations of the research need to be kept in mind. First, it is important to note that firms are the entities that engage in trade. This implies that the third-party's trade with sender and/or target is likely to depend on how its firms organize and lobby on trade policy. Due to lack of data, we have not been able to analyze firm-lobbying as a determinant of trade diversion which can be a promising extension of this study. Another interesting extension might be to study the importance of public sentiments regarding sanctions and voters' preferences in shaping the third-party country's decision to support senders in their sanctioning efforts or to shield targets from debilitating impact of sanctions. Finally, understanding the impact of sanctions on commodity-level trade and trade diversion could be a topic of future research.

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