Asian Economic and Financial Review
ISSN(e): 2222-6737
ISSN(p): 2305-2147
DOI: 10.55493/5002.v15i3.5348
Vol. 15, No. 3, 454-466.

URL: www.aessweb.com

Effect of geopolitical distance on export efficiency in the transition countries

Trung Thanh Nguyen[1]
Thuy Thi Cam Nguyen[2+]

[1]*Training School, Banking Academy of Vietnam, No. 12 Chua Boc, Dong Da Dist, Hanoi, Vietnam.*
Email: trungnt@hvnh.edu.vn
[2]*Faculty of International Business, Banking Academy of Vietnam, No. 12 Chua Boc, Dong Da Dist, Hanoi, Vietnam.*
Email: thuyntc@hvnh.edu.vn

(+ Corresponding author)

Article History
Received: 6 January 2025
Revised: 10 March 2025
Accepted: 28 March 2025
Published: 9 April 2025

Keywords
Communist
Export efficiency
Geopolitical distance
Gravity model
Stochastic frontier analysis
Transition countries.

JEL Classification:
F10; F13; F14; F51; F53; F60; I18.

ABSTRACT

This study explores the impact of geopolitical distance on trade efficiency in 18 transition economies from 1990 to 2020. It examines how differences in political alignment, measured through United Nations General Assembly (UNGA) voting patterns, influence export performance. Export efficiency is defined as the ratio of actual exports to potential exports. Geopolitical distance is quantified using voting similarity scores in the UNGA. The study employs a stochastic frontier analysis (SFA) to estimate export efficiency and assess the effects of geopolitical distance while controlling for economic and institutional factors. Greater geopolitical distance negatively affects export efficiency by increasing sourcing costs and input complexity. The impact varies over time and depends on the exporter's political system, especially whether it remains a communist state, as well as the development level of trading partners. The findings underscore the importance of political alignment in trade efficiency. Transition economies with closer geopolitical ties to major trading partners tend to achieve higher export efficiency. The study offers insights for policymakers and business leaders in transition economies. To mitigate geopolitical risks, firms should diversify trade partners, while governments can pursue strategic diplomatic and trade policies to enhance market access.

Contribution/ Originality: This study introduces a novel measure of geopolitical distance using UNGA voting patterns to assess its impact on trade efficiency in transition economies. Unlike previous research, it integrates political alignment into export efficiency analysis, revealing how communist status and partner development levels shape trade outcomes, offering new insights for policy and strategy.

1. INTRODUCTION

In an increasingly interconnected world marked by escalating geopolitical tensions, integrating geopolitics into economics has become essential. The current geopolitical fragmentation, further highlighted by Russia's invasion of Ukraine, emphasizes the urgency of this integration. As global challenges evolve, traditional factors that have long shaped international trade, such as physical distance and cultural ties, are proving insufficient in explaining current trade dynamics. For instance, Janet Yellen has advocated for the USA to promote "friend-shoring" of supply chains to ensure secure market access and mitigate economic risks (Yellen, 2022). This growing trend of basing trade on geopolitical proximity calls for a reassessment of the concept of distance in gravity models to incorporate geopolitical distance as a key driver of bilateral trade as well as export efficiency. Therefore, analyzing export efficiency requires a broader perspective that takes into account both geopolitical distance alongside physical distance, offering a more

comprehensive insight into contemporary trade challenges. The increasing complexity of global trade dynamics highlights the necessity of incorporating geopolitical factors into traditional economic models of trade efficiency. While earlier studies have extensively examined the role of physical distance and cultural ties in shaping trade patterns (Sachs, 2018; Sheets & Boata, 1998), they often overlook the geopolitical dimension, which has become more evident in recent years due to shifting global alliances and economic sanctions (Campos, Estefania-Flores, Furceri, & Timini, 2023; Javorcik, Kitzmuller, Yildirim, & Schweiger, 2022). The recent focus on "friend-shoring" and trade security (Yellen, 2022) emphasizes the strategic realignment of supply chains, yet empirical studies examining the direct impact of geopolitical distance on export efficiency remain scarce. Existing studies on geopolitical risk focus primarily on its effect on foreign direct investment (Truong, Friday, & Pham, 2024) and financial markets (Elsayed & Helmi, 2021), with few addressing their impact on export performance, particularly in transition economies.

This study addresses these gaps by systematically quantifying the impact of geopolitical distance, measured through United Nations General Assembly (UNGA) voting patterns, on trade efficiency in 18 transition countries over three decades. Unlike prior research that focuses primarily on static trade determinants, this study introduces geopolitical alignment as a dynamic factor shaping trade outcomes. Furthermore, by employing a stochastic gravity model it provides a more nuanced understanding of how geopolitical distance interacts with economic complexity, regional trade agreements, and physical distance. The findings reveal that geopolitical distance not only amplifies the negative effects of physical distance on trade but also introduces sourcing complexities that disproportionately affect non-communist and emerging economies. In doing so, this study advances the discourse on geo-economic fragmentation and offers critical insights for policymakers and business leaders navigating an increasingly politicized global trade environment. The rest of this paper is organized as follows: Section 2 reviews the relevant literature; Section 3 describes the model, data sources, and estimation methods; Section 4 presents the empirical results and discussion; and Section 5 concludes with a summary of the key findings and their implications.

2. LITERATURE REVIEW

The relationship between geopolitical distance and export efficacy in transitional economies is shaped by a complex combination of geographical factors, economic strategies, and external political affiliations. While previous research has thoroughly explored traditional determinants of trade, such as spatial separation, cultural connections, and regional integration (Sachs, 2018; Sheets & Boata, 1998), it has largely neglected the role of geopolitical alignment on trade results. Current theoretical frameworks predominantly presuppose that nations engage in trade based on comparative advantages and transportation costs, thereby disregarding the political factors that increasingly dominate global trade dynamics.

2.1. Limitations of Conventional Trade Models

Traditional trade theories, particularly the gravity model, posit that trade volume is positively correlated with economic magnitude and inversely related to geographic separation (Kalirajan & Findlay, 2005). While the gravity model has proven effective in empirical studies, it fails to account for geopolitical distance, which has emerged as a significant factor in international trade due to rising political tensions (Javorcik et al., 2022). Recent geopolitical shifts—such as economic sanctions, trade conflicts, and the process of economic decoupling—have introduced non-economic impediments that conventional models are ill-equipped to address (Campos et al., 2023).

Furthermore, research on regional trade agreements (RTAs) indicates that political and economic integration within entities like the EU or CEFTA bolsters trade efficiency (Gaytaranov & Gunter, 2013). Nevertheless, these analyses fail to distinguish between economic integration predicated on shared markets and that based on geopolitical alignment. Our research seeks to fill this void by explicitly quantifying geopolitical distance as a trade impediment using UNGA voting patterns.

2.2. Geopolitical Distance as a Trade Determinant

While studies on foreign direct investment (FDI) and financial markets acknowledge the existence of geopolitical risks (Elsayed & Helmi, 2021; Truong et al., 2024), there is a lack of studies examining how these risks impact trade efficiency, especially in transitional economies. Aiyar, Malacrino, and Presbitero (2024) highlight the significance of geopolitical alignment in influencing FDI trajectories; however, their investigation does not consider trade performance. Similarly, Nana and Ouedraogo (2023) contend that camaraderie is as significant as geographic proximity in trade relations, but they provide a systematic quantification of this effect across different economies. Our research builds upon these findings by employing a dynamic metric of geopolitical distance that spans several decades, thus providing a systematic and empirical framework for elucidating how political alignment influences trade efficiency in transitional economies. Past studies have mainly focused on static determinants of trade costs, such as tariff frameworks, logistics, and infrastructure (Gençosmanoğlu & Süleyman, 2022). However, contemporary research indicates that dynamic elements, including alterations in global alliances and economic strategies, assume an increasingly significant role in trade efficiency (Salimi & Amidpour, 2022). For instance, the friend-shoring paradigms advocated by Yellen (2022) underscore the extent to which geopolitical apprehensions influence trade choices, transcending mere economic rationality. Our study contributes to this evolving body of literature by demonstrating that geopolitical distance functions as a trade cost, similar to physical distance, but with distinctive mechanisms such as heightened sourcing intricacies and supply chain disruptions. In contrast to earlier studies that focused on generalized trade patterns, we utilize a stochastic gravity model to quantify these impacts with greater accuracy.

2.3. Addressing Gaps in Empirical Research

Despite the growing recognition of geopolitical risks in trade, the majority of empirical investigations have either concentrated on specific case studies (e.g., U.S.-China trade tensions) or short-term ramifications (Javorcik et al., 2022). Our research distinguishes itself in three key ways: (i) It investigates 18 transition economies across three decades (1990–2020), thereby capturing long-term trends and structural transformations; (ii) By integrating geopolitical distance alongside physical and economic variables, it offers a more comprehensive understanding of trade efficiency; (iii) It explores whether the influence of geopolitical distance varies based on temporal context, political regime (communist versus non-communist), and the developmental status of trading partners—an analytical perspective largely absent from previous studies.

This study makes several important contributions to the existing literature. Firstly, it incorporates geopolitical distance within trade models, thereby bridging the divide between international economics and political economy. Secondly, it quantifies how geopolitical distance impedes trade efficiency, challenging the conventional gravity models that treat trade as solely an economic decision. Thirdly, by employing a stochastic frontier gravity model, we establish an empirical framework that encapsulates both direct trade impediments and the influence of geopolitical alignment on export performance. These revelations provide novel insights for policymakers and business leaders as they navigate the complexities of global trade amid an era characterized by escalating geopolitical tensions.

3. DATA AND MODEL SPECIFICATION

3.1. Measuring Export Efficiency

Export efficiency is measured by a theoretical export frontier, which represents the maximum export capacity attainable under conditions of free trade. A country's exports are considered 100% efficient when they reach this capacity. In this study, we utilize a stochastic gravity model to estimate export frontiers. Gravity models are widely used in empirical research on international trade and the effects of free trade agreements. Traditional gravity models estimate the average effects of export determinants based on actual export volumes. However, due to various natural and man-made obstacles, actual export volumes consistently fall short of the maximum potential level. Consequently, there are error terms with non-zero and positive means, which serve to quantify the disparity between actual and

potential exports. Drawing on the stochastic frontier analysis employed in measuring production possibility frontiers, Kalirajan and Findlay (2005) proposed the use of stochastic gravity models to estimate export potential. As this method is subsequently followed by numerous studies, this paper employs it to estimate export efficiency.

3.2. Measuring Geopolitical Distance

Geopolitical distance in this study is measured using voting patterns at the United Nations General Assembly (UNGA). Specifically, we adopt the ideal point distance (IPD) methodology as outlined by Bailey, Strezhnev, and Voeten (2017). While some recent studies on geo-economic fragmentation concentrate on specific recent significant votes, such as the March 2022 UNGA resolution ES-11/1 on 'Aggression against Ukraine' (Javorcik et al., 2022), our analysis spans the past two decades, necessitating a measure that remains consistent and comparable over an extended period. The IPD method is robust in this regard, as it calculates distances between countries' voting preferences while keeping the UNGA agenda constant, ensuring that observed changes in alignments are driven by geopolitical shifts rather than changes in the topics discussed.

3.3. Model Specification

In examining how geopolitical alignment affects export efficiency, we utilize an adapted gravity model. To tackle this issue and mitigate estimation bias, we implement full fixed effects in our panel data analysis. This method controls for bilateral resistance factors like distance, border proximity, shared language, and colonial connections, as well as multilateral resistance, from our model specification estimation.

$$ExportEff_{ijt} = \gamma_{it} + \gamma_{jt} + \gamma_{ij} + \beta_1 GPD_{ij,t-1} + \beta_2 CONTROL_{ijt} + \varepsilon_{ijt} \quad (1)$$

The superscripts i and j represent exporters and importers, while t represents the year. The variable *ExportEff* is defined as the ratio of actual exports to potential exports, estimated using a stochastic frontier gravity model (Kalirajan & Findlay, 2005). This measure captures how close a country is to maximizing its export potential under ideal conditions.

Our main interest variable is *GPD* that captures the distance between two countries each year, calculated as the absolute difference between the inferred preference parameters for voting (Bailey et al., 2017). A higher GPD indicates greater geopolitical misalignment between two trading partners.

$CONTROL_{ijt}$ denotes a set of bilateral variables typically employed in gravity models. These variables encompass the product of Gross Domestic Product (GDP), bilateral distance, indicator variables denoting the existence of a shared border, official language, and colonial legacy, along with membership in the same regional trade agreements (*rta*). In details, bilateral distance (D) is the logarithmic transformation of bilateral geographical distance, as sourced from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) database, and functions as a conventional control variable within the gravity model framework. Economic size (Product of GDP in both countries) is the multiplicative outcome of the GDP of both the exporting and importing nations accounts for the effects related to market size. Regional Trade Agreement (*rta*) is a dichotomous variable that signifies whether both trading entities are members of the same regional trade bloc, thereby controlling for the implications of preferential trade agreements.

To address both multilateral and bilateral resistance, we introduce time-varying fixed effects for countries i and j (γ_{it} and γ_{jt}) and pair-specific fixed effects (γ_{ij}), respectively. Estimation results are reported with standard errors robust to heteroscedasticity, calculated using the Huber-White method. As there are no zero observations in our dataset, we do not use the Poisson Pseudo Maximum Likelihood method commonly utilized in trade literature.

The dataset utilized in our analysis comprises 39,520 observations spanning 18 transition exporting nations from 1990 to 2020, chosen for its capture of significant geopolitical and economic transformations: (i) Post-Cold War Trade Realignments (1990s): Following the dissolution of the Soviet Union, transition economies underwent significant political and economic restructuring, culminating in a significant reorientation of trade flows; (ii) Globalization and EU Integration (2000s): Numerous transition economies augmented their trade interactions with Western nations,

notably during the EU accession waves of 2004 and 2007; (iii) Geopolitical Fragmentation and Trade Tensions (2010s-2020): Recent geopolitical developments, including sanctions and trade conflicts, have fundamentally altered trade dynamics. By incorporating recent decades, we elucidate the escalating significance of geopolitical risks within international trade. The sample encompasses a variety of transition economies characterized by disparate political and economic frameworks, thereby ensuring the robustness and generalizability of the findings. The control variables are sourced from the CEPII database. Table 1 provides a statistical overview of the variables, while Figure 1 illustrates the distribution of average *GPD* and *ExportEff* values across years and exporting countries. The *GPD* values show a marked increase during the period 1990-1993, followed by a considerable decline in 1995, reaching their lowest point in 1998. Subsequently, there is a period of relatively stable fluctuations until 2013, followed by an increase in 2014, which remains steady thereafter. In contrast, export efficiency demonstrates a decline over time.

Table 1. Statistical summary.

Variables	Count	Mean	Sd	Min.	Max.
Export eff.	39520	16.39	19.45	0.11	81.69
GPD	39520	0.93	0.69	0.01	2.90
D	39520	8.47	0.86	5.04	9.89
rta	39520	0.12	0.33	0.00	1.00

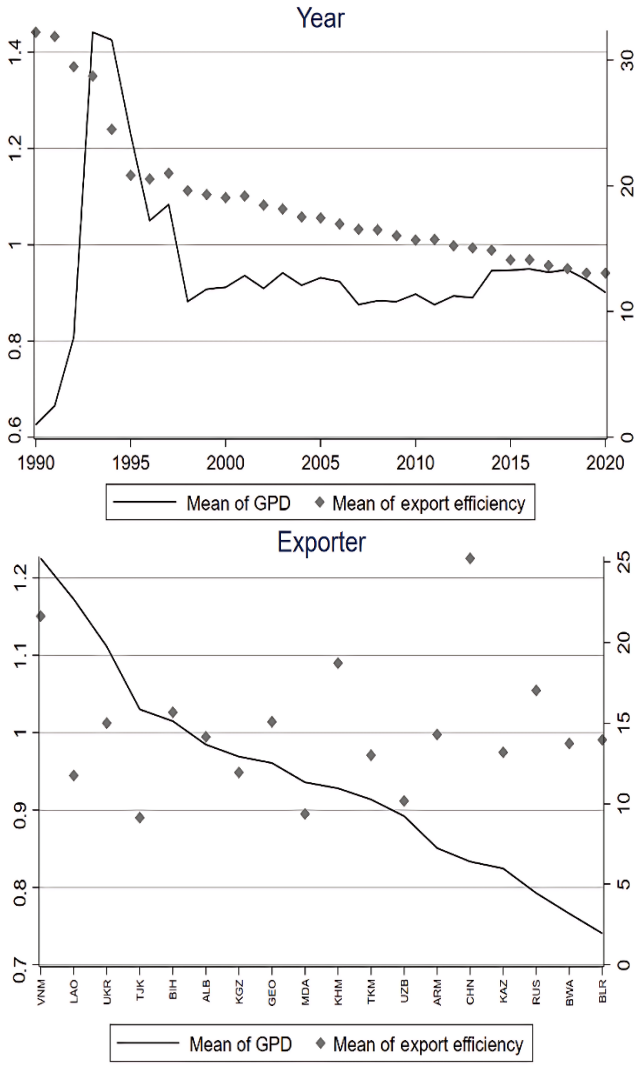

Figure 1. Distribution of the average values of geopolitical distance and export efficiency across years and transition countries.

Note: The left-hand scale represents the average value of GPD, while the right-hand scale represents the average value of ExportEff.

To ensure robust estimation, we implement the following econometric techniques: (i) Fixed effects panel regression, which removes time-invariant variables influencing trade efficiency; (ii) Robust standard errors, using Huber-White heteroskedasticity-consistent standard errors to address potential variance distortions; (iii) Subsample analysis, which involves estimating the model separately for different categories, including Communist versus Non-Communist transition economies, advanced versus emerging trading partners, and three distinct time periods (1990-1998, 1999-2013, 2014-2020). Moreover, we estimate an interaction model to analyze the interplay between geopolitical distance, economic complexity, and regional trade agreements.

4. ECONOMETRIC RESULTS

4.1. Main Results

The analysis of GPD and its impact on export efficiency reveals several nuanced findings. Initially, the base findings in column (1) of Table 2 demonstrate that when full fixed effects are applied, all control variables except for regional trade agreements (*rta*) are absorbed, with GPD coefficients being negative and statistically significant at the 1% level. This suggests a strong inverse relationship between GPD and export efficiency.

Further investigation into potential structural shifts in GPD around 1998 and 2014 is conducted by dividing the sample into three periods: 1990-1998, 1999-2013, and 2014-2020. The results in columns (2) to (4) of Table 2 indicate that GPD significantly impedes export efficiency only during the latter two periods, 1999-2013 and 2014-2020. This aligns with findings from other studies that highlight the impact of geopolitical risks on economic activities, such as the inhibition of foreign direct investment (FDI) due to geopolitical tensions (Yu & Wang, 2023) and the reduction in trade flows due to geopolitical fragmentation (Campos et al., 2023).

Additionally, the analysis of GPD's impact across various exporters' communist affiliations and income classifications, as shown in Table 3, reveals that the adverse effects of GPD are significantly more pronounced for non-communist nations and in transactions with advanced economies, with a comparatively weaker effect in interactions with emerging markets. This finding supports existing literature suggesting that geopolitical risks may hinder financial development within emerging markets (Lu, Gozgor, Huang, & Keung Lau, 2020) and contribute to carry trade volatility within BRICS nations[1] (Cepni, Emirmahmutoglu, Guney, & Yilmaz, 2023). Additionally, it has been demonstrated that geopolitical risks can affect volatility dynamics within financial markets, particularly in regions such as the Middle East and North Africa (MENA) (Elsayed & Helmi, 2021). These results highlight the intricate relationship between geopolitical elements and economic outcomes, reinforcing the need to account for geopolitical risks within international trade and investment frameworks.

In summary, the significance of geopolitical distance is as important as that of physical distance in determining export efficiency. As the political misalignment between two nations increases, their trade efficiency diminishes, and this effect has become more pronounced over time. These findings carry substantial implications: For policymakers, it is clear that reliance solely on trade agreements is insufficient; it is essential for governmental bodies to engage in diplomatic endeavors to strengthen trade relations. For businesses, this underscores the need to integrate geopolitical risk assessments into supply chain strategies, especially when trading with developed economies.

4.2. Mechanism Analysis

The investigation into how GPD impacts export efficiency via various mechanisms, with particular emphasis on the static cost channel, offers valuable insights into the dynamics of international trade. The static cost channel, encompassing factors such as physical distance and the establishment of RTAs, assumes a pivotal role in the assessment of trade efficiency. Columns (1) and (2) of Table 4 show that the interaction between geographical distance

[1] BRICS is an intergovernmental organization consisting of ten countries—Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Indonesia, Iran and the United Arab Emirates.

and shared RTAs is crucial, as greater distances tend to amplify the negative effects of GDP on trade efficiency. This phenomenon arises because engaging in trade with distant nations escalates expenses, as demonstrated by the gravity model analysis pertaining to Turkey's exports, which indicates that transportation costs and infrastructural investments substantially influence trade results (Gençosmanoğlu & Süleyman, 2022). Furthermore, geopolitical distance can diminish the positive effects of RTAs on export efficiency, as illustrated in the case of the RCEP, where distinct tariff schedules and extended transition periods are requisite to adapt to the varied economic contexts of member nations (Salamatov, Tangaeva, & Kolomin, 2022). The detrimental influence of distance is also observed in studies of cross-border e-commerce in China, where trade distance exhibits a negative correlation with export efficiency, despite the benefits of trade openness and internet utilization (Han & Lee, 2022). In addition, the exportation of China's fruit and vegetable products to RCEP affiliates is impeded by geographical distance, although variables such as GDP per capita and shared linguistic conditions may facilitate trade (Xie & Wu, 2022). These findings underscore the complexity of trade relationships, where static costs, geopolitical considerations, and regional agreements intersect to influence trade efficiency. The integration of these studies accentuates the necessity for strategic investments in infrastructure and diplomatic initiatives aimed at alleviating the adverse repercussions of distance while enhancing the advantages of RTAs, ultimately leading to improved trade efficiency across varied economic territories.

The investigation of dynamic costs, particularly related to sourcing complexity in economies with high economic complexity, presents additional challenges. Economic complexity, as defined by Hidalgo and Hausmann (2009), refers to a nation's ability to diversify its production capabilities and to generate an array of intricate goods utilizing analogous knowledge or competencies. This complexity requires sourcing from diverse suppliers across various countries, increasing sourcing challenges. The Economic Complexity Outlook Index (COI), developed by the Massachusetts Institute of Technology (MIT) Media Lab's Observatory of Economic Complexity, serves as a valuable instrument for capturing this dimension. The postulation that increased economic complexity engenders heightened sourcing complexity is corroborated by findings from a plethora of studies. For example, the dynamics of global sourcing suggest that the advantages of sourcing from multiple countries amplify as firms broaden their import networks, although this expansion is accompanied by sunk costs that render the establishment of new supplier relationships more costly than the maintenance of existing ones (Hoang, 2022). Furthermore, economic complexity has been demonstrated to diminish the likelihood of fiscal crises by enabling nations to export diversified and less ubiquitous goods, thereby contributing to macroeconomic stability (Gomez-Gonzalez, Uribe, & Valencia, 2023). In the context of developing nations, economic complexity can also mitigate output volatility by diversifying export bundles and enhancing export sophistication (Güneri & Yalta, 2021). Moreover, economic complexity exerts a beneficial influence on the diversification of services exports, particularly when it is coupled with increased inflows of foreign direct investment, which bolsters a nation's engagement in international markets (Gnangnon, 2022).

Table 2. Benchmark results.

	(1)	(2)	(3)	(4)
	Full sample	**1990-1998**	**1999-2013**	**2014-2020**
Variables	**Export eff.**	**Export eff.**	**Export eff.**	**Export eff.**
L.GPD	-0.41***	-0.02	-0.25***	-0.06**
	(0.023)	(0.034)	(0.020)	(0.025)
rta	0.32***		0.04	0.08**
	(0.034)		(0.035)	(0.033)
Constant	17.25***	17.65***	18.39***	14.58***
	(0.022)	(0.045)	(0.018)	(0.024)
Observations	32,650	468	20,290	11,284
R-squared	0.999	1.000	1.000	1.000
Country-year FE	Yes	Yes	Yes	Yes
Pair FE	Yes	Yes	Yes	Yes

Note: *** p<0.01, ** p<0.05.

In column (3) of Table 4, the interaction of COI with GDP in the reestimated model implies that while economic complexity has the potential to stimulate growth and stability, it concurrently introduces sourcing complexities that necessitate effective management. The negative coefficients for the interaction terms within the model underscore the prospective challenges and costs associated with the administration of these complexities, underscoring the importance of strategic sourcing and international trade policies in nations characterized by economic complexity.

Table 3. Estimation results with sub-samples.

	(1)	(2)	(3)	(4)	(5)
	Exporter		Importer		
	Non-communist	Communist	Advanced economies	Emerging economies	Low-income economies
Variables	Export eff.	Export eff.	Export eff.	Export eff.	Export eff.
L.GPD	-0.51***	-0.20***	-0.48***	-0.23***	-0.33***
	(0.028)	(0.063)	(0.071)	(0.036)	(0.053)
rta	0.25***	0.11	0.03	0.46***	0.36
	(0.039)	(0.075)	(0.051)	(0.061)	(0.244)
Constant	15.75***	23.67***	15.41***	19.16***	17.54***
	(0.027)	(0.069)	(0.080)	(0.033)	(0.056)
Observations	25,203	5,863	8,747	13,409	5,962
R-squared	0.999	1.000	0.999	0.999	0.999
Country-year FE	Yes	Yes	Yes	Yes	Yes
Pair FE	Yes	Yes	Yes	Yes	Yes

Note: *** p<0.01.

Table 4. Channel analysis.

	(1)	(2)	(3)
Variables	Export eff.	Export eff.	Export eff.
L.GPD	-0.27***	-0.38***	-0.25***
	(0.027)	(0.023)	(0.026)
rta	0.31***	0.52***	0.18***
	(0.034)	(0.039)	(0.035)
*L.GPD*D*	-0.03***		
	(0.003)		
*L.GPD*rta*		-0.39***	
		(0.049)	
COI			0.12***
			(0.021)
*L.GPD*COI*			-0.04***
			(0.014)
Constant	17.32***	17.22***	17.46***
	(0.025)	(0.022)	(0.031)
Observations	32,650	32,650	18,860
R-squared	0.999	0.999	1.000
Country-year FE	Yes	Yes	Yes
Pair FE	Yes	Yes	Yes

Note: *** p<0.01.

5. CONCLUSION AND POLICY IMPLICATIONS

5.1. Conclusion

This study examines the effects of geopolitical distance on trade efficiency in 18 transition economies from 1990 to 2020, providing novel perspectives on the intricate interplay between international political dynamics and economic performance. Our examination indicates that geopolitical distance, operationalized through voting concordance in the United Nations General Assembly, significantly hinders export efficiency in transitional nations. Moreover, the impact of geopolitical distance is not static; it fluctuates over time and is influenced by the political

context of the exporting country—particularly whether the nation operates under a communist regime—and the developmental stage of its trading partners. This highlights the significance of geopolitical elements in influencing trade dynamics, particularly in areas characterized by political volatility and transforming international relations.

The findings suggest that geopolitical distance impedes trade efficacy by augmenting sourcing expenses and complicating the procurement of inputs. As geopolitical tensions escalate, transition economies, which already face developmental challenges, encounter escalating obstacles in realizing their export potential. These insights are especially relevant in the context of global political fragmentation, where trade affiliations are shaped not solely by economic factors but also by geopolitical alignments.

This research contributes significantly to the existing scholarship on international trade, economic geography, and geopolitical risk. First, it incorporates geopolitical distance into trade efficiency frameworks. Conventional gravity models of trade predominantly emphasize physical distance, economic magnitude, and cultural affiliations as essential factors influencing export efficiency (Kalirajan & Findlay, 2005; Sachs, 2018). Nonetheless, these models frequently neglect the influence of geopolitical distance, especially within transition economies. Our empirical findings confirm that geopolitical distance significantly reduces export efficiency, supporting the view that political alignment is just as influential as geographical proximity in determining trade patterns (Nana & Ouedraogo, 2023). This perspective builds upon the work of Javorcik et al. (2022), who emphasize the growing importance of friend-shoring within international trade, where geopolitical factors are prioritized over economic efficiency in their selection of trade partners.

Second, our paper shows that geopolitical distance functions as an evolving barrier to trade. While previous studies have identified geopolitical risks in relation to FDI and financial markets (Elsayed & Helmi, 2021; Truong et al., 2024), few have explored how these risks affect export efficiency over time. Our analysis reveals that the negative impact of geopolitical distance on trade efficiency has worsened over time, particularly after 1999, with a significant escalation post-2014. This observation builds upon the conclusions of Campos et al. (2023), who contend that geopolitical fragmentation disrupts trade dynamics and modifies global supply chains.

Third, our paper highlights the differential impact of geopolitical distance among nations and trade partners. While prior research suggests that developing nations are more vulnerable to geopolitical disruptions Aiyar et al., 2024), it has not sufficiently differentiated between communist and non-communist transition economies. Our results indicate that non-communist transition economies are particularly affected by geopolitical distance, as they tend to rely more heavily on trade with Western markets. This finding resonates with the conclusions of Lu et al. (2020), who assert that emerging markets are more prone to financial volatility due to geopolitical risks, and our study extends this discourse by illustrating how these dynamic influences trade efficiency.

Fourth, while trade agreements are frequently presumed to facilitate trade and diminish barriers (Gaytaranov & Gunter, 2013), our findings reveal that RTAs only partially alleviate the ramifications of geopolitical distance. This challenges the conventional view by demonstrating that regional integration alone is insufficient to counterbalance geopolitical misalignment, a conclusion that is consistent with Salimi and Amidpour (2022), who observe a diminishing impact of traditional trade blocs. Furthermore, our investigation finds that nations characterized by heightened economic complexity encounter amplified sourcing challenges, reinforcing the assertions of Hoang (2022) and Gnangnon (2022) regarding the influence of complexity on trade frictions.

5.2. Policy Implications

The results of this study offer significant insights for policymakers and business leaders in transition economies, as well as globally, with several actionable recommendations for addressing geopolitical risks in trade.

5.2.1. Strengthening Diplomatic and Economic Strategies for Trade Stability

Policymakers in transition economies should take proactive measures to mitigate the negative effects of geopolitical distance by fostering diplomatic ties with key trading partners. This could involve enhancing international cooperation, actively engaging in multilateral organizations, and building strategic alliances that facilitate smoother trade flows, even amidst geopolitical tensions.

Governments should align their trade and foreign policy strategies by negotiating economic agreements in conjunction with diplomatic collaborations. For instance, transitioning economies seeking greater trade access to the European Union or the United States should harmonize their foreign policies with Western trade regulations to mitigate export vulnerabilities.

Furthermore, nations should initiate structured dialogues to normalize trade relations with key partners, particularly those with significant political differences. An example of such diplomacy can be seen in the efforts of Turkey and the European Union, which have maintained trade relations despite geopolitical challenges. This approach could be emulated by other transition economies.

Additionally, governments should establish trade insurance mechanisms and financial resources to support businesses that face losses due to geopolitical disruptions. A potential strategy might involve adapting the Export Credit Guarantee Agency model to address losses linked to geopolitical risks.

5.2.2. Diversifying Trade Partnerships to Reduce Geopolitical Dependence

Transition economies should broaden their trading relationships to mitigate the risks associated with geopolitical misalignment. Expanding trade beyond politically aligned partners can reduce dependence on a narrow set of markets, thereby bolstering economic resilience in times of diplomatic uncertainty.

Transition economies should increase trade with emerging markets to lessen their dependence on advanced economies that impose geopolitical trade restrictions. For example, strengthening economic ties with China, India, ASEAN, and Africa would help diversify trade risks.

Governments should also promote regional production networks within trade blocs to reduce dependence on distant geopolitical allies. For instance, the Eurasian Economic Union (EAEU) can strengthen intra-regional supply chains, thereby decreasing reliance on Western trade networks.

Furthermore, governments must assist enterprises in identifying alternative export markets through targeted trade missions, financial incentives, and trade promotion programs. For example, trade promotion agencies should offer incentives for exporters to explore less politically sensitive markets, such as Latin America and Southeast Asia.

5.2.3. Enhancing Business Strategies to Manage Geopolitical Risk

It is crucial for businesses operating in transition economies to develop adaptive strategies to manage geopolitical uncertainty. Such strategies may involve optimizing supply chains, identifying alternative sourcing options, and securing resilient input channels capable of withstanding geopolitical shocks.

Governments should establish geopolitical risk assessment centers that provide real-time intelligence on trade disruptions, helping firms anticipate and mitigate political trade risks. For instance, a "Geopolitical Risk Index for Trade" dashboard could enable businesses to foresee and prepare for political instability affecting trade.

To encourage supplier diversification, governments should offer subsidies and tax incentives to businesses that broaden their supplier networks and reduce reliance on geopolitically unstable regions. For example, the US CHIPS Act provides financial incentives to firms relocating semiconductor production away from China—a strategy that transition economies could adopt to promote diversification.

Additionally, enterprises should be supported in utilizing trade finance instruments such as letters of credit, structured trade finance, and export credit guarantees to mitigate risks. For example, the International Finance Corporation (IFC) trade finance initiative could be expanded to cover geopolitical trade risks.

5.2.4. Strengthening the Role of International Organizations in Trade Stability

International organizations and development agencies should provide targeted assistance to transition economies, helping them manage geopolitical trade risks more effectively. This could involve offering technical support in trade facilitation, expanding access to global markets, and supporting diplomatic and economic negotiations.

The World Trade Organization (WTO) should implement reforms to specifically address non-tariff trade barriers arising from geopolitical tensions. One potential solution could involve introducing a Geopolitical Trade Stability Framework, which would provide best practices for managing trade barriers motivated by political factors.

Multilateral organizations such as the World Bank, International Monetary Fund (IMF), and UN Conference on Trade and Development (UNCTAD) should enhance their trade facilitation programs by incorporating geopolitical risk assessments into trade policies. For instance, the World Bank's Trade Facilitation Support Program could be expanded to focus on geopolitical trade risks.

Additionally, a global risk-sharing mechanism could be established to allow businesses and governments to pool resources to protect against geopolitical trade disruptions. A model similar to the Multilateral Investment Guarantee Agency (MIGA), which offers political risk insurance, could be developed to address trade-related geopolitical risks.

5.2.5. Strengthening Trade Agreements to Address Geopolitical Risks

Policymakers must ensure that trade agreements take both economic and geopolitical factors into account. Agreements that focus solely on economic metrics may fail to address geopolitical uncertainties, which could undermine their long-term stability.

New regional trade agreements should include stability provisions that allow trade to continue despite political disruptions. For instance, the European Union–Ukraine Deep and Comprehensive Free Trade Agreement (DCFTA) includes geopolitical stability measures—a framework that could be replicated in other regional trade blocs.

Given that physical trade is highly vulnerable to geopolitical disruptions, regional trade agreements should prioritize expanding digital trade frameworks to enhance trade resilience. For example, the Regional Comprehensive Economic Partnership (RCEP) includes digital trade protections, offering a potential model for transition economies.

Furthermore, regional trade agreements should establish autonomous dispute resolution mechanisms to prevent trade disruptions caused by geopolitical conflicts. For instance, the WTO's dispute settlement system could be adapted to develop faster, region-specific arbitration mechanisms for trade-related geopolitical disputes.

5.3. Future Research

While the present investigation provides valuable empirical insights into the implications of geopolitical distance, there are several areas for future research. Subsequent research endeavors could explore how firms adjust their trade and investment strategies in response to political discord. Some sectors, such as energy and defense, may be more vulnerable to geopolitical distance than others, such as consumer goods. This study focuses on traditional goods trade, but future research could also examine the effects of geopolitical risks on digital trade, fintech, and remote services, wherein geopolitical risks may manifest in distinct manners.

Funding: This research is supported by Banking Academy of Vietnam (Grant number: NC.2025).
Institutional Review Board Statement: Not applicable.
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Data Availability Statement: The corresponding author can provide the supporting data of this study upon a reasonable request.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: Both authors contributed equally to the conception and design of the study. Both authors have read and agreed to the published version of the manuscript.

REFERENCES

Aiyar, S., Malacrino, D., & Presbitero, A. F. (2024). Investing in friends: The role of geopolitical alignment in fdi flows. *European Journal of Political Economy*, *83*, 102508. https://doi.org/10.1016/j.ejpoleco.2024.102508

Bailey, M. A., Strezhnev, A., & Voeten, E. (2017). Estimating dynamic state preferences from United Nations voting data. *Journal of Conflict Resolution*, *61*(2), 430-456. https://doi.org/10.1177/0022002715595700

Campos, R. G., Estefania-Flores, J., Furceri, D., & Timini, J. (2023). Geopolitical fragmentation and trade. *Journal of Comparative Economics*, *51*(4), 1289-1315. https://doi.org/10.1016/j.jce.2023.06.008

Cepni, O., Emirmahmutoglu, F., Guney, I. E., & Yilmaz, M. H. (2023). Do the carry trades respond to geopolitical risks? Evidence from BRICS countries. *Economic Systems*, *47*(2), 101000. https://doi.org/10.1016/j.ecosys.2022.101000

Elsayed, A. H., & Helmi, M. H. (2021). Volatility transmission and spillover dynamics across financial markets: The role of geopolitical risk. *Annals of Operations Research*, *305*(1), 1-22. https://doi.org/10.1007/s10479-021-04081-5

Gaytaranov, J., & Gunter, L. F. (2013). *Export performance of transition economies*. Paper presented at the International Conference on Energy, Regional Integration and Socio-Economic Development, Article 6052.

Gençosmanoğlu, Ö. T., & Süleyman, T. (2022). An alternative approach to the effect of the distance on Turkey's exports: Transportation modes. *Journal of Empirical Economics and Social Sciences*, *4*(1), 56-64. https://doi.org/10.46959/jeess.1057179

Gnangnon, S. K. (2022). Effect of economic complexity on services export diversification: Do foreign direct investment inflows matter? *International Journal of Development Issues*, *21*(3), 413-437. https://doi.org/10.1108/IJDI-01-2022-0023

Gomez-Gonzalez, J. E., Uribe, J. M., & Valencia, O. M. (2023). Does economic complexity reduce the probability of a fiscal crisis? *World Development*, *168*, 106250. https://doi.org/10.1016/j.worlddev.2023.106250

Güneri, B., & Yalta, A. Y. (2021). Does economic complexity reduce output volatility in developing countries? *Bulletin of Economic Research*, *73*(3), 411-431. https://doi.org/10.1111/boer.12257

Han, J., & Lee, T. (2022). The influence factors of China's cross-border E-commerce export trade using gravity model. *Journal of Korea Trade*, *26*(5), 56-75. https://doi.org/10.35611/jkt.2022.26.5.56

Hidalgo, C. A., & Hausmann, R. (2009). The building blocks of economic complexity. *Proceedings of the National Academy of Sciences*, *106*(26), 10570-10575. https://doi.org/10.1073/pnas.0900943106

Hoang, T. (2022). The dynamics of global sourcing. *International Finance Discussion Paper*, *2022*(1336), 1–73. https://doi.org/10.17016/IFDP.2022.1337

Javorcik, B., Kitzmuller, L., Yildirim, M., & Schweiger, H. (2022). *Economic costs of friend-shoring*. CID Faculty Working Paper No. 422. Center for International Development at Harvard University.

Kalirajan, K., & Findlay, C. (2005). Estimating potential trade using gravity models: A suggested methodology. *Foundation for Advanced Studies on International Development, Tokyo*.

Lu, Z., Gozgor, G., Huang, M., & Keung Lau, M. C. (2020). The impact of geopolitical risks on financial development: Evidence from emerging markets. *Journal of Competitiveness*, *12*(1), 93–107. https://doi.org/10.7441/joc.2020.01.06

Nana, I., & Ouedraogo, I. (2023). Friendship is as Important as Neighborhood: The impact of Geopolitical Distance on Bilateral Trade.

Sachs, J. D. (2018). Geography, geopolitics, and policy in the performance of transition economies. *Economics of Transition*, *26*(4), 841-849. https://doi.org/10.1111/ecot.12163

Salamatov, V., Tangaeva, A. V., & Kolomin, V. O. (2022). RCEP in the system of mega-regional trade agreements. *Mirovaia Ekonomika I Mezhdunarodnye Otnosheniia*, *66*(2), 23-32. https://doi.org/10.20542/0131-2227-2022-66-2-23-32

Salimi, M., & Amidpour, M. (2022). The impact of energy transition on the geopolitical importance of oil-exporting countries. *World*, *3*(3), 607-618. https://doi.org/10.3390/world3030033

Sheets, N., & Boata, S. (1998). Eastern European export performance during the transition. *Contemporary Economic Policy*, *16*(2), 211-226. https://doi.org/10.1111/j.1465-7287.1998.tb00513.x

Truong, L. D., Friday, H. S., & Pham, T. D. (2024). The effects of geopolitical risk on foreign direct investment in a transition economy: Evidence from Vietnam. *Journal of Risk and Financial Management*, *17*(3), 101. https://doi.org/10.3390/jrfm17030101

Xie, G., & Wu, J. (2022). Study on the potential of China's fruit and vegetable products export to the RCEP partners. *Chinese Business Review*, *21*(3), 77-90. https://doi.org/10.17265/1537-1506/2022.03.001

Yellen, J. (2022). *US treasury secretary Janet Yellen on the next steps for Russia sanctions and 'friend-shoring'supply chains. Address Delivered to the Atlantic Council*, *13*. Retrieved from https://www.atlanticcouncil.org/news/transcripts/transcript-us-treasury-secretary-janet-yellen-on-the-next-steps-for-russia-sanctions-and-friend-shoring-supply-chains/

Yu, M., & Wang, N. (2023). The influence of geopolitical risk on international direct investment and its countermeasures. *Sustainability*, *15*(3), 2522. https://doi.org/10.3390/su15032522