Global Trade Fragmentation under Sanctions: Evidence on Geopolitical Distance, Third-Party Spillovers, and BRICS Dynamics

Jerin John Puliyayil [**], Mini P Thomas [*]

[*]Department of Economics and Finance, BITS Pilani, Hyderabad Campus

[*]Corresponding email address: p20230477@hyderabad.bits-pilani.ac.in

Abstract

With trade flows increasingly fragmented along geopolitical lines due to Geopolitical uncertainty and economic statecraft, it is important to understand how bilateral political relationships and economic sanctions affect international trade, especially for emerging economies. Existing studies find that sanctions' impact on trade flows is heterogeneous, across sanction sender-target and target-third-party country pairs. This study aims to examine the impact of geopolitical distance, economic sanctions, and their interactions on international trade flows using bilateral monthly export data of 187 countries. We estimate the impact of geopolitical distance on trade flows, separately for trade and financial sanctions, for sanctioner-target and target–third-party trade, and further on intra-BRICS trade flows. Using a PPML gravity model framework, we find that geopolitical distance is significantly explains the heterogeneous impacts of sanctions on trade. Sanctions "bite harder" when countries are geopolitically distant, both for sanctioner-target and target-third party pairs. We also find that trade diversion or "sanctions busting" occurs when financial sanctions are imposed, between geopolitically closer targets and third-party countries. In addition, we find that intra-BRICS trade flows increase when the member countries are under financial sanctions. Decile Heterogeneity Analysis shows the differential impact across the geopolitical spectrum. Findings are robust under various robustness checks.

Keywords: Sanctions; Geopolitical distance; Geoeconomic fragmentation; Trade Sanctions; Financial Sanctions; BRICS.

JEL Codes: F13, F14

1. Introduction

Recent years have witnessed an unprecedented surge in global conflicts and great-power competition. The Uppsala Conflict Data Program recorded 61 active state-based armed conflicts in 2024, the highest number since systematic data collection began in 1946, with an additional 59 conflicts recorded in 2023 (also a post-1946 high) (UCDP, 2024). The Geopolitical risk index, which measures adverse geopolitical events and associated risks, has remained elevated since 2021, with large spikes in 2022 and 2025 (Caldara and Iacoviello, 2018; Caldara and Iacoviello, 2025).

Economic sanctions can be defined as economic "actions (or threats) undertaken by sanctioning states or international organizations (the senders) to punish, constrain or, more generally, to influence the behavior of sanctioned states, private entities and/or

powerful elites (the targets)" (Felbermayr et al., 2020). There has been a threefold increase in cases of active sanctions between countries over the past 15 years (Felbermayr et al., 2025).

These escalations have led to the emergence of economic statecraft as a key foreign policy tool, which comprises policies aimed at economic security and strategic interests in international trade and finance (Gopinath et al., 2024). These developments have had heterogeneous impacts on trade flows across the globe. These policies have led to a 'Geoeconomic fragmentation' in trade and financial flows, which can be defined as "a policy-driven reversal of global economic integration, often guided by strategic considerations" (Aiyar et al., 2023). The role of economic statecraft as a significant factor determining global trade patterns, is an important development in trade relations (Baldwin, 2020). This is not only driven by state actors; businesses are increasingly placing greater emphasis on strategies that emphasize reliability, such as reshoring and friendshoring, which affect supply chain patterns (Wu, 2025). The recent trend in friend shoring, near shoring and reshoring in factories across Asia, America and Europe should be understood against this background of geopolitical tensions (Ando et al., 2026).

These changing alliances between countries can be both advantageous and disadvantageous, and emerging economies must effectively manage them (Aiyar & Ohnsorge, 2024). Emerging markets generally depend on advanced economies for new technologies, FDI, capital, and export markets. The advanced economies could be geopolitically distant from the emerging markets, making any fragmentation of trade and financial flows on geopolitical lines tricky for Emerging economies like India. In this context, the BRICS has emerged over time as a representative voice of the developing nations, with an emphasis on boosting sustainable trade and investment flows. In 2025, the BRICS bloc, which now includes 10 member countries, namely, Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Iran, Indonesia, and the United Arab Emirates, accounted for 40.7% of the world's GDP in PPP terms, as opposed to the G7 countries' share of 28.4% (IMF, 2025). Another important reason the BRICS are important in a multipolar global order is their open endorsement of de-dollarization and their policies to substitute the US dollar with local currencies and other measures within the bloc for boosting trade. Moreover, the BRICS have put in place several mechanisms to reduce their reliance on the Dollar and the SWIFT system for trade payments. SPFS and CIPS, operated by Russia and China, respectively, are inter-bank messaging systems that facilitate payments even when access to SWIFT is restricted. However, they are mainly used only by Chinese and Russian firms. Reciprocal Currency Swap Lines established by BRICS central banks also facilitate transactions in local currencies. Countries like India use bilateral local-currency trade agreements, allowing settlements in partner currencies.

Also, recent studies have found that trade and investment have declined globally between economic blocs, while flows within blocs have remained relatively stable or risen (Santacreu et al., 2025). The recent exponential increase in the number of sanctions between countries is a main reason behind these global developments.

However, there is a dearth of literature examining how geopolitical distance affects the success or failure of sanction regimes and how they interact to influence trade flows, particularly for emerging economies. Moreover, existing studies divide countries into homogeneous US-leaning or China-leaning 'blocs' to analyze geoeconomic fragmentation (Airaudo et al., 2025), thereby failing to account for countries' important bilateral relationships and intra-bloc dynamics, especially among BRICS countries. Additionally, existing studies find that a target country's trade with this party countries also get affected when sanctions are employed, and that this change is heterogenous across countries. However, the drivers of this heterogeneity is under explored.

To fill this void, this paper estimates the effects of geopolitical distance on trade under sanctions (trade as well as financial), between sanctioning and target countries, and target and third-party countries. We use monthly bilateral export flows of 187 countries from 2009 to 2024 for the analysis. The study also examines whether geopolitical distance affects intra-BRICS trade when a member country is sanctioned. Specifically, we analyze whether BRICS countries act as 'sanction busters'—third-party actors who significantly increase trade with sanctioned states following sanctions imposition on other bloc members, undermining the enforcement power of sanctioning coalitions (Early, 2015).

To be specific, we examine whether the impact of economic sanctions on trade flows depends upon the geopolitical distance between the sender country and the target country, and whether the deflection of sanctions through trade flows between target and third-party countries depends upon the geopolitical distance between them, and explore how economic sanctions and geopolitical distance interact and influence trade flows within the BRICS bloc, when a member faces sanctions.

Using a Poisson pseudo-maximum likelihood (PPML) structural gravity model framework, we find that Geopolitical distance is a significant factor in sanction effectiveness, and that financial sanctions, rather than trade sanctions, lead to trade diversion between targets and non-sanctioning third-party countries. We also find that Geopolitical distance negatively affects trade flows between the sender and the target countries, as well as between the target and third-party countries. Furthermore, financial sanctions are found to increase trade flows within the BRICS bloc, and intra-BRICS trade is also negatively affected by the geopolitical distance between the member countries.

2. Literature Review

This paper is conceptually related to literature that looks at the relationship between sanctions and targets (Lektzian & Souva, 2007; Bapat et al., 2013), and the impact of sanctions on third party states- Kwon et al., (2024) finds heterogenous effects of US sanctions on Cuba on third party states; countries that were geographically close or economically connected to Cuba had positive effects; Peterson,(2021) finds lower third-

party dual-use exports to US-sanctioned states. The research questions are also aligned with the literature on the impact of geopolitical distance and the geoeconomic fragmentation of trade flows (Campos et al., 2023; Hakobyan, 2023; Cevik, 2024). Below, we review recent studies on these different strands of literature.

2.1. Success and the effectiveness of sanctions

Most of the literature on the success of sanctions finds that economic sanctions do not work (Pape, 1997); whereas Hufbauer et al. (2007a) report approximately 34% success, and Pape (1998) re-estimates the success rate at only about 4%. There have been many studies on the heterogeneity of sanctions' effects, which vary by sanction type, sectoral exposure, and sender or target country market shares (Felbermayr et al., 2019; Gutmann, 2023). Afesorgbor (2019) finds that threatened sanctions and imposed sanctions have different effects on trade flows. Threatened sanctions lead to an increase in trade between the sender and the target, possibly due to firms stockpiling in anticipation of sanctions, whereas imposed sanctions directly reduce trade between them. However, Dai et al. (2021) found negative anticipatory effects of sanctions, and there were significant post-sanction effects that gradually disappeared approximately 8 years after the lifting of sanctions.

However, many studies find that sanctions do not have the desired effects on trade flows. Kryvoi (2008) finds that EU sanctions on countries failed to cause any impact on trade and capital flows, particularly in the case of countries which had strong benefactor countries supporting them. Itskhoki & Ribakova (2024) find that while sanctions can be impactful, their success often hinges on the clarity of their objectives and the robustness of their enforcement, citing the limited impact of financial sanctions on Russia, wherein Russia was successfully able to divert a huge part of its trade flows to third-party countries. Sanctions are more likely to succeed when sanctioners have a comparative advantage in goods exported to the target, but more likely to fail if the target's export portfolio is diverse or the target has a comparative advantage in exports (Kavaklı et al., 2020).

2.2. Sanctions and trade flows with third-party countries

Another strand of literature examines the trade and financial flows between countries directly involved in sanctions and third-party countries. Barry & Kleinberg (2015) find that as firms in the sanctioning state respond to coercive measures against a trading partner by seeking alternative avenues for profit, they will shift investments to countries that can provide indirect access to the sanctioned economy, particularly those that are perceived as sanction busters. In the post-Cold War era, exports of third-party dual-use goods decreased to the US-sanctioned states (Peterson, 2021). Sanctions also affect global value chains (GVCs); they have a negative impact on global value chain participation,

with the disruptive effect on backward linkages significantly exceeding that on forward linkages (Le et al., 2021). The threat or use of economic coercion itself is dependent on whether the target state is trade-dependent on the sender; if the target has higher opportunities to redirect lost trade, the sender is less likely to deploy sanctions (Peksen & Peterson, 2015). BRICS' economic integration have reduced the impact of international sanctions on Russia's trade, by facilitating export diversification and upgrading to higher-value products, with this trade transformation effect strengthened when BRICS members develop more diversified financing channels and mature capital markets (Li & Han, 2025). Unilateral sanctions imposed by the US were followed by target countries increasing their trade flows with the EU (Yang et al., 2009). There is also a plethora of studies exploring the idea of "sanction-busting", in which a third-party state trades with the target state, making up for the lost trade the target faces, and decreasing the impact of sanctions. Most studies conclude that the reasons for sanction-busting are primarily economic rather than political (Early, 2011; Jena et al., 2024).

2.3. Geopolitical Distance and Trade Flows

Most of the existing studies find that Geopolitical distance has a negative impact on trade and cross-border financial flows; Mayrhuber & Abeliansky (2025) find that this effect is more pronounced for the countries that are geopolitically closely aligned with the US. Nana & Ouedraogo (2023) find that the negative impact of geopolitical distance on bilateral trade holds for trading partners across different income groups.

However, Cevik (2025) finds contradictory and statistically insignificant effects of geopolitical distance on trade, depending on the level of economic development. It is found to be positive in advanced economies and negative in developing countries,- in constrast to studies that find the negative relationship between geopolitical distance and trade flows (Qiu et al., 2025; Seong et al., 2025).

3. Data and Methodology

3.1 Model specification and Econometric technique

In this paper, we empirically examine the direct and indirect effects of economic sanctions on the trade flows of sanctioned and sanctioning countries globally, along with the effects of Geopolitical distance on trade during sanction episodes. We also focus on the BRICS countries (Brazil, Russia, India, China and South Africa) in particular, to analyse how sanctions and geopolitical distance in the presence of sanctions affect Intra bloc trade flows.

Based on the structural gravity model operationalized by Anderson & van Wincoop (2003), we estimate two empirical model specifications. Following Santos Silva and Tenreyro (2006), we estimate the model using the Poisson Pseudo Maximum Likelihood (PPML) technique to account for heteroskedasticity in the trade data and to take advantage of the information contained in the zero trade flows. PPML is also with structural gravity and additive fixed effects.

In order to analyse the direct and indirect effects of sanctions and geopolitical distance on trade flows, we estimate the following gravity model specification:

$$
\begin{aligned}
X_{ij,t} \;=\; exp[\; & \beta_1 SanctionerwithTarget_{ij,t} \;+\; \beta_2\, TargettoThirdParty_{ijt} \\
& +\; \beta_3\, IntraBRICS_{ij,t} + \beta_4 GeoDist_{ij,t-1} \\
& +\; \beta_5 \left(SanctionerwithTarget_{ij,t} \;\times\; GeoDist_{ij,t-1} \right) \\
& + \beta_6 \left(TargetwitThirdParty_{ij,t} \times\; GeoDist_{ij,t-1} \right) \\
& + \beta_7 \;\left(IntraBRICS \;\times\; GeoDist_{ij,t-1} \right) + \beta_8\; FTA_{i,j,t} \;+\; \varphi_{ij} \;+\; \theta_{it} \\
& +\; \delta_{jt}\;] \;\times\; \varepsilon_{ij,t}
\end{aligned}
$$

--------(1)

Wherein $X_{ij,t}$ in equation (1) denotes the bilateral export flows from country i and j at time t. We use monthly data of trade flows, so t denotes months. *SanctionerwithTarget* $_{ij,t}$ is a binary variable that takes the value one when trade takes place between a sanction-sending country and a target country at time t, and zero otherwise. *Target_with _ThirdParty* $_{ij,t}$ is another binary variable which takes the value one when a sanctioned country trades with a non-sanctioning third-party country, and zero otherwise. *GeoDist* $_{ij,t-1}$ is the lagged geopolitical distance between country *i* and *j* at time t, which is the absolute difference between the IPD values of country *i* and *j* at time *t-1*. The lagged term is used to mitigate endogeneity issues. *FTA* $_{ij,t}$ is a binary variable taking the value of 1 if there is a trade agreement between country i and j at time t, and 0 otherwise. We also have two interaction terms in the empirical model, to capture the impact of geopolitical distance when sanctions are in place; *SanctionerwithTarget* $_{ij,t}$ *X GeoDist* $_{ij,t-1}$ for capturing the impact of geopolitical distance on trade flows between a sanction sending country and a target country, and *TargetwithThirdParty* $_{ij,t}$ *X GeoDist* $_{ij,t-1}$ to capture the same on trade flows between a target country and a third-party country.

In order to analyse the impact of sanctions on intra-BRICS tradeflows, we have used IntraBRICS in equation (1), which is a binary variable that captures trade flows between BRICS members, and takes a value of 1 if at least one party is sanctioned, and 0 otherwise. We also add the interaction term of *IntraBRICS* with *GeoDist* in the model to capture the impact of Geopolitical distance on such trade flows. We run separate empirical models for trade sanctions and financial sanctions, in order to bring out the heterogeneous nature of the different kinds of sanctions and their impact.

The models specified in equations (1) incorporate three conventional fixed-effect specifications commonly employed in the gravity-trade literature. Time-varying exporter dummies, φ, absorb exporters' outward multilateral resistance and any other time-varying exporter characteristics—observed or unobserved—that systematically affect bilateral exports (Anderson and van Wincoop, 2003, Olivero & Yotov, 2012). Time-varying importer dummies, θ, absorb inward multilateral resistance and importer-specific influences. The use of exporter-time and importer-time fixed effects mitigates potential endogeneity due to the fact that sanctions are usually imposed in response to actions/inactions that are specific to the target country by accounting for target specific linkages. Additionally, we point out that it is unlikely that trade volume concerns drove these sanctions, thereby reducing reverse causality as a source of endogeneity.

Country-pair fixed effects, δ, capture the full set of time-invariant bilateral trade costs (both observable and latent); moreover, by sweeping out these persistent bilateral determinants, they substantially mitigate endogeneity concerns arising from the correlation between bilateral policy variables and the error term $\varepsilon_{ij,t}$ (Baier & Bergstrand, 2007). The standard errors in all specifications are clustered by country pair. Some observations are dropped because of lack of monthly bilateral export data.

3.2 Data

We source the bilateral monthly export data of 187 countries from 2009 to 2024 from the International Trade in Goods by Partner Country dataset (formerly Direction of Trade Statistics (DOTS)) published by the IMF. The list of the countries for the analyses is given in Table A1 in the appendix. Data on economic sanctions is taken from The Global Sanctions Database (Yalcin et al., 2025) which is a comprehensive dataset that documents economic sanctions worldwide from 1950 to 2023. It encompasses bilateral and multilateral sanctions, detailing their types, political objectives, and degrees of success. Ideal Point distance based on UN voting patterns as a proxy for geopolitical distance was taken from the database Voeten et al., (2009). Data on GDP and population of the countries were taken from the World Bank's World Development Indicators. Standard Gravity variables were taken from the CEPII gravity database. FTA data was taken from the database by Mario Larch Egger and Larch (2008). Consecutive-year panel data is used, rather than averages or intervals, to maximise the information in the sample, as recommended by Egger, Larch, and Yotov (2021).

3.3 An overview of Geopolitical distance

We use Ideal Point Distance (IPD), constructed by Bailey, Strezhnev, and Voeten (2017), is a measure of states' geopolitical alignment, based on UN General Assembly vote trends

as a proxy for Geopolitical Distance. Unlike evaluating individual voting-similarity dyads, IPD is a standardized way to gauge variation in countries' perspectives on different aspects of foreign policy.

Every country has an underlying "ideal point"—a position on a latent policy spectrum that reflects its fundamental geopolitical preferences regarding the US-led liberal international order—according to the IPD methodology. The ideal point distance between two nations is the absolute difference between their ideal points; smaller distances indicate a closer geopolitical alignment and a shared foreign policy preferences. Figure 1 shows the geopolitical distance between Russia and the countries that sanctioned it in 2014.

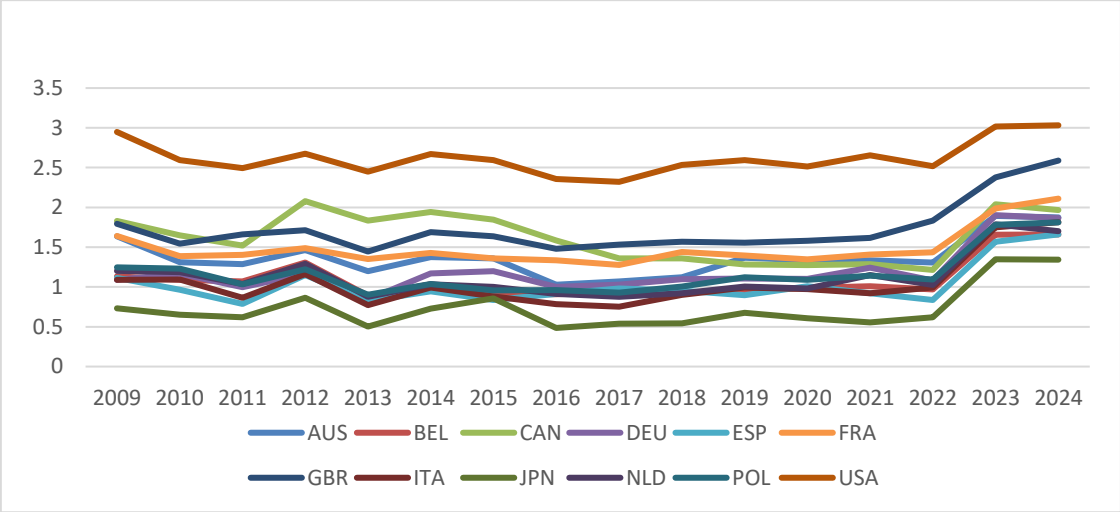


Figure 1: Geopolitical distance between Russia and sanctioning countries

Source: Authors' calculation based on the IPD database by Bailey, Strezhnev, and Voeten (2017)

Note: Abbreviations are ISO 3 codes of countries (AUS = Australia, BEL = Belgium, CAN = Canada, DEU = Germany, ESP = Spain, FRA = France, GBR = United Kingdom, ITA = Italy, JPN = Japan, NLD = Netherlands, POL = Poland, USA = United States)

Mean IPD differences between sanctioning countries and Russia were gradually decreasing prior to 2014. This decline halted in 2014 (after the annexation of Crimea), and the trend remained unchanged until 2021. The relationship, however, abruptly changed after 2022, with IPD differences increasing at a significant rate. However, the rising trend in the geopolitical distance halted and stabilised after the first year. Figure 2 shows the Geopolitical distance between Russia and the BRICS member countries.

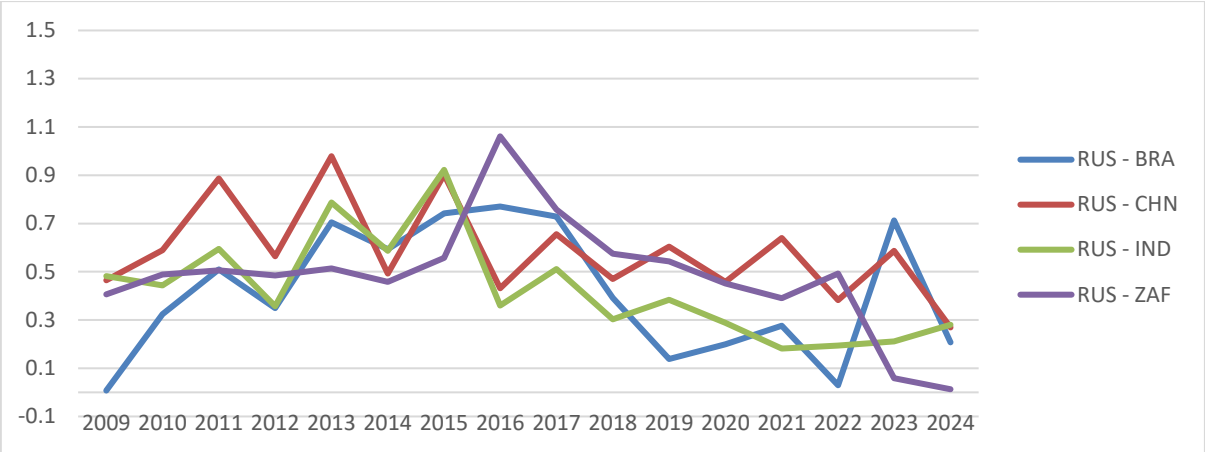


Figure 2: Geopolitical distance between Russia and BRICS members

Source: Authors' calculation based on the IPD database by Bailey, Strezhnev, and Voeten (2017)

Note: Abbreviations are ISO 3 codes of countries (RUS- Russia, BRA-Brazil, CHN-China, ZAF-South Africa, IND-India)

There was no significant change in the mean IPD distance between Russia and other BRICS countries, after both 2014 as well as 2022, when Russia Ukraine relations escalated, followed by numerous sanctions on Russia. This suggests that factors influencing sanction episodes do not affect the geopolitical distance between BRICS countries.

4. Results and Discussion

We present the results of our baseline empirical model in Table 1 below.

Table 1 – Impact of Sanctions and Geopolitical Distance on trade flows.

Variable	**Trade Sanctions**	**Financial Sanctions**
IntraBRICS	0.0524764 (0.0537602)	0.1954145 ** (0.0525273)
Sanctioner with Target	-0.1131314 (0.0784696)	0.0312543 (0.0511089)
Target with ThirdParty	0.0080205 (0.0367124)	0.0713813 * (0.0309161)

FTA	0.0623344 * (0.0282107)	0.0657572 * (0.0280575)
GeoDist	-0.1514219 ** (0.0338539)	-0.1555278 ** (0.0335968)
GeoDist x IntraBRICS	-0.0385692 * (0.0171491)	-0.0835775 ** (0.0204472)
GeoDist x Sanctioner with Target	-0.1044670 ** (0.0248332)	-0.0798985 ** (0.0192286)
GeoDist x *Target with ThirdParty*	-0.0564804 ** (0.0141483)	-0.0235735 + (0.0133659)
Constant	7.5442120 ** (0.0551233)	7.4953010 ** (0.0445021)
Number of observations	3,136,957	3,136,957
Pseudo R2	0.9795	0.9794
Exporter year fixed effects	Yes	Yes
Importer year fixed effects	Yes	Yes
Country pair fixed effects	Yes	Yes

Notes. Robust standard errors clustered by pair_cluster. Standard errors shown on the line below each coefficient in parentheses. Significance stars: *** p < .001, ** p < .01, * p < .05, + p < .10.

Source: Authors' Calculation using PPML gravity framework

4.1 Impact of Geopolitical Distance on trade flows

The estimated coefficient for the lagged Geopolitical Distance between countries is found to be negative and significant at the 1% level, in both the models based on trade sanctions as well as financial sanctions. A one unit increase in Geopolitical distance results in a 14 -14.4% reduction in export flows. Hakobayan et al (2023) shows how Geopolitical distance enters trade costs through a parametric iceberg trade-cost function, where bilateral foreign-policy alignment ($u_{n'n}^{align}$) is mapped into sector-specific iceberg multipliers via

$$\hat{\tau}_{sn'n} = ex\left(-\frac{1}{\theta_s}\hat{\beta}_s^{align}\left(\hat{u}_{n'n}^{align} - 1\right)\right)$$

where $\hat{\tau}_{sn'n}$ is the counterfactual proportional change in trade cost for sector s, from exporter $n'$to importer n. If $n' = n$,

$\hat{\beta}_s^{align}$ is the sector-s sensitivity of trade costs to geopolitical alignment under the counterfactual scenario,

$\hat{u}_{n'n}^{align}$is the counterfactual bilateral geopolitical alignment between exporter $n'$and importer n.

And $\hat{u}_{n'n}^{align} - 1$is the change in alignment relative to the baseline level; positive values mean stronger alignment, and negative values mean weaker alignment.

such that lower geopolitical alignment (higher distance) raises the bilateral trade cost $\tau_{sn'n}$ proportionally to the estimated elasticity β_s^{align} and inversely to the sectoral trade elasticity θ_s. The Realist school prespective in International Relations supports our empirical findings. It holds that since countries tend to give importance to gaining relative power rather than absolute power, when geopolitical distance increases, countries employ tariffs and other trade barriers to be better off than their rivals (Baldwin & Ruta, 2025). These measures also result in Geopolitical distance increasing trade costs. Our empirical results on geopolitical distance also aligns with recent literature supporting the claim of 'geoeconomic fragmentation' between countries in opposing geopolitical blocs in trade and financial flows (European Central Bank, 2024; Hardwick, 2025; Qiu et al., 2024).

However, trade and financial flows between geopolitically distant countries are being mediated by some emerging economies, which have evolved to function as 'connector countries' (Gopinath et al., 2024; Aiyar & Ohnsorge, 2024). In this context, we look at the impact of Geopolitical distance between India and Advanced Economies (as defined by the IMF) on trade flows between them. The list of AE countries is given in Table A2 in the appendix. The estimation results are shown in Figure 3 as coefficient plots with 95% confidence intervals in blue.

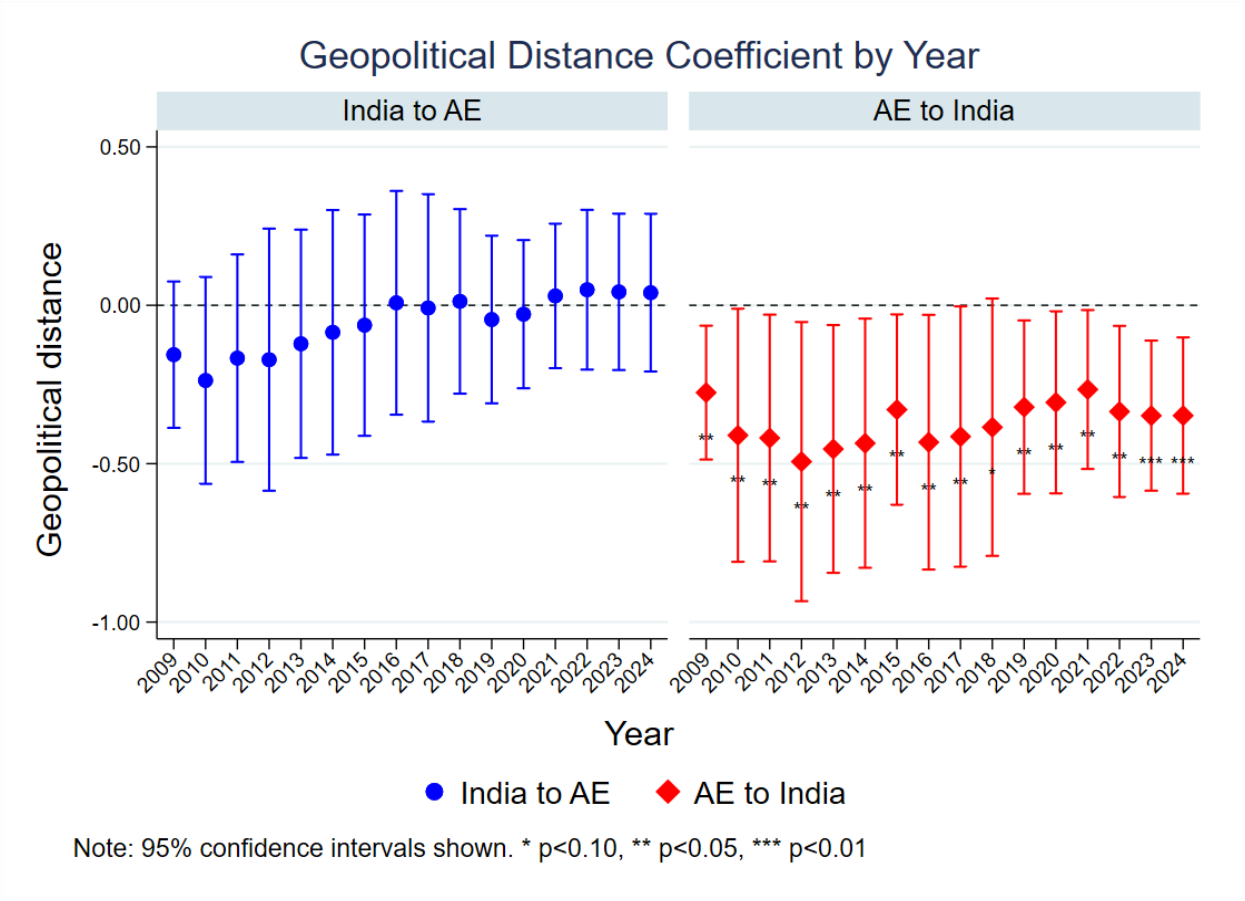


Figure 3: Coefficients of the impact of Geopolitical Distance on India's exports to AEs and AEs exports to India.

Note: AE=Advanced Economies

Source: Authors' calculations using a PPML gravity model, with country pair, importer year and exporter year fixed effects. Standard errors are clustered at the country pair level.

India's Geopolitical Distance with the AEs is found to be statistically insignificant throughout the years for its exports, and the coefficient becomes bigger over time. This indicates that India's exports to AEs are largely unaffected by Geopolitical Distance, and that India has increasingly been trading with Geopolitically distant partners. However, exports from AEs to India are negatively affected by their Geopolitical Distance with India, suggesting that AEs are more susceptible to Geopolitical differences in their exports. Recent studies have also found that advanced economies' trade flows are affected to a greater extent by geopolitical distance (Costanza Bosone & Stamato, 2024). This could be attributed to export and product diversification, trade composition asymmetries, trade finance and compliance cost differentials, asymmetric firm-level responsiveness, institutional workarounds and policy adaptations.

We will discuss how Geopolitical distance affects trade flows when sanctions are in place in the next section.

4.2 Impact of Sanctions and Geopolitical Distance on trade flows between sanctioning and sanctioned countries

The direct effect of trade sanctions on trade between the sanction-sending country and the target country is negative in the first model on trade sanctions and surprisingly positive in the second model on financial sanctions, but both are found to be statistically insignificant. However, their interaction terms with Geopolitical distance are negative and statistically significant. This finding reveals an important nuance about the effectiveness of trade and financial sanctions- that they "bite harder" or become effective when the Geopolitical distance between the sanction-sending country and the target country increases. When trade sanctions are in place, a one-unit increase in Geopolitical distance results in a 22.6%% decline in trade between the sender country and the target country. When financial sanctions are in place, trade flows between the target country and sanctioning country declines by 21%%, for a one-unit increase in Geopolitical distance. Our empirical results results indicate that when the sanctioning and target countries are geopolitically closer, sanctions are less effective in reducing trade flows between them.

Trade sanctions may apply only to specific goods (partial trade sanctions) or to exports and/or imports as a whole (complete trade sanctions). The sanctions that were put into place from 2009 to 2024 include very few complete sanctions; most of the sanctions were targeted and partial in nature. Figure 4 shows the frequency of the number of partial and complete sanctions.

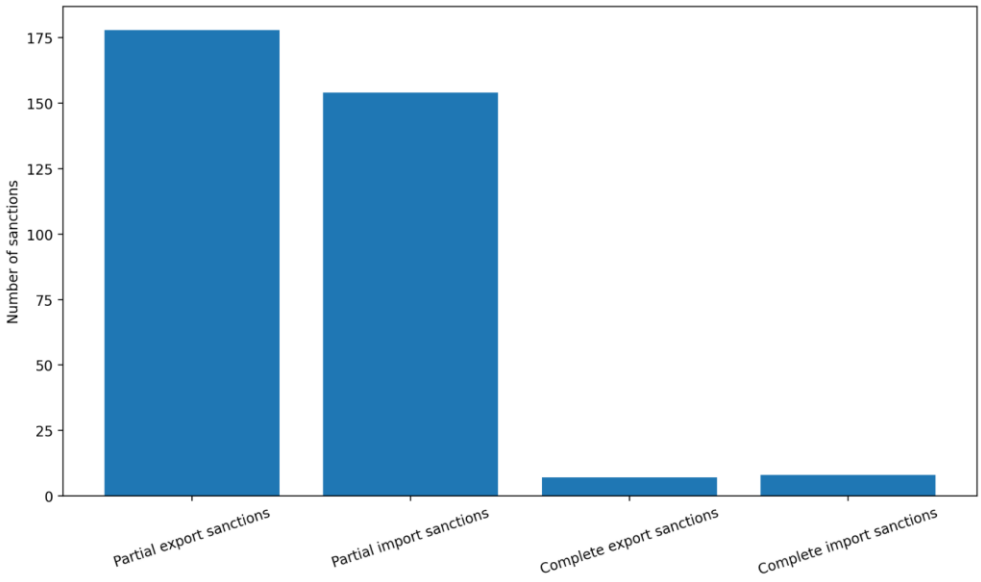


Figure 4: Number of partial and complete trade sanctions deployed (2009 to 2024)

Source: Authors' calculation from GSDB v 3

Caruso (2003) finds that moderate and limited sanctions, although expected to have a negative impact on trade, show a positive coefficient but are not significantly different from zero. Our findings are also in consonance with the findings of Felbermayr et al. (2020) pertaining to trade sanctions. We argue that the Geopolitical distance between nations is the key factor that facilitates the enforcement of partial sanctions that eventually decrease trade flows. Geopolitically distant sanctioning states might be more prudent in enforcing sanctions.

To further substantiate our findings, we examine the impact of trade and financial sanctions imposed on trade flows of Iran and Russia,which are members of the newly formed BRICS+.

Sanctions by the United States, Canada and Australia produce the largest, statistically significant and negative effects on both Iranian exports and imports; Japan and Russia display pronounced negative effects on their exports to Iran (Japan's imports from Iran are insignificant). China and Turkey show positive but statistically insignificant coefficients (consistent with possible waivers). and The United Arab Emirates exhibits a positive and statistically significant effect on exports to Iran, suggesting trade-creation (Felbermayr et al., 2020). India's exports to Iran decreased after the UN sanctions on Iran, while its imports from Iran increased (Hussain Wani et al., 2019). Figure 5 shows the geopolitical distance between Iran and its key trading partners from 2009 to 2024, when the United Nations sanctions on Iran were in place.

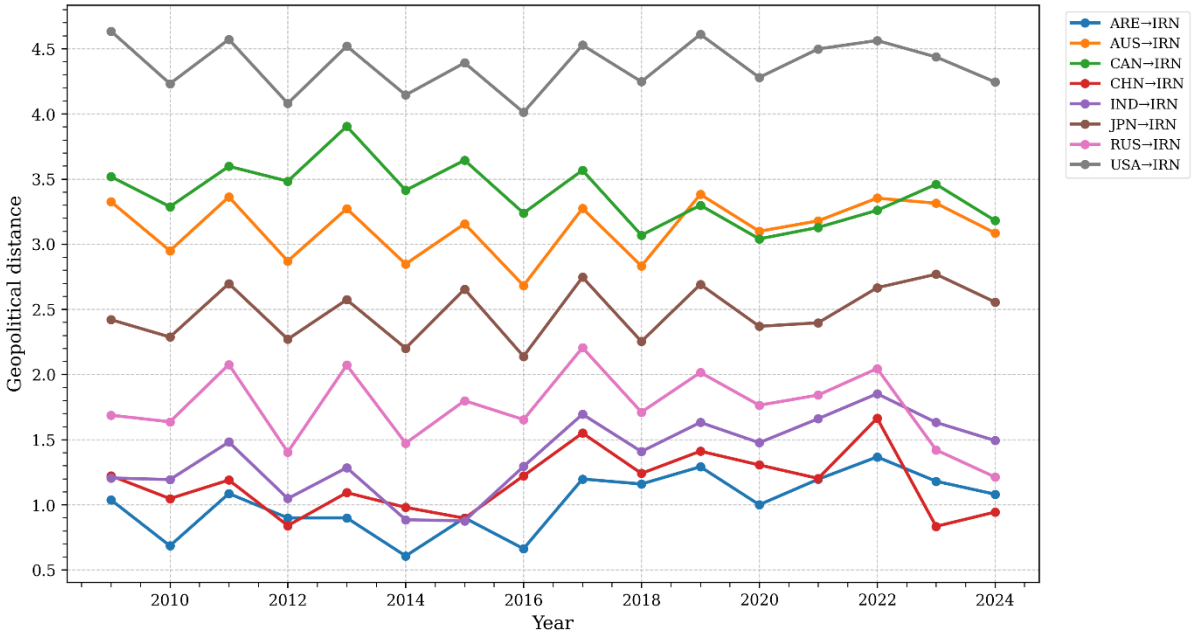


Figure 5: Geopolitical Distance between Iran and major economies (2009 to 2024)

Source: Authors' calculation from the UN IPD database by Voeten et al.

Note: The abbreviations are ISO 3 codes (ARE = United Arab Emirates; AUS = Australia; CAN = Canada; CHN = China; IND = India; JPN = Japan; RUS = Russia; USA = United States; IRN = Islamic Republic of Iran)

Sanctioning countries that showed limited or no negative effects of sanctions on trade flows with Iran are geopolitically closer to Iran, while countries with declining trade flows with Iran are found to be geopolitically distant. The UAE, another member country of BRICS +) is geopolitically closer (denoted as ARE in the chart), and Iran's trade flows with the UAE increased during the sanctions period.

Next, in order to further substantiate our finding that sanctions become effective when sanction sending countries and target countries are geopolitically distant, we examine the impact of trade and financial sanctions imposed on Russia on trade flows between Russia and the sanctioning states. Yalcin et al., (2025) found that the impact of the 2022 sanctions on Russia's trade flows with sanctioning countries had heterogenous impacts. Sanctions had a statistically significant negative effect on trade with the United States, the EU (aggregate), the United Kingdom, Japan, and Switzerland; no statistically detectable effect for Canada and Norway.Within the EU, Sweden, Czechia and Poland experienced significant negative effects while Latvia and Malta experienced significant positive effects, with Austria, Estonia, Greece and Ireland showing no statistically detectable effect. Figure 6 shows the Geopolitical distance between Russia and these sanctioning countries.

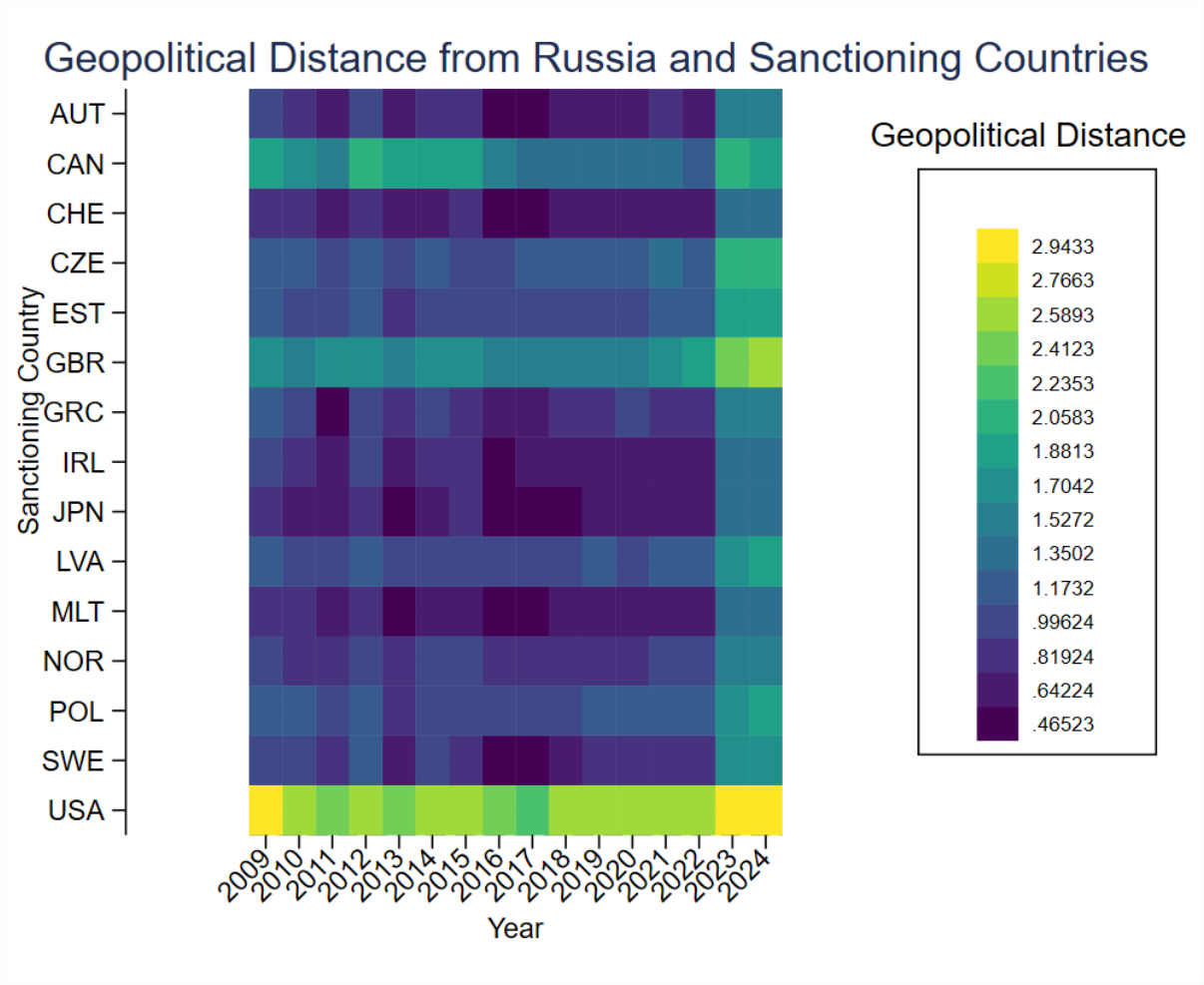


Figure 6: Russia's geopolitical distance with sanctioning countries

Source: Author's calculation from the UNDP database by Voeten et al.

Note: The abbreviations are ISO 3 codes (AUT = Austria; CAN = Canada; CHE = Switzerland; CZE = Czech Republic; EST = Estonia; GBR = United Kingdom; GRC = Greece; IRL = Ireland; JPN = Japan; LVA = Latvia; MLT = Malta; NOR = Norway; POL = Poland; SWE = Sweden; USA = United States).

Countries that experienced no changes or positive changes in trade flows with Russia after sanctions were put in place (Latvia, Malta, Austria, Estonia, and Greece) are found to be geopolitically closer to Russia. Countries that experienced a significant decline in trade flows with Russia are also geopolitically distant.

These two sanction episodes show that the enforcement of sanctions and the eventual decline in trade flows are related to the geopolitical distance between sanctioning and target states; more geopolitically distant countries enforce sanction regimes more effectively.

4.3 Impact of sanctions and geopolitical distance on trade between sanctioned and third-party countries

Next, we examine the nature of relationship in trade flows between target states and third-party non-sanctioning states. The negative impact of Geopolitical distance on trade flows is persistent for target and third-party states in the case of trade and financial sanctions- both coefficients are found to be negative and statistically significant.

As geopolitical distance increases, trade flows between these country pairs are negatively affected by sanctions, but the impact on trade flows is less, compared to that between the sender and target countries. A one unit increase in geopolitical distance leads to a 18.6% decline in trade flows when trade sanctions are in place, and a 16.4% decline on trade flows when financial sanctions are in place between target countries and third party countries. As geopolitical distance increases, third-party states increasingly worry about retaliation from the sanctioning countries, and the fear of secondary sanctions also increase. These might deter geopolitically distant countries from trading with target states. Another important finding is that the impact of sanctions on trade flows is less for third-party countries and target states under financial sanctions, than under trade sanctions, when they are geopolitically distant. This indicates that financial sanctions leave more room and opportunity for trade diversion for the target state to third party states. Financial sanctions usually restrict the target state's ability to make cross-border payments. The emergence of digital and cryptocurrencies enables target states to circumvent these restrictions, making trade of goods possible with third-party countries (Wronka, 2021).

Our estimation results also show that while trade sanctions do not result in trade diversion between targets and third-party states, financial sanctions do. The coefficient for *Target with ThirdParty* is not statistically significant in the case of trade sanctions, while the coefficient for the same under financial sanctions is positive and statistically significant.. Target countries and third party countries trade 7.4%more when financial sanctions are in place. However, financial sanctions also result in a decline in trade between these country pairs when we interact it with geopolitical distance, as mentioned above. We find that trade diversion occurs when Financial Sanctions are put into place between target countries and third-party countries, and that this diversion is mostly to countries that are geopolitically closer to the target country. This is interesting as several studies looking at trade diversion when export or import restrictions were put in place also find similar results. Frank (2017) finds no evidence for trade diversion under trade sanctions. Trade sanctions do not have a statistically significant impact on high-tech imports and do not affect semiconductor trade (Steinfeld, 2025). Most non-sanctioning states traded less with Cuba, while economic allies and states in close proximity to it traded more during the sanctions (Kwon et al., 2024).

However, it is to be noted that most of the financial sanctions that were put in place were combined with trade sanctions (in GSDB V3), and therefore, the results could also mean that the co-occurrence of both sanctions could be inducing trade diversion.

Currency swaps, banking systems substituting SWIFT , barters etc are usually used by countries to evade financial restrictions and facilitate trade (Eichengreen, 2022). Jiao et al., (2025) find that the effects of Financial Sanctions on Russian trade with non-Western countries are undermined by financial bypassing, primarily through the increased use of non-Western currencies. Financial sanctions usually prohibit the banks in the sanctioner's jurisdiction from providing any type of finance, opening the letter of credit, remittances and guarantees for exports to and imports from target sate, and this results in trade diverting to third party states which are able to provide credit facilities (Heydarian et al., 2023).

4.4 Impact of Sanctions and Geopolitical distance on Intra-BRICS trade flows

The motivation for examining intra-BRICS trade patterns under sanctions stems from our finding below that Geopolitical distance increasingly affects trade flows between BRICS nations and Advanced Economies (AEs), including the most prolific sanctioning states. Over the years, geopolitical distance has increasingly been a trade-dampening factor between the two country groups. Figure 7 shows the estimates of the impact of geopolitical distance on export flows between AEs and the BRICS bloc obtained using a PPML gravity method.

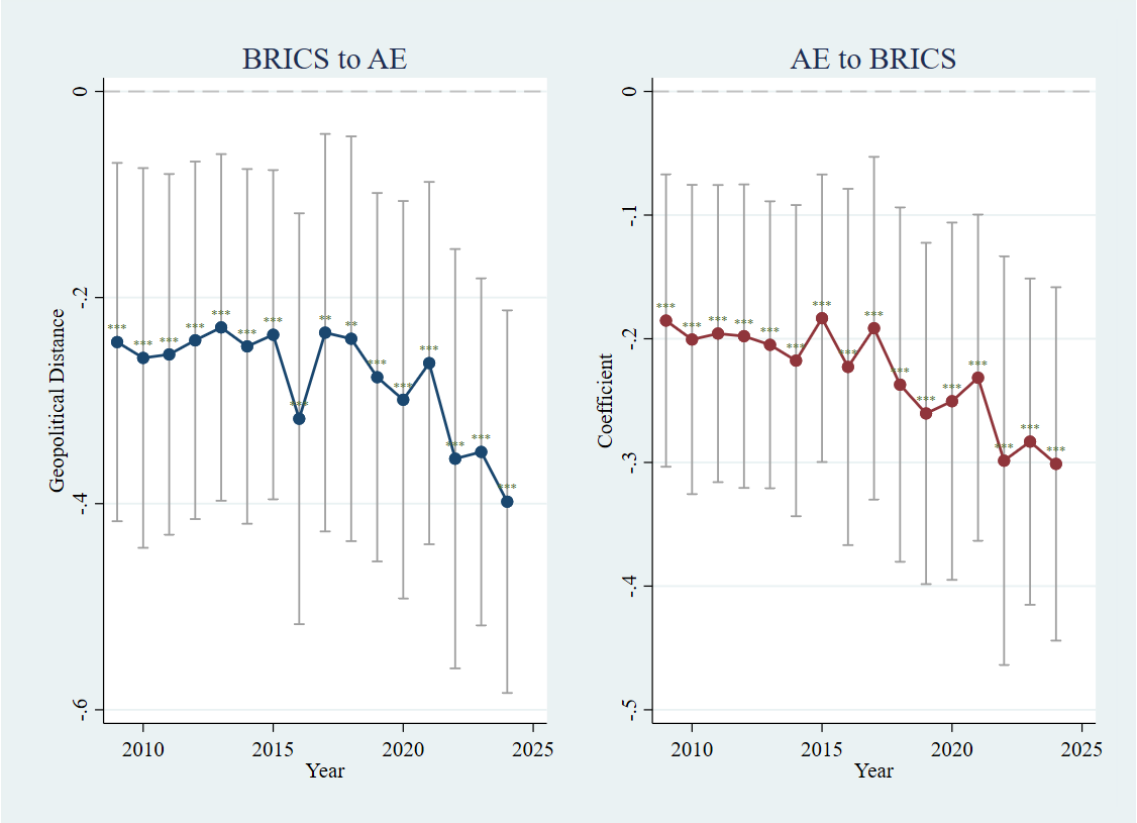


Figure 7: Estimates of Impact of Geopolitical Distance on trade flows between BRICS bloc and AEs

Source: Authors' calculations using a PPML gravity model, with country pair, importer year and exporter year fixed effects. Standard errors are clustered at the country pair level.

Note: *** p < .001, ** p < .01, * p < .05. AEs, as defined by the IMF; the list of countries is given in Table A1 in the appendix.

The coefficient for intra-BRICS dummy in which at least one party is under sanctions is found to be statistically insignificant in the case of trade sanctions. Our estimation results also indicate that BRICS countries tend to trade more with sanctioned member countries when financial sanctions are in place, akin to the earlier finding on trade between targets and third party countries. When financial sanctions are in place, BRICS bloc members trade 21.6% more with the sanctioned countries inside the bloc. One of the main reasons for this can be the different mechanisms the BRICS bloc has put in place to circumvent financial restrictions.

However, our results also show that intra-BRICS trade is also negatively affected by Geopolitical Distance when sanctions are in place; in the case of trade sanctions, a one-unit increase in Geopolitical Distance leads to a 17.3% decline in intra-BRICS trade flows when trade sanctions are in place. In the case of financial sanctions, the impact of greater geopolitical distance is greater; a one-unit increase in geopolitical distance leads to a 21.3%decline in trade flows within the bloc. The results indicate that BRICS countries have similar impacts of sanctions and geopolitical distance on trade flows as other countries; but the mechanisms established for facilitating cross-border payments within the BRICS bloc are increasing trade flows even when financial sanctions are put in place.

4.5 Impact of Financial Sanctions on the direction of trade in BRICS

Next, we look at the heterogeneity of impacts on trade flows of individual BRICS countries when financial sanctions were put in place against countries inside the bloc. Figure 4 shows the estimated coefficients, a PPML gravity method.

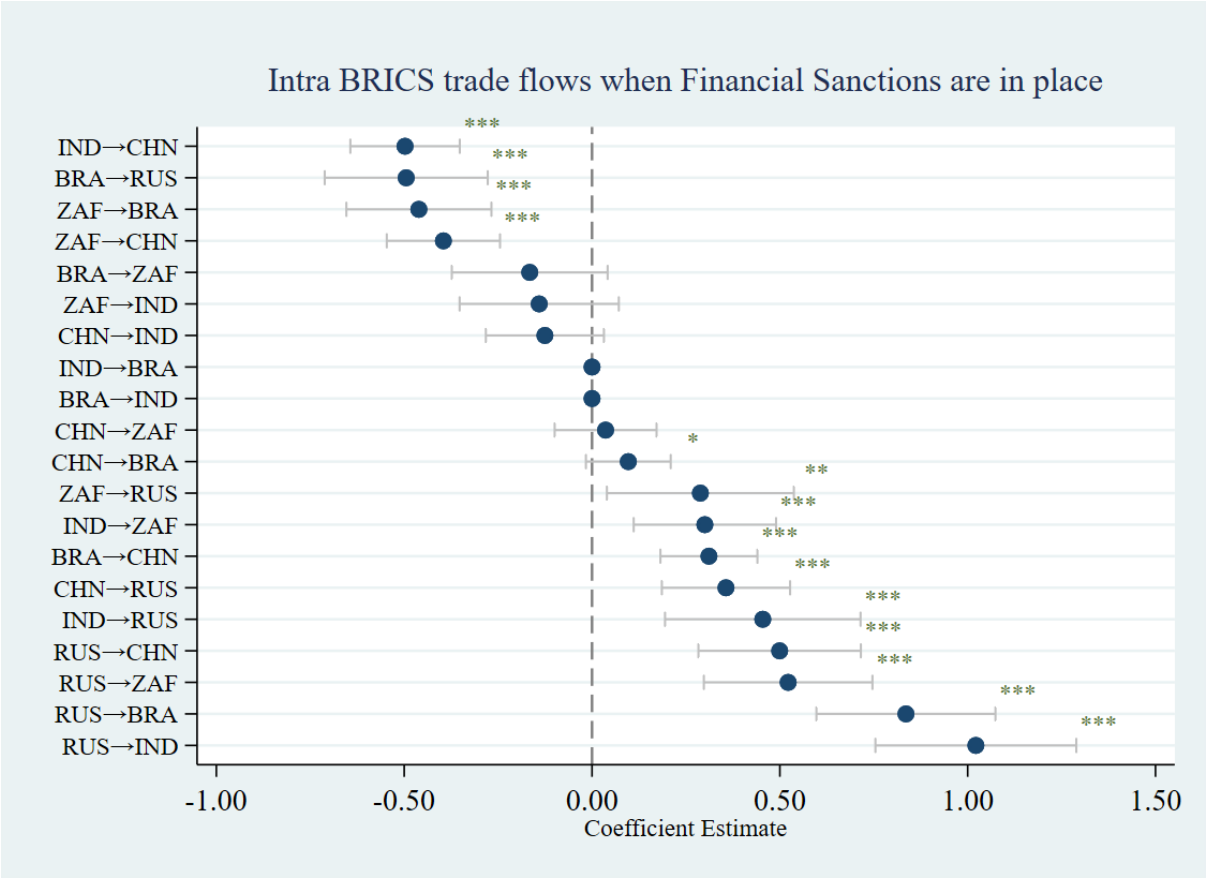


Figure 8: Estimated Coefficients of intra-BRICS trade patterns under financial sanctions

Source: Authors' calculations using a PPML gravity model, with country pair, importer year and exporter year fixed effects. Standard errors are clustered at the country pair level.

Note: *** p < .001, ** p < .01, * p < .05.

Most of the directional pair coefficients are found to be positive and statistically significant in Figure 4. Russian exports show large positive coefficients consistently across the bloc. For example, Russian exports to India when financial sanctions are put in place see a 177% increase. Indian exports generally increase to sanctioned bloc members, except to China. India's exports to China decreases when the financial sanctions were imposed on China, while China's exports to India do not seem to be affected. Another important finding is that South Africa's exports are negatively affected by sanctions significantly, except for Russia.

The coefficient of FTA, which indicates whether a country pair is engaged in a Regional Trade Agreement, is positive and statistically significant at the 5% level in both the models, which follows a priori expectations from the literature. Countries engaged in RTAs have 6–7%higher export flows, all else equal. This result is in consonance with the findings of Baier & Bergstrand (2005).

4.6 Heterogeneity analysis

We examine the differential impact of sanctions and geopolitical distance, on trade flows between the sanctioner and target on the one hand, and the target and third-party countries on the other, by dividing countries into deciles based on Geopolitical distance., We find that the impact is heterogeneous, and that the impact of sanctions on trade flows increases as geopolitical distance increases.

We build on the approach by Bosone and Stamato (2024) who use quartile dummy interactions with the geopolitical distance in a structural gravity setting. We categorize all countries into deciles of Geopolitical distance and interact decile indicators with our sanction treatment variables. This strategy lets us recover the full distributional heterogeneity of sanction effects across the geopolitical spectrum.

The analysis shows that the impact of sanctions is highly heterogeneous across different deciles of geopolitical distance. The direct impact of sanctions, those between sanction senders and target pairs, increases as geopolitical distance increases between the country pairs in the case of trade sanctions. This increase or decrease in the impact as geopolitical distance varies explains the heterogeneity in the effects of sanctions between these country pairs.

In the case of financial sanctions, the impact is high and statistically significant for countries that were moderately geopolitically closer. Countries that are geopolitically farthest have no statistically significant impact of sanctions on trade flows when financial sanctions are in place, both in the case of sanction sender-target pairs and target-third-party country pairs. This could be because geopolitically distant country pairs had fewer relationships related to financial sanctions to begin with (Catalan, 2024).

Table 2. Trade sanctions

Variable	**Coef.**	**Std. Err.**	**z**	**p-value**
IntraBRICS	0.0565	0.1074	0.53	0.599
Sanctioner with Target	0.3502***	0.1037	3.38	0.001

Variable	Coef.	Std. Err.	z	p-value
Target with ThirdParty	-0.0363	0.0446	-0.81	0.415
FTA	0.0635***	0.0242	2.62	0.009
GeoDist	-0.0052	0.0204	-0.25	0.800
GeoDist x IntraBRICS	-0.0807	0.4767	-0.17	0.866
GeoDist x Sanctioner with Target	0.0751	0.3375	0.22	0.824
GeoDist x Target with ThirdParty	0.0209	0.1643	0.13	0.899
Constant	7.3661***	0.0315	233.82	0.000

Table 3. Trade sanctions: IntraBRICS decile interactions

Variable	Coef.	Std. Err.	z	p-value
IntraBRICS x Decile 2	-0.0114	0.1178	-0.10	0.923
IntraBRICS x Decile 3	0.0594	0.1288	0.46	0.645
IntraBRICS x Decile 4	-0.1844	0.1352	-1.36	0.173
IntraBRICS x Decile 5	0.2304	0.1765	1.31	0.192
IntraBRICS x Decile 6	0.2844	0.2258	1.26	0.208
IntraBRICS x Decile 7	-0.0133	0.1776	-0.08	0.940
IntraBRICS x Decile 8	-0.2122	0.2268	-0.94	0.349
IntraBRICS x Decile 9	0.0388	0.2092	0.19	0.853
IntraBRICS x Decile 10	-0.1449	0.1706	-0.85	0.395
GeoDist x IntraBRICS x Decile 2	0.0026	0.5045	0.01	0.996
GeoDist x IntraBRICS x Decile 3	0.2253	0.5069	0.44	0.657
GeoDist x IntraBRICS x Decile 4	0.1198	0.4708	0.25	0.799
GeoDist x IntraBRICS x Decile 5	-0.2167	0.5107	-0.42	0.671
GeoDist x IntraBRICS x Decile 6	-0.2839	0.5143	-0.55	0.581
GeoDist x IntraBRICS x Decile 7	-0.0466	0.4960	-0.09	0.925
GeoDist x IntraBRICS x Decile 8	0.2626	0.5010	0.52	0.600
GeoDist x IntraBRICS x Decile 9	0.0206	0.4875	0.04	0.966
GeoDist x IntraBRICS x Decile 10	0.1369	0.4802	0.29	0.776

Table 4. Trade sanctions: Sanctioner with Target decile interactions

Variable	Coef.	Std. Err.	z	p-value
Sanctioner with Target x Decile 2	-0.2490*	0.1296	-1.92	0.055
Sanctioner with Target x Decile 3	-0.3647***	0.1077	-3.39	0.001
Sanctioner with Target x Decile 4	-0.2021	0.1781	-1.13	0.256
Sanctioner with Target x Decile 5	0.1186	0.2163	0.55	0.583
Sanctioner with Target x Decile 6	0.4119**	0.2022	2.04	0.042
Sanctioner with Target x Decile 7	1.2691***	0.2759	4.60	0.000
Sanctioner with Target x Decile 8	0.8313**	0.3263	2.55	0.011
Sanctioner with Target x Decile 9	1.6433*	0.9358	1.76	0.079
Sanctioner with Target x Decile 10	0.4874**	0.2119	2.30	0.021
GeoDist x Sanctioner with Target x Decile 2	-0.1143	0.5287	-0.22	0.829
GeoDist x Sanctioner with Target x Decile 3	0.2611	0.4843	0.54	0.590
GeoDist x Sanctioner with Target x Decile 4	-0.2717	0.4780	-0.57	0.570
GeoDist x Sanctioner with Target x Decile 5	-1.0973**	0.4349	-2.52	0.012
GeoDist x Sanctioner with Target x Decile 6	-1.3962***	0.3777	-3.70	0.000
GeoDist x Sanctioner with Target x Decile 7	-2.0542***	0.4536	-4.53	0.000
GeoDist x Sanctioner with Target x Decile 8	-1.0374**	0.4162	-2.49	0.013
GeoDist x Sanctioner with Target x Decile 9	-1.3507**	0.6285	-2.15	0.032
GeoDist x Sanctioner with Target x Decile 10	-0.4942	0.3422	-1.44	0.149

Table 5. Trade sanctions: Target with ThirdParty decile interactions

Variable	Coef.	Std. Err.	z	p-value
Target with ThirdParty x Decile 2	0.0418	0.0555	0.75	0.451
Target with ThirdParty x Decile 3	0.0011	0.0435	0.03	0.979
Target with ThirdParty x Decile 4	0.1871***	0.0706	2.65	0.008
Target with ThirdParty x Decile 5	0.0580	0.0726	0.80	0.424
Target with ThirdParty x Decile 6	0.1680**	0.0711	2.36	0.018
Target with ThirdParty x Decile 7	0.1968***	0.0676	2.91	0.004
Target with ThirdParty x Decile 8	0.4720***	0.0918	5.14	0.000
Target with ThirdParty x Decile 9	0.3229***	0.0782	4.13	0.000

Variable	Coef.	Std. Err.	z	p-value
Target with ThirdParty x Decile 10	0.3581***	0.1133	3.16	0.002
GeoDist x Target with ThirdParty x Decile 2	-0.2256	0.2009	-1.12	0.261
GeoDist x Target with ThirdParty x Decile 3	-0.0170	0.1717	-0.10	0.921
GeoDist x Target with ThirdParty x Decile 4	0.0126	0.1729	0.07	0.942
GeoDist x Target with ThirdParty x Decile 5	0.0186	0.1832	0.10	0.919
GeoDist x Target with ThirdParty x Decile 6	-0.2054	0.1724	-1.19	0.233
GeoDist x Target with ThirdParty x Decile 7	-0.2364	0.1717	-1.38	0.169
GeoDist x Target with ThirdParty x Decile 8	-0.3873**	0.1747	-2.22	0.027
GeoDist x Target with ThirdParty x Decile 9	-0.1943	0.1673	-1.16	0.246
GeoDist x Target with ThirdParty x Decile 10	-0.1852	0.1686	-1.10	0.272

N = 3,136,957; clusters = 27,978 country pairs; pseudo R2 = 0.9799; Wald chi2(62) = 755.12; $p < 0.001$.

Table 6. Financial sanction

Variable	Coef.	Std. Err.	z	p-value
Sanctioner with Target	-0.0714	0.0574	-1.24	0.214
Target with ThirdParty	0.0508	0.0331	1.54	0.125
IntraBRICS	0.0551	0.1071	0.51	0.607
FTA	0.0681***	0.0240	2.83	0.005
GeoDist	-0.0096	0.0221	-0.44	0.663
GeoDist x Sanctioner with Target	-0.2851	0.2048	-1.39	0.164
GeoDist x Target with ThirdParty	0.0086	0.0903	0.10	0.924
GeoDist x IntraBRICS	-0.0079	0.4819	-0.02	0.987
GeoDist x Sanctioner with Target	1.5105***	0.4183	3.61	0.000
GeoDist x Target with ThirdParty	-0.0661	0.1839	-0.36	0.719

Table 7. Financial sanctions: Sanctioner with Target decile interactions

Variable	Coef.	Std. Err.	z	p-value
Sanctioner with Target x Decile 2	0.0316	0.0710	0.45	0.656

Variable	Coef.	Std. Err.	z	p-value
Sanctioner with Target x Decile 3	-0.0726	0.0627	-1.16	0.247
Sanctioner with Target x Decile 4	0.0061	0.1679	0.04	0.971
Sanctioner with Target x Decile 5	0.7318***	0.2349	3.12	0.002
Sanctioner with Target x Decile 6	0.4638**	0.2295	2.02	0.043
Sanctioner with Target x Decile 7	0.0559	0.2997	0.19	0.852
Sanctioner with Target x Decile 8	0.1077	0.2368	0.45	0.649
Sanctioner with Target x Decile 9	0.2729**	0.1366	2.00	0.046
Sanctioner with Target x Decile 10	-0.1548	0.1404	-1.10	0.270
GeoDist x Sanctioner with Target x Decile 2	0.1469	0.2609	0.56	0.573
GeoDist x Sanctioner with Target x Decile 3	0.6244**	0.2570	2.43	0.015
GeoDist x Sanctioner with Target x Decile 4	0.2643	0.3897	0.68	0.498
GeoDist x Sanctioner with Target x Decile 5	-1.1949**	0.4826	-2.48	0.013
GeoDist x Sanctioner with Target x Decile 6	-0.4540	0.3058	-1.48	0.138
GeoDist x Sanctioner with Target x Decile 7	0.0491	0.3696	0.13	0.894
GeoDist x Sanctioner with Target x Decile 8	0.2803	0.2288	1.23	0.221
GeoDist x Sanctioner with Target x Decile 9	0.1319	0.2169	0.61	0.543
GeoDist x Sanctioner with Target x Decile 10	0.3667*	0.2110	1.74	0.082

Table 8. Financial sanctions: Target with ThirdParty decile interactions

Variable	Coef.	Std. Err.	z	p-value
Target with ThirdParty x Decile 2	0.0054	0.0383	0.14	0.889
Target with ThirdParty x Decile 3	0.0241	0.0544	0.44	0.657
Target with ThirdParty x Decile 4	-0.0656	0.0469	-1.40	0.162
Target with ThirdParty x Decile 5	-0.1020*	0.0617	-1.65	0.098
Target with ThirdParty x Decile 6	-0.0380	0.0750	-0.51	0.612
Target with ThirdParty x Decile 7	-0.0397	0.1102	-0.36	0.719
Target with ThirdParty x Decile 8	0.0356	0.1012	0.35	0.725
Target with ThirdParty x Decile 9	-0.1755	0.1583	-1.11	0.268
Target with ThirdParty x Decile 10	0.0203	0.1216	0.17	0.868

Variable	Coef.	Std. Err.	z	p-value
GeoDist x Target with ThirdParty x Decile 2	-0.1329	0.1194	-1.11	0.266
GeoDist x Target with ThirdParty x Decile 3	-0.0264	0.1084	-0.24	0.808
GeoDist x Target with ThirdParty x Decile 4	0.0796	0.1184	0.67	0.501
GeoDist x Target with ThirdParty x Decile 5	0.0064	0.1180	0.05	0.957
GeoDist x Target with ThirdParty x Decile 6	-0.0197	0.1096	-0.18	0.857
GeoDist x Target with ThirdParty x Decile 7	-0.0542	0.1201	-0.45	0.652
GeoDist x Target with ThirdParty x Decile 8	-0.0297	0.1019	-0.29	0.771
GeoDist x Target with ThirdParty x Decile 9	0.0850	0.1133	0.75	0.453
GeoDist x Target with ThirdParty x Decile 10	-0.0419	0.0977	-0.43	0.668

Table 9. Financial sanctions: IntraBRICS decile interactions

Variable	Coef.	Std. Err.	z	p-value
IntraBRICS x Decile 2	0.0405	0.1178	0.34	0.731
IntraBRICS x Decile 3	0.1266	0.1339	0.95	0.344
IntraBRICS x Decile 4	-0.1906	0.1335	-1.43	0.153
IntraBRICS x Decile 5	0.1691	0.1791	0.94	0.345
IntraBRICS x Decile 6	0.3199	0.2289	1.40	0.162
IntraBRICS x Decile 7	-0.0077	0.1965	-0.04	0.969
IntraBRICS x Decile 8	-0.1391	0.2367	-0.59	0.557
IntraBRICS x Decile 9	0.0496	0.2576	0.19	0.847
IntraBRICS x Decile 10	-0.1190	0.1768	-0.67	0.501
GeoDist x IntraBRICS x Decile 2	-0.1856	0.5114	-0.36	0.717
GeoDist x IntraBRICS x Decile 3	0.1581	0.5137	0.31	0.758
GeoDist x IntraBRICS x Decile 4	0.1254	0.4837	0.26	0.795
GeoDist x IntraBRICS x Decile 5	-0.2458	0.5226	-0.47	0.638
GeoDist x IntraBRICS x Decile 6	-0.4281	0.5260	-0.81	0.416
GeoDist x IntraBRICS x Decile 7	-0.1433	0.5062	-0.28	0.777
GeoDist x IntraBRICS x Decile 8	0.1480	0.5072	0.29	0.770
GeoDist x IntraBRICS x Decile 9	-0.0456	0.5028	-0.09	0.928

Variable	Coef.	Std. Err.	z	p-value
GeoDist x IntraBRICS x Decile 10	0.0537	0.4842	0.11	0.912

Table 10. Financial sanctions: Sanctioner with Target decile interactions

Variable	Coef.	Std. Err.	z	p-value
Sanctioner with Target x Decile 2	0.0184	0.1436	0.13	0.898
Sanctioner with Target x Decile 3	-0.0298	0.1085	-0.27	0.783
Sanctioner with Target x Decile 4	0.1211	0.1969	0.61	0.539
Sanctioner with Target x Decile 5	-0.1347	0.1491	-0.90	0.366
Sanctioner with Target x Decile 6	0.3113	0.2700	1.15	0.249
Sanctioner with Target x Decile 7	1.5905***	0.3740	4.25	0.000
Sanctioner with Target x Decile 8	1.1400***	0.3715	3.07	0.002
Sanctioner with Target x Decile 9	1.8295*	0.9464	1.93	0.053
Sanctioner with Target x Decile 10	1.0584***	0.2425	4.36	0.000
GeoDist x Sanctioner with Target x Decile 2	-1.3914**	0.6006	-2.32	0.021
GeoDist x Sanctioner with Target x Decile 3	-1.4135***	0.5384	-2.63	0.009
GeoDist x Sanctioner with Target x Decile 4	-1.7127***	0.5969	-2.87	0.004
GeoDist x Sanctioner with Target x Decile 5	-1.2506**	0.5730	-2.18	0.029
GeoDist x Sanctioner with Target x Decile 6	-2.0804***	0.4796	-4.34	0.000
GeoDist x Sanctioner with Target x Decile 7	-3.2366***	0.5807	-5.57	0.000
GeoDist x Sanctioner with Target x Decile 8	-2.4703***	0.4967	-4.97	0.000
GeoDist x Sanctioner with Target x Decile 9	-2.6585***	0.6831	-3.89	0.000
GeoDist x Sanctioner with Target x Decile 10	-2.0011***	0.4277	-4.68	0.000

Table 11. Financial sanctions: Target with ThirdParty decile interactions

Variable	Coef.	Std. Err.	z	p-value
Target with ThirdParty x Decile 2	-0.0263	0.0500	-0.53	0.599
Target with ThirdParty x Decile 3	-0.0787	0.0507	-1.55	0.121
Target with ThirdParty x Decile 4	0.1725***	0.0643	2.68	0.007
Target with ThirdParty x Decile 5	0.0640	0.0700	0.91	0.361

Variable	Coef.	Std. Err.	z	p-value
Target with ThirdParty x Decile 6	0.0819	0.0723	1.13	0.258
Target with ThirdParty x Decile 7	0.1541	0.1109	1.39	0.165
Target with ThirdParty x Decile 8	0.3668***	0.1167	3.14	0.002
Target with ThirdParty x Decile 9	0.1903	0.1683	1.13	0.258
Target with ThirdParty x Decile 10	0.3676***	0.1222	3.01	0.003
GeoDist x Target with ThirdParty x Decile 2	-0.0293	0.2233	-0.13	0.895
GeoDist x Target with ThirdParty x Decile 3	0.0728	0.1975	0.37	0.712
GeoDist x Target with ThirdParty x Decile 4	0.0166	0.2072	0.08	0.936
GeoDist x Target with ThirdParty x Decile 5	0.0751	0.2068	0.36	0.716
GeoDist x Target with ThirdParty x Decile 6	-0.0516	0.1968	-0.26	0.793
GeoDist x Target with ThirdParty x Decile 7	-0.1053	0.2036	-0.52	0.605
GeoDist x Target with ThirdParty x Decile 8	-0.2617	0.1961	-1.33	0.182
GeoDist x Target with ThirdParty x Decile 9	-0.0497	0.2061	-0.24	0.809
GeoDist x Target with ThirdParty x Decile 10	-0.1085	0.1874	-0.58	0.563

N = 3,136,957; clusters = 27,978 country pairs; pseudo R2 = 0.9800; Wald chi2(100) = 975.51; $p < 0.001$.

4.7 Robustness checks

To ensure robustness of our empirical results, we run three robustness checks. First, we use the S-score instead of IPD, which is often used as a proxy for geopolitical distance (Signorino & Ritter, 1999). The S-score is a special similarity measure, which places countries' geopolitical portfolio based on factors like UN Votes, alliances and trade relationships and places them between -1(geopolitically distant) and 1(geopolitically closer). Second, we remove USA and China from the dataset and run the PPML model with the same specifications as before. We do this for two reasons; they are the biggest economies and also the US is the most prolific sanctioning state. Third, we run the same specification with OLS instead of PPML, along with exporter-year,importer-year and country pair fixed effects. The results are presented in Table 4 below. We find that our three robustness checks produce similar and comparable results to our initial model specification as well as initial estimation technique. Hence, we can conclude that our empirical results are robust and statistically valid.

Table 12: Robustness tests

Variable	**S-score: Trade Sanctions (1)**	**S-score: Financial Sanctions (2)**	**PPML (no USA/CHN): Trade Sanctions (3)**	**PPML (no USA/CHN): Financial Sanctions (4)**	**OLS FE Trade Sanctions (5)**	**OLS FE Financial Sanctions (6)**
Sanctioner with Target	-0.337** (0.148)	-0.1056 (0.1129)	0.0404 (0.0876)	0.0128 (0.0565)	-0.1327*** (0.0499)	-0.0831** (0.0332)
Target with ThirdParty	0.0304 (0.201)	0.0175 (0.1280)	-0.0825 (0.0529)	0.100*** (0.0371)	0.0024 (0.0289)	-0.0096 (0.0236)
FTA	0.0329 (0.0618)	0.0221 (0.0613)	0.0889*** (0.0224)	0.0907*** (0.0227)	0.1255*** (0.0256)	0.1289*** (0.0255)
IntraBRICS	0.154 (0.150)	0.1180 (0.1146)	-0.0340 (0.0792)	0.156** (0.0744)	-0.0597 (0.0533)	-0.0701 (0.0482)
GeoDist	-0.0979* (0.0516)	-0.1027** (0.0514)	-0.120*** (0.0358)	-0.120*** (0.0362)	0.0025 (0.0051)	0.0064 (0.0053)
GeoDist × Sanctioner with Target	-0.600*** (0.188)	-0.1680 (0.1518)	-0.387*** (0.0745)	-0.309*** (0.0670)	-0.1086*** (0.0248)	-0.0166 (0.01595)
GeoDist × *Target with ThirdParty*	0.113 (0.149)	0.1505 (0.1198)	-0.0610*** (0.0207)	-0.0532*** (0.0160)	-0.0063 (0.0073)	-0.0147** (0.0063)
GeoDist × IntraBRICS	0.306** (0.128)	0.2146 (0.1349)	-0.195*** (0.0664)	-0.232*** (0.0701)	-0.0464** (0.0230)	-0.0533** (0.0233)
Constant	7.883*** (0.0294)	7.8845*** (0.0282)	6.344*** (0.0333)	6.291*** (0.0305)	-0.8441 (0.0122)	-0.8394 (0.0125)

Source: Authors' calculations

Note. Coefficients reported with standard errors in parentheses. models. Significance indicators: * p < .10, ** p < .05, *** p < .01. Models: Columns (1)-(2) = S-score robustness (Trade / Financial sanctions); (3)-(4) = PPML excluding USA & CHN (Trade / Financial); (5)-(6) = OLS with three-way fixed effects (Trade / Financial) where the dependent variable is log of export values from country i to j at time t.

As evident from Table 12, the estimated coefficients for geopolitical distance (*GeoDist*) is found to be negative and statistically significant in most of the empirical models used for robustness checks, consistent with the main findings of our study. The interaction term *GeoDist_× Sanctioner with Target*, which captures the impact of geopolitical distance on trade flows between sanctioning and target countries, is found to be negative across all models and mostly significant, consistent with our main results. *GeoDist_× Target with ThirdParty*, which captures the impact of geopolitical distance on trade flows between target and third-party countries, is also negative in most of the models, and where it is significant, it is negative and consistent with our main empirical results. GeoDist_× IntraBRICS, which captures the impact of geopolitical distance on intra BRICS trade flows under sanctions, is also found to be negative and significant in 4 robustness tests, and in consonance with our main findings based on PPML. The estimate for IntraBRICS is insignificant in our models, but the signs are positive in most specifications and where it is significant, it is positive and consistent with our main results. The estimated coefficients of *Sanctioner with Target*, *Target with ThirdParty* and *FTA* are also found to be similar and comparable to our main findings. Hence, we can conclude that the findings of our study are robust to different model specifications, estimation techniques and variable definitions.

5. Conclusion and Policy Implications

In an increasingly fragmented and uncertain world, marked by trade-restrictive measures and economic sanctions, maintaining reliable, mutually beneficial trade relations is of paramount importance for both advanced and emerging economies. In this paper, our objective is to examine the impact of geopolitical distance, especially in the presence of economic sanctions, on trade flows between Sender-Target, Target-Third Party, and Intra-BRICS country pairs. We estimate the impact of geopolitical distance and its interaction with trade sanctions and financial sanctions separately in this study. Using a Poisson Pseudo Maximum Likelihood (PPML) gravity framework, we find that geopolitical distance is a significant factor affecting trade flows. Sanctions are found to "bite harder" when countries are geopolitically distant. This is found to hold true for Sender-Target, Target-Third Party, and Intra-BRICS country pairs. In this regard, we find that the reason behind the heterogeneous impacts of sanctions on trade flows between the above-mentioned country pairs is the geopolitical distance between them; geopolitically

closer country pairs' trade flows are not affected by sanctions, while they are negatively affected by sanctions for geopolitically distant countries. We also find that financial sanctions, rather than trade sanctions, lead to trade diversion between target and third-party countries. In addition, we find that BRICS bloc members trade more with the member countries of the bloc that are under financial sanctions. We also find that these direct and indirect impacts of sanctions are highly heterogeneous across the geopolitical spectrum; the impact of increased geopolitical distance on the impact of sanctions is more pronounced for trade sanctions, while it is more pronounced for moderately geopolitically closer countries in the case of financial sanctions.

The findings of our study indicate that it is beneficial for all countries to maintain good bilateral political relations with trade partner countries to facilitate more trade flows. Emerging economies like India are exporting to geopolitically distant partner countries, while advanced economies are not. This increased trade fragmentation can cause long-standing problems, especially in the Balance of Payments for Emerging Market economies. BRICS countries can benefit in this context by boosting intra-bloc trade through greater cooperation and understanding. Multilateral organizations such as the United Nations and the WTO can also play a major role in reducing the geopolitical distance and instances of economic sanctions between hostile countries by facilitating bilateral negotiations and taking the help of connector countries, which will go a long way in boosting international trade for both advanced economies and emerging market economies. India’s position as a connector country, trading actively with geopolitically distant and closer countries, is both a comparative advantage and a delicate balancing act. Our results show that India's exports to advanced economies include cpuntries which are geopolitically distant, suggesting that India has successfully maintained trade relationships across the geopolitical spectrum. This positions India well to serve as an intermediary in global value chains during periods of fragmentation. However, India's imports are negatively impacted by geopolitical distance from advanced economies. This also means that Advanced economies align more tightly along geopolitical blocs. India may face increasing friction in sourcing technology, capital goods, and high-value intermediates from them. India and other emerging economies should diversify their sources of imports, especially in strategic sectors such as semiconductors, defense technology and precision manufacturing to reduce vulnerabilities arising out of geopolitical differences.

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Appendix

Table A1-List of countries used in the analyses

1. Afghanistan	48. Dominican Republic	95. Laos	142. Qatar
2. Angola	49. Algeria	96. Lebanon	143. Romania
3. Albania	50. Ecuador	97. Liberia	144. Russia
4. United Arab Emirates	51. Egypt	98. Libya	145. Rwanda
5. Argentina	52. Eritrea	99. Saint Lucia	146. Saudi Arabia
6. Armenia	53. Spain	100. Sri Lanka	147. Sudan
7. Antigua and Barbuda	54. Estonia	101. Lesotho	148. Senegal
8. Australia	55. Ethiopia	102. Lithuania	149. Singapore
9. Austria	56. Finland	103. Luxembourg	150. Solomon Islands
10. Azerbaijan	57. Fiji	104. Latvia	151. Sierra Leone
11. Burundi	58. France	105. Morocco	152. El Salvador
12. Belgium	59. Federated States of Micronesia	106. Moldova	153. San Marino
13. Benin	60. Gabon	107. Madagascar	154. Somalia
14. Burkina Faso	61. United Kingdom	108. Maldives	155. South Sudan
15. Bangladesh	62. Georgia	109. Mexico	156. Suriname
16. Bulgaria	63. Ghana	110. Marshall Islands	157. Slovakia

17. Bahrain	64. Guinea	111. North Macedonia	158. Slovenia
18. Bahamas	65. Gambia	112. Mali	159. Sweden
19. Bosnia and Herzegovina	66. Guinea-Bissau	113. Malta	160. Eswatini
20. Belarus	67. Equatorial Guinea	114. Myanmar	161. Seychelles
21. Belize	68. Greece	115. Montenegro	162. Syria
22. Bolivia	69. Grenada	116. Mongolia	163. Chad
23. Brazil	70. Guatemala	117. Mozambique	164. Togo
24. Barbados	71. Guyana	118. Mauritania	165. Thailand
25. Brunei	72. Honduras	119. Mauritius	166. Tajikistan
26. Bhutan	73. Croatia	120. Malawi	167. Turkmenistan
27. Botswana	74. Haiti	121. Malaysia	168. Timor-Leste
28. Central African Republic	75. Hungary	122. Namibia	169. Tonga
29. Canada	76. Indonesia	123. Niger	170. Trinidad and Tobago
30. Switzerland	77. India	124. Nigeria	171. Tunisia
31. Chile	78. Ireland	125. Nicaragua	172. Tuvalu
32. China	79. Iran	126. Netherlands	173. Tanzania
33. Côte d'Ivoire	80. Iraq	127. Norway	174. Uganda
34. Cameroon	81. Iceland	128. Nepal	175. Ukraine
35. Democratic Republic of the Congo	82. Israel	129. Nauru	176. Uruguay
36. Republic of the Congo	83. Italy	130. New Zealand	177. United States
37. Colombia	84. Jamaica	131. Oman	178. Uzbekistan
38. Comoros	85. Jordan	132. Pakistan	179. Saint Vincent and the Grenadines

39. Cabo Verde	86. Japan	133. Panama	180. Venezuela
40. Costa Rica	87. Kazakhstan	134. Peru	181. Vietnam
41. Cuba	88. Kenya	135. Philippines	182. Vanuatu
42. Cyprus	89. Kyrgyzstan	136. Palau	183. Samoa
43. Czech Republic	90. Cambodia	137. Papua New Guinea	184. Yemen
44. Germany	91. Kiribati	138. Poland	185. South Africa
45. Djibouti	92. Saint Kitts and Nevis	139. North Korea	186. Zambia
46. Dominica	93. South Korea	140. Portugal	187. Zimbabwe
47. Denmark	94. Kuwait	141. Paraguay	

Source: International Trade in Goods by Partner Country dataset

Table A2- Advanced Economies

Andorra	Australia	Austria
Belgium	Canada	Croatia
Cyprus	Czech Republic	Denmark
Estonia	Finland	France
Germany	Greece	Hong Kong SAR
Iceland	Ireland	Israel
Italy	Japan	Korea
Latvia	Lithuania	Luxembourg
Macao SAR	Malta	The Netherlands
New Zealand	Norway	Portugal
Puerto Rico	San Marino	Singapore
Slovak Republic	Slovenia	Spain
Sweden	Switzerland	Taiwan Province of China
United Kingdom	United States	

Source: IMF