RESHAPING THE MAP OF INTERNATIONAL TRADE AMID ESCALATING TRADE WARS AND GEOPOLITICAL TENSIONS

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Abstract. This study examines changes in the structure of international trade amid escalating trade wars and geopolitical tensions. It combines a qualitative review of recent developments in global trade and supply chains with a panel-data econometric analysis covering sixteen countries over the period 2005–2024. The quantitative analysis focuses specifically on the concentration of countries' trading partnerships, measured by the Herfindahl–Hirschman Index (HHI). A fixed effects model is used to examine the relationship between trade concentration and geopolitical risk (GPR), tariff protection (TARIFF), foreign direct investment (FDI), and economic growth. The econometric results indicate a positive and statistically significant association between geopolitical risk, tariff levels, and the concentration of international trade relationships, while GDP growth is negatively associated with trade concentration. Foreign direct investment does not exhibit a statistically significant relationship with the dependent variable in the estimated model. These econometric findings should be interpreted as evidence concerning the concentration of trading partners rather than as direct evidence of the relocation of production centers or the restructuring of global supply chains. Evidence concerning reshoring, near-shoring, friend-shoring, changes in production locations, and supply-chain reconfiguration is derived from the qualitative analysis and the reviewed international literature. Taken together, the quantitative and qualitative findings suggest that geopolitical tensions and trade-policy changes are increasingly relevant to the organization of international economic relations, while the specific channels through which production and supply chains are reconfigured require separate empirical investigation.

Keywords: Geopolitical Risk, Trade Wars, International Trade Concentration, Global Supply Chains, Protectionism.

ИЗМЕНЕНИЕ КАРТЫ МЕЖДУНАРОДНОЙ ТОРГОВЛИ В УСЛОВИЯХ ЭСКАЛАЦИИ ТОРГОВЫХ ВОЙН И ГЕОПОЛИТИЧЕСКОЙ НАПРЯЖЁННОСТИ

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Аннотация. В исследовании рассматриваются изменения структуры международной торговли в условиях эскалации торговых войн и геополитической напряжённости. Работа сочетает качественный анализ современных тенденций мировой торговли и глобальных цепочек поставок с эконометрическим анализом панельных данных по шестнадцати странам за период 2005–2024 гг. Количественный анализ сосредоточен непосредственно на концентрации торговых связей стран, измеряемой с помощью индекса Херфиндаля–Хиршмана (HHI). Модель с фиксированными эффектами используется для оценки взаимосвязи между концентрацией торговли, геополитическим риском (GPR), тарифной защитой (TARIFF), прямыми иностранными инвестициями (FDI) и экономическим ростом. Базовые эконометрические оценки указывают на положительную и статистически значимую связь геополитического риска и уровня тарифов с концентрацией международных торговых

отношений, тогда как рост ВВП отрицательно связан с концентрацией торговли. Для прямых иностранных инвестиций статистически значимой связи с зависимой переменной в оценённой модели не выявлено. Эконометрические результаты следует интерпретировать как свидетельство изменений концентрации торговых партнёров, а не как прямое доказательство перемещения производственных центров или перестройки глобальных цепочек поставок. Выводы относительно reshoring, near-shoring, friend-shoring, изменения размещения производства и реорганизации цепочек поставок основаны на качественном анализе и рассмотренной международной научной литературе. В совокупности количественные и качественные результаты свидетельствуют о возрастающем значении геополитической напряжённости и изменений торговой политики для организации международных экономических отношений, тогда как конкретные механизмы перестройки производства и цепочек поставок требуют отдельного эмпирического исследования.

Ключевые слова: геополитическая напряжённость, торговые войны, глобальные цепочки поставок, концентрация торговли, протекционизм.

Introduction

In recent decades, international trade has witnessed significant expansion as a result of economic globalization, technological development, and market liberalization, which have led to increased interdependence among national economies and the emergence of global value chains that have made production and distribution increasingly dependent on cooperation among several countries. However, this interdependence has increasingly been challenged by the escalation of trade wars and geopolitical tensions, the return of protectionist policies, and the imposition of trade restrictions and economic sanctions.

The trade war between the United States and China is one of the most prominent manifestations of these challenges, as tariffs and technological restrictions have affected trade and investment flows and pushed companies to reconsider production locations and sources of supply. The Russia–Ukraine war and tensions in the Middle East have also disrupted energy, food, and maritime transportation markets and increased shipping and insurance costs, thereby increasing uncertainty in the global economy.

These developments have prompted many countries and companies to adopt new strategies, such as reshoring, near-shoring, and reliance on politically friendly countries (friend-shoring), with the aim of reducing risks and enhancing supply chain security. These shifts point to the growing influence of political and security considerations on trade and investment decisions alongside traditional economic considerations (Gopinath et al., 2024).

In light of these developments, developing countries face challenges related to high import costs and difficulties in accessing certain markets, but they may also benefit from the relocation of investment and production centers if they can improve the business environment, develop their infrastructure, and enhance their competitiveness (UNCTAD, 2025).

Hence, the importance of studying the reshaping of the international trade map lies in analyzing the impact of trade wars and geopolitical tensions on export and import trends, changes in trading partners, the redistribution of production and investment centers, and transformations in global supply chains. The research also seeks to identify the repercussions of these changes for developing countries and the future of the global trading system.

2. Research Problem and Questions

Research Problem

The research problem concerns the escalation of trade wars and geopolitical tensions and the resulting changes in international trade patterns, including the redistribution of trading partners, production centers, and supply chains. These developments raise important questions about the future

of the global trading system and its stability in the context of increasing protectionist policies, economic conflicts, and geopolitical fragmentation.

Main Question

How have escalating trade wars and geopolitical tensions contributed to reshaping the international trade map, and what are the implications for the global economy?

Sub-questions

1. What are the main reasons for the escalation of trade wars and geopolitical tensions?
2. How has the U.S.–China trade war affected global trade?
3. What are the implications of geopolitical tensions for international supply chains and trade?
4. What is the role of protectionist policies and economic blocs in redirecting global trade?
5. What is the impact of these shifts on developing countries?
6. What is the future of the international trade map in light of ongoing economic and political conflicts?

3. The Importance of the Research and Its Objectives

First: The Importance of the Research

The importance of the research stems from its examination of a contemporary economic issue related to the future of the global trading system. Its significance can be considered from two main perspectives:

- **Scientific Importance:** The study contributes to the economic literature on trade wars and geopolitical tensions and clarifies their relationship with the structure of international trade and economic relations among countries.
- **Practical Importance:** The study helps identify the challenges and opportunities arising from transformations in global trade and provides insights that may assist decision-makers in developing appropriate economic and trade policies.

Second: Research Objectives

The research seeks to achieve the following objectives:

1. Identify the concept of trade wars and geopolitical tensions and their main causes.
2. Analyze changes in the international trade map.
3. Examine the impact of the U.S.–China trade conflict on global trade.
4. Clarify the implications of geopolitical tensions for supply and production chains.
5. Analyze the role of protectionist policies and economic blocs in reshaping trade relations.
6. Identify the effects of these transformations on developing countries.
7. Anticipate future trends in international trade in light of ongoing economic and political tensions.

4. Research Hypotheses

The main hypothesis of the study is that geopolitical and economic factors are significantly associated with changes in the structure and concentration of international trade.

Based on the variables included in the empirical model, the following hypotheses are tested:

1. **H1:** Geopolitical risk has a statistically significant positive relationship with international trade concentration.
2. **H2:** Tariff levels have a statistically significant positive relationship with international trade concentration.
3. **H3:** Foreign direct investment has a statistically significant relationship with international trade concentration.
4. **H4:** Economic growth has a statistically significant relationship with international trade concentration.

These hypotheses are examined empirically using the panel fixed effects model presented in the quantitative analysis section.

5. Research Methodology

The study combines descriptive, analytical, comparative, and quantitative approaches appropriate to the nature of the research problem.

- **Descriptive Method:** Used to describe developments in international trade and identify the main manifestations of trade wars and geopolitical tensions.
- **Analytical Method:** Used to analyze the effects of trade and political conflicts on international trade patterns, production networks, and global supply chains.
- **Comparative Approach:** Used to compare developments in international trade before and after the escalation of major trade and geopolitical tensions, with particular attention to the United States, China, and major European economies.
- **Quantitative Econometric Approach:** Used to examine the relationship between geopolitical risk, tariffs, foreign direct investment, economic growth, and international trade concentration through a panel fixed effects model.

The empirical analysis covers 16 countries over the period 2005–2024. The final estimation sample is determined by the availability of complete observations for the variables included in the econometric model.

The sample includes the following advanced, emerging, and developing economies:

United States, China, Japan, United Kingdom, Canada, Germany, France, Italy, Russia, India, Brazil, South Africa, Turkey, Mexico, South Korea, and Indonesia.

These economies represent major participants in international trade and global production networks and include countries that have played significant roles in recent geopolitical and trade developments.

The quantitative analysis uses the International Trade Concentration Index (HHI) as the dependent variable, while geopolitical risk (GPR), tariff rates (TARIFF), foreign direct investment (FDI), and GDP growth are included as explanatory variables.

The empirical variables were compiled from internationally recognized databases. Bilateral merchandise trade data used to construct the International Trade Concentration Index (HHI) were obtained from UN Comtrade; country-specific geopolitical risk data were obtained from the Geopolitical Risk Index database developed by Caldara and Iacoviello; tariff data were obtained from the WTO Tariff & Trade Data platform; and FDI and GDP growth data were obtained from the World Bank's World Development Indicators.

A more detailed description of the variables, their measurement, data sources, and construction procedures is provided in Section Three.

6. Previous Studies and Research Gap

First: Previous Studies

A number of international studies and reports have examined the relationship between international trade, geopolitical tensions, economic fragmentation, and global supply chains. The most prominent include:

Gopinath et al. (2024): The study examined changes in global trade and investment linkages resulting from increasing geopolitical tensions and analyzed the effects of geopolitical divisions on international trade and investment flows.

Baldwin and Freeman (2022): The study examined the risks associated with global supply chains and highlighted the importance of diversification and resilience in reducing vulnerability to external shocks and disruptions.

Alvarez et al. (2023): The study examined the effects of geoeconomic fragmentation on commodity markets and showed that trade fragmentation may lead to significant changes in commodity prices and different economic effects across countries.

UNCTAD (2025): The report examined transformations in the global economy in the context of trade, financial, and geopolitical tensions, with particular attention to their implications for developing countries.

World Trade Organization (WTO) Reports: The WTO (2023, 2026) examined changes in global trade, geopolitical fragmentation, supply chain resilience, and the implications of trade and geopolitical disruptions for the international trading system.

Tan (2024): The study examined the extent of foreign direct investment fragmentation and found that fragmentation is concentrated mainly in particular strategic sectors and specific geopolitical relationships rather than representing a generalized global phenomenon.

Second: Comments on Previous Studies

Previous studies have focused on the effects of trade wars and geopolitical tensions on trade, investment, and global supply chains. Their findings indicate that these developments have contributed to changes in international economic relations, the reorientation of trade and investment flows, and increased efforts to diversify trading partners and sources of supply.

Third: The Research Gap

Despite the growing literature on trade wars, geopolitical tensions, and supply chain disruptions, many previous studies have focused on individual dimensions of these transformations, such as the U.S.–China trade conflict, geopolitical fragmentation, foreign direct investment, or supply chain restructuring.

The research gap therefore lies in the need for an integrated analysis that examines economic, political, and geopolitical factors within a common framework and evaluates their relationship with the concentration of international trade.

The present study seeks to address this gap by combining a qualitative analysis of recent transformations in global trade with a quantitative panel-data analysis of 16 countries over the period 2005–2024. Particular attention is given to the relationship between geopolitical risk, tariff protection, foreign direct investment, economic growth, and international trade concentration, as well as the implications of these transformations for developing economies and global economic security.

Section One: The Conceptual Framework of Trade Wars, Geopolitical Tensions, and International Trade

This section examines the main concepts associated with trade wars and geopolitical tensions and clarifies their relationship with international trade, as well as the principal channels through which they affect trade flows and global supply chains. This conceptual framework provides a basis for understanding the transformations taking place in the global trading system and the ways in which economic and political conflicts contribute to the redirection of trade flows and changes in production and investment centers.

First Requirement: The Concept of International Trade and Its Importance

First: The Concept of International Trade

International trade is defined as the exchange of goods, services, and capital between countries through export and import activities, with the aim of meeting market needs and generating economic benefits for the parties involved. International trade is based on differences in natural resources, levels of technological development, production costs, and economic capabilities, which encourage countries to specialize in the production of goods and services in which they possess comparative or competitive advantages.

International trade has evolved from the traditional exchange of goods between countries into a complex network of economic and production relationships as a result of the expansion of multinational corporations and global value chains. The production stages of a single commodity may now take place in several countries before the final product reaches the consumer (World Trade Organization [WTO], 2023).

Second: The Importance of International Trade

The importance of international trade is reflected in several economic aspects, most notably:

1. **Promoting economic growth:** by expanding markets and increasing production and export opportunities.

2. **Providing goods and services:** by enabling countries to obtain products that they are unable to produce efficiently or sufficiently domestically.
3. **Promoting specialization and the division of labor:** by directing resources toward sectors in which countries possess comparative advantages.
4. **Facilitating technology and knowledge transfer:** through trade, foreign investment, and cooperation between companies.
5. **Increasing competition:** which encourages improvements in product quality and reductions in production costs.
6. **Strengthening international economic relations:** by creating common interests and expanding cooperation among countries.

International trade has become a key factor in the interdependence of national economies. However, this interdependence can also make countries more vulnerable to external disruptions, particularly when supply chains, transport routes, or political relations are affected by sudden crises (OECD, 2025).

Second Requirement: The Concept of Trade Wars and the Reasons for Their Escalation

First: The Concept of Trade Wars

Trade wars are defined as a set of economic measures and policies adopted by one or more countries against their trading partners with the aim of exerting pressure, protecting domestic industries, reducing trade deficits, or achieving strategic objectives. These measures may include the imposition of tariffs, import restrictions, support for domestic industries, trade sanctions, and restrictions on the export of certain strategic technologies and goods. Trade wars increase the costs of international trade, weaken confidence between economic partners, and may prompt affected countries to adopt countermeasures, leading to the escalation and expansion of trade disputes. The trade confrontation between the United States and China is a prominent example, given its consequences for trade policies, supply chains, and global investment (Gopinath et al., 2024).

Second: Reasons for the Escalation of Trade Wars

The main reasons for the escalation of trade wars can be identified as follows:

1. **Trade imbalances:** Some countries seek to reduce trade deficits by imposing tariffs and import restrictions.
2. **Protection of domestic industries:** Governments adopt protectionist policies to shield domestic producers from foreign competition.
3. **Technological competition:** Major economic powers seek to strengthen their positions in advanced technologies and strategic industries.
4. **Competition for economic influence:** Some countries use trade and investment instruments to enhance their international economic position.
5. **Political and strategic differences:** Political tensions may lead to reciprocal economic measures between countries.
6. **Economic security considerations:** Countries seek to reduce their dependence on external sources for essential goods and strategic materials.

Third Requirement: The Concept of Geopolitical Tensions and Their Economic Implications

First: The Concept of Geopolitical Tensions

Geopolitical tensions refer to situations of competition, disagreement, or conflict between states or international powers arising from differences in political, security, and strategic interests or from competition over resources, geographical locations, and spheres of influence. These tensions may take various forms, including military conflicts, economic sanctions, regional disputes, and competition over trade corridors and energy resources.

Geopolitical tensions acquire economic significance when they affect the stability of international markets, disrupt trade and investment, or prompt countries to reconsider their economic

relationships with certain partners. The International Monetary Fund (IMF) has indicated that geopolitical divergence can lead to changes in trade and investment patterns among countries and increase the likelihood of fragmentation in the global economy (Gopinath et al., 2024).

Second: The Main Economic Repercussions of Geopolitical Tensions

Geopolitical tensions affect the global economy through several channels, the most important of which include:

1. **Disruption of international trade routes:** as a result of conflicts affecting sea lanes, ports, and transport routes.
2. **Volatility in energy and raw material prices:** due to concerns regarding supply and production.
3. **Higher transportation and insurance costs:** as a result of increased security risks associated with shipping and trade.
4. **Decline in foreign investment:** due to heightened uncertainty and political risk.
5. **Reorientation of business partnerships:** through the search for more stable markets and sources of supply.
6. **Fragmentation of the global economy:** as a result of the growing division between economic and political blocs.

Fourth Requirement: The Relationship Between Trade Wars, Geopolitical Tensions, and International Trade

Trade wars and geopolitical tensions are closely interconnected, as political disputes can lead to trade restrictions and economic sanctions, while trade competition may evolve into political and strategic conflict between countries. This relationship affects international trade through several channels:

1. **Changes in trade patterns:** Countries seek alternative trading partners in order to reduce dependence on countries with which they have political disagreements.
2. **Redistribution of production:** Companies may relocate production activities to more stable countries or to locations closer to target markets.
3. **Supply chain disruption:** Trade restrictions and sanctions may make it more difficult to obtain certain raw materials and production inputs.
4. **Higher trade costs:** Tariffs, restrictions, and disputes may increase import, transportation, and insurance costs.
5. **Growing geoeconomic fragmentation:** Countries tend to strengthen trade relations within politically aligned blocs, which may weaken some trade ties between different blocs (Hakobyan et al., 2023).

The study by Hakobyan et al. (2023) indicates that geopolitical fragmentation can act as a barrier to trade and that its effects vary across countries and economic sectors, with emerging and developing economies facing greater risks under certain scenarios.

Fifth Requirement: Aspects of Reshaping the International Trade Map

Economic and political developments have led to the emergence of several transformations affecting the structure and patterns of international trade. The most important of these are outlined below.

First: Changes in Trading Partners

Countries have become increasingly attentive to political and security considerations when selecting their trading partners, and trade decisions are no longer based solely on cost and efficiency. This has led some countries to diversify their sources of imports and expand trade with countries with which they maintain stable political and strategic relations (Gopinath et al., 2024).

Second: Relocation of Industries and Production

Some companies have relocated production activities from countries exposed to high political risk to other countries that are more stable or geographically closer to consumer markets. This trend

is reflected in strategies such as reshoring, the relocation of production to nearby countries (near-shoring), and the relocation of production to politically friendly countries (friend-shoring).

Third: Transformation of Global Supply Chains

Companies are seeking to diversify their sources of raw materials and production inputs and reduce dependence on a single supplier or country in order to lower the risk of supply disruptions. However, the large-scale relocation of supply chains may increase production costs and reduce the efficiency of global trade (OECD, 2025).

Fourth: The Growth of Economic and Trade Blocs

The escalation of international competition has increased the importance of economic blocs and regional trade agreements, as countries seek to strengthen economic cooperation with countries that share similar political and strategic interests in order to secure markets and sources of supply.

Fifth: Differences in the Effects of These Transformations Across Countries

Not all countries are affected by trade transformations to the same extent. The effects vary depending on the size of the economy, the degree of trade openness, the structure of exports, and the ability to diversify trading partners. Hakobyan et al. (2023) suggest that developing economies may incur greater costs as a result of geopolitical fragmentation, making the strengthening of productive capacity and competitiveness particularly important.



Figure 1: Key Aspects of the Reshaping of the International Trade Map

Result: Changes in global trade flows, production centers, and investment patterns.

Source: Prepared by the researcher based on WTO (2023), OECD (2025), and Gopinath et al. (2024).

Section Two: Analysis of Transformations in the International Trade Map in Light of Escalating Trade Wars and Geopolitical Tensions

Introduction

Trade wars and geopolitical tensions have led to significant changes in the structure of international trade. Competition between countries is no longer limited to increasing exports or gaining control over markets but has expanded to include competition over technology, resources, production centers, and sources of supply.

First Requirement: The Impact of the U.S.–China Trade War on the International Trade Map

First: Background of the U.S.–China Trade War

The trade war between the United States and China is one of the most prominent manifestations of international economic competition. It has escalated as a result of disputes related to trade imbalances, industrial policies, intellectual property protection, and technological competition. Both sides have used tariffs, trade restrictions, and technological controls as instruments of economic pressure, affecting exports, imports, and investment flows between the two countries. The effects of this confrontation have not been limited to the United States and China but have also extended to other countries integrated into global production and supply chains, as companies have

been forced to reconsider the locations of their factories and their sources of raw materials and intermediate inputs (Gopinath et al., 2024).

Second: The Repercussions of the Trade War on Global Trade

The main repercussions of the U.S.–China trade war can be identified as follows:

1. **Changing trade patterns:** Some companies have sought alternative markets and sources of supply in order to reduce direct dependence on the two countries.
2. **Rising trade costs:** Tariffs and trade restrictions have increased the costs of importing certain goods and products.
3. **Redistribution of investment:** Some investment has shifted to other countries with the aim of diversifying production locations and reducing risks.
4. **Escalating technological competition:** Restrictions on the export of advanced technologies, equipment, and strategic products have increased.
5. **Effects on global value chains:** Companies have been forced to reorganize their relationships with suppliers and manufacturers across a number of countries.

The study by Gopinath et al. (2024) indicates that trade and investment flows between geopolitically divergent blocs declined by approximately 12% and 20%, respectively, relative to flows between countries within the same geopolitical bloc. These findings reflect the growing influence of geopolitical divisions on international economic linkages.

Third: The Repercussions of the Trade War on Production and Investment Centers

The trade war has reinforced companies' tendency to diversify production locations and reduce their reliance on a single country for the supply of essential goods and components. Some Asian countries and other emerging economies have also become increasingly attractive to companies seeking alternative locations for production and export.

This does not imply a comprehensive relocation of industries from China to other countries but rather a partial redistribution of certain production and investment activities depending on the nature of the sector, production costs, and political and security considerations (Tan, 2024).

Second Requirement: The Impact of the Russia–Ukraine War and Tensions in the Middle East on International Trade

First: The Impact of the Russia–Ukraine War

The Russia–Ukraine war has led to widespread disruptions in international trade and economic relations as a result of sanctions imposed on Russia, disruptions to certain trade routes, and changes in energy, food, and fertilizer markets.

The main effects of the war can be summarized as follows:

1. **Disruptions in energy markets:** Oil and gas trade has been affected by sanctions and changes in supply sources and export routes.
2. **Rising food prices:** Grain and agricultural markets have been affected by disruptions to exports and supplies.
3. **Changes in trading partners:** Some countries have sought alternative sources of energy and food.
4. **Higher production costs:** Rising prices of energy, fertilizers, and transportation have increased the costs of producing various goods.
5. **Rising investment risks:** Uncertainty has led to a reassessment of investments associated with the region and sectors affected by sanctions.

The IMF has noted that the war has accelerated trade and investment fragmentation along geopolitical lines, although these shifts vary across countries and sectors (Gopinath et al., 2024).

Second: The Impact of Tensions in the Middle East

The Middle East is a region of strategic importance for international trade because of its geographical location, energy resources, and vital maritime routes. Security tensions in the region

have increased risks to shipping and commercial transportation and have raised insurance and freight costs on certain routes.

The main effects include:

1. **Threats to the security of maritime routes and energy transportation corridors.**
2. **Rising shipping and marine insurance costs.**
3. **An increased likelihood of delays in the delivery of goods and raw materials.**
4. **Disruptions to certain supply chains associated with energy and industrial products.**
5. **Growing uncertainty among companies and investors.**

The World Trade Organization (WTO) report issued in October 2026 indicated that global trade showed resilience to conflict-related disruptions in the Middle East during the first half of the year. However, the effects of the crisis were uneven across sectors and regions, while trade in services was affected differently from trade in goods (WTO, 2026).

Third Requirement: Transformations in Global Supply Chains and Production Centers

First: The Concept of Global Supply Chains

Global supply chains are defined as networks of activities and processes involving the sourcing of raw materials, production, manufacturing, transportation, distribution, and delivery to the final consumer. These processes are carried out across multiple countries and companies. Globalization has contributed to the expansion of these chains as companies seek to benefit from differences in production costs, resources, and skills across countries. However, trade and geopolitical crises have exposed the vulnerabilities of these chains, particularly their heavy dependence on a single supplier or a specific geographical region. This has encouraged companies to adopt new strategies aimed at strengthening supply chain resilience (OECD, 2025).

Second: The Main Emerging Trends in Supply Chains

Several new trends have emerged in the organization of global production and supply, the most important of which are:

1. **Reshoring:** Transferring production activities back to the home country in order to strengthen control over production and reduce dependence on foreign suppliers.
2. **Near-shoring:** Moving production to countries geographically closer to key markets in order to reduce transportation costs and supply risks.
3. **Friend-shoring:** Relying on suppliers and countries with stable political and strategic relationships.
4. **Diversification of supply sources:** Using multiple suppliers or countries in order to reduce the risk of supply disruptions.
5. **Increasing strategic stockpiles:** Maintaining additional quantities of essential goods and materials in order to respond to sudden crises.

The OECD review notes that strengthening supply chain resilience requires maintaining a balance between diversifying sources of supply and preserving production and trade efficiency, rather than relying on economic isolation or relocating all production activities domestically (OECD, 2025).

Third: The Repercussions of Transformations on Production and Investment Centers

Geopolitical shifts have led companies to reassess the locations selected for factories and production centers, as political stability, economic security, and the availability of infrastructure have become increasingly important determinants of investment decisions.

Some developing and emerging economies have also gained potential opportunities to attract investment seeking alternative production locations. However, taking advantage of these opportunities requires a stable investment environment, a skilled workforce, advanced infrastructure, and clear trade policies (UNCTAD, 2025).



Figure 2: Shifts in Global Supply Chains

Source: Prepared by the researcher based on OECD (2025) and Gopinath et al. (2024).

Fourth Requirement: The Implications of the Restructuring of International Trade for Developing Countries

First: Challenges Facing Developing Countries

Developing countries are significantly affected by transformations in the global trading system because many of them depend heavily on the export of raw materials and the import of industrial and technological goods, while also having more limited production and financial capacities than advanced economies.

The main challenges include the following:

1. **Higher import costs:** resulting from increased transportation, energy, and raw material costs.
2. **Weak competitiveness:** due to limited technological capabilities and insufficient infrastructure in some economies.
3. **Exposure to external shocks:** resulting from dependence on a limited number of markets or sources of supply.
4. **Declining investment opportunities:** due to elevated political and economic risks and instability.
5. **Widening economic disparities:** resulting from differences in countries' ability to adapt to trade and technological transformations.

UNCTAD reports show that developing countries face challenges related to trade finance, market access, and resilience to global economic fluctuations, despite their growing role in international production and trade (UNCTAD, 2025).

Second: Opportunities for Developing Countries

Despite these challenges, the reshaping of the international trade map may also create economic opportunities for developing countries, most notably:

1. **Attracting foreign investment** seeking alternative production locations.
2. **Increasing exports** by entering new markets.
3. **Benefiting from the relocation of certain industries and production activities.**
4. **Developing domestic industries and increasing value added.**
5. **Expanding regional and international trade cooperation.**
6. **Improving their position within global value chains.**

UNCTAD data indicate that developing economies play an important role in the growth of global trade. However, benefiting from this role requires addressing structural constraints related to infrastructure, finance, and trade integration (UNCTAD, 2026).

Requirements for Enhancing the Resilience of Developing Countries

Developing countries can strengthen their capacity to respond to shifts in international trade through a range of policies, including:

- Diversifying export markets and sources of imports.
- Developing transport infrastructure, ports, and logistics.

- Supporting domestic industries and technological upgrading.
- Improving the investment environment and ensuring legislative stability.
- Promoting trade agreements and regional economic cooperation.
- Developing human capital and skills associated with modern industries.

Fifth Requirement: The Future of the International Trade Map and Possible Trends

First: The Trend Toward Multiple Global Trade Centers

The number and importance of production and trade centers in the global economy are expected to increase as countries seek to reduce their dependence on a limited number of trading partners. This may strengthen the role of Asian economies and other emerging economies in global trade and production.

Second: The Growing Importance of Geopolitical Considerations

Political and security considerations have become increasingly influential in shaping trade and investment patterns, and this influence is likely to continue amid competition among major economic powers, particularly in sectors related to technology, energy, and strategic resources (Gopinath et al., 2024).

Third: Continued Transformation of Supply Chains

Companies are expected to continue diversifying their sources of supply and redistributing some production activities in order to enhance resilience and reduce risk. However, the persistence of global economic interdependence makes complete disengagement between economies costly and difficult to achieve (OECD, 2025).

Fourth: The Future of the Multilateral Trading System

The WTO faces challenges related to the escalation of trade disputes, the expansion of unilateral measures, and diverging interests among countries. Therefore, it is increasingly important to strengthen the rules governing international trade cooperation and improve dispute resolution mechanisms in order to maintain stability, predictability, and transparency in the global trading system (WTO, 2026).



Figure 3: Potential Trends in the Future of International Trade

Source: Prepared by the researcher based on UNCTAD (2026), WTO (2026), and Gopinath et al. (2024).

Section Three: Quantitative and Statistical Analysis of the Effects of Geopolitical Transformations and Trade Wars on the Structure of International Trade and Economic Security

Introduction

Geopolitical transformations and trade wars have become increasingly important factors affecting the structure of international trade due to the disruptions they create in trade relations, higher transaction costs, and the reorientation of trade and investment flows across countries. International trade is no longer determined solely by traditional economic factors but is increasingly influenced by political tensions, international conflicts, and protectionist policies. Accordingly, this section aims to

analyze and measure the relationship between geopolitical risk, tariffs, foreign direct investment, economic growth, and the degree of international trade concentration, as well as to examine the implications of these factors for economic security.

The study relies on balanced panel data for a sample of **16 countries** over the period **2005–2024**, resulting in a total of **320 country-year observations**. The sample comprises the **United States, China, Japan, the United Kingdom, Canada, Germany, France, Italy, Russia, India, Brazil, South Africa, Turkey, Mexico, South Korea, and Indonesia**.

The empirical analysis employs a **Fixed Effects Model**, while the **Herfindahl–Hirschman Index (HHI)** is used to measure the degree of international trade concentration.

First Requirement: Study Methodology and Identification of Variables

First: Description of the Econometric Model

To examine the effects of geopolitical transformations and trade-related factors on the structure of international trade, an econometric model was adopted in which the International Trade Concentration Index serves as the dependent variable. The explanatory variables represent geopolitical risk, trade policy, foreign direct investment, and economic growth.

The variables used in the empirical analysis are presented in Table 1.

Table 1. Definition and Measurement of the Study Variables

Variable	Symbol	Measurement Method
International Trade Concentration	HHI	Herfindahl–Hirschman Index
Geopolitical Risk	GPR	Geopolitical Risk Index
Tariffs	TARIFF	Average Tariff Rate
Foreign Direct Investment	FDI	Foreign Direct Investment as a Percentage of GDP
Economic Growth	GDP Growth	Annual GDP Growth Rate

Data Sources and Construction of the Study Variables

The empirical dataset covers the period 2005–2024 and includes annual observations for the countries included in the study. To ensure consistency and comparability across countries and years, the variables were obtained from internationally recognized statistical databases and defined using a uniform measurement methodology.

International Trade Concentration Index (HHI).

International trade concentration was measured using the Hirschman–Herfindahl market concentration approach. The indicator is based on the distribution of a country's merchandise trade across its trading partners. **The underlying bilateral merchandise trade data were obtained from the United Nations Comtrade Database (UN Comtrade).**

For each reporting country, bilateral trade with trading partner (j) is defined as the sum of merchandise exports and imports:

$$Trade_{ijt} = Exports_{ijt} + Imports_{ijt}$$

where (i) denotes the reporting country, (j) denotes the trading partner, and (t) denotes the year.

The share of each trading partner in the reporting country's total merchandise trade is defined as:

$$s_{ijt} = \frac{Trade_{ijt}}{\sum_{j=1}^{n} Trade_{ijt}}$$

The Herfindahl–Hirschman Index is then expressed as:

$$\mathrm{HHI}_{it} = \sum_{\mathrm{j}=1}^{n} s_{ijt}^{2}$$

The index ranges from values approaching zero to one. Lower values indicate a more diversified distribution of trade across a larger number of trading partners, whereas higher values indicate greater concentration of trade among a smaller number of partners. Aggregate partner categories, such as "World," are not treated as individual trading partners in the calculation.

Geopolitical Risk Index (GPR).

Geopolitical risk was measured using the country-specific Geopolitical Risk Index developed by Caldara and Iacoviello (2022). The index is based on the frequency of newspaper articles associated with geopolitical threats, tensions, and adverse geopolitical events that also refer to the relevant country or its major cities. Because the original country-specific GPR series is reported at monthly frequency, annual GPR observations were obtained by calculating the arithmetic mean of the twelve monthly values for each country and year:

$$GPR_{it} = \frac{1}{12}\sum_{m=1}^{12} GPT_{itm}$$

where (m) denotes the month.

Tariff Rate (TARIFF).

The tariff variable represents the annual applied tariff rate for merchandise trade. Tariff data were obtained from the World Trade Organization Tariff & Trade Data platform. A consistent definition of the tariff indicator was applied across countries and years in order to preserve comparability within the panel dataset.

Foreign Direct Investment (FDI).

Foreign direct investment was measured as net FDI inflows as a percentage of GDP. The data were obtained from the World Bank's World Development Indicators database.

Economic Growth (GDP Growth).

Economic growth was measured using the annual percentage growth rate of real GDP. The data were obtained from the World Bank's World Development Indicators database.

All variables were matched by country and year. The resulting country-year dataset was checked for consistency and missing observations before econometric estimation. The final estimation sample was determined by the availability of complete observations for the variables included in the model.

Second: The Mathematical Specification of the Model

The fixed effects model is specified as follows:

$$HHI_{it} = \alpha + \beta_1 GPR_{it} + \beta_2 \mathrm{TARIFF}_{it} + \beta_3 FDI_{it} + \beta_4 \mathrm{GDPGrowth}_{it} + \mu_i + \varepsilon_{it}$$

where:

- HHI_{it} – represents the International Trade Concentration Index for country (i) in year (t);
- GPR_{it} – represents the Geopolitical Risk Index for country (i) in year (t);
- TARIFF_{it} – represents the average tariff rate for country (i) in year (t);
- FDI_{it} – represents foreign direct investment as a percentage of GDP for country (i) in year (t);
- $\mathrm{GDPGrowth}_{it}$ – represents the annual GDP growth rate for country (i) in year (t);
- α – represents the constant term;
- β_1, β_2, β_3, and β_4 represent the estimated coefficients;
- μ_i represents the country-specific fixed effect;
- ε_{it} represents the error term.

The fixed effects model is used to control for unobserved country-specific characteristics that remain constant over time and to estimate the relationships between geopolitical risk, tariffs, foreign direct investment, economic growth, and international trade concentration.

Scope of the Econometric Analysis

It is important to distinguish between the phenomena examined quantitatively in the econometric model and the broader structural transformations discussed in the qualitative part of the

study. The dependent variable, the International Trade Concentration Index (HHI), measures the degree to which a country's merchandise trade is concentrated among a relatively limited number of trading partners.

Accordingly, the econometric model evaluates the statistical association between geopolitical risk, tariffs, foreign direct investment, economic growth, and the concentration of international trade relationships. It does not directly measure the geographical relocation of production, reshoring, near-shoring, friend-shoring, changes in the location of production centers, or the restructuring of global supply chains.

The discussion of these broader structural transformations is therefore based on the qualitative analysis and the international literature reviewed in the study. The quantitative and qualitative components should be viewed as complementary: the econometric analysis provides evidence on changes in the concentration of trading relationships, while the literature review provides the broader context concerning changes in production networks and global supply chains.

Second Requirement: Descriptive Statistical Analysis of the Study Variables

First: Descriptive Statistics Results

Descriptive statistical analysis provides an overview of the main characteristics of the study variables through their mean, median, standard deviation, minimum, and maximum values.

Table 2. Descriptive Statistics of the Study Variables

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
HHI	0.3279	0.3237	0.0825	0.1443	0.5663
GPR	75.9519	73.9750	18.0019	42.1300	118.9500
TARIFF	3.4192	3.2100	0.8398	1.6100	5.4000
FDI	3.6095	3.5800	1.0351	0.7800	7.0800
GDP Growth	2.9450	2.9350	1.4108	-1.2600	7.1500

Source: Prepared by the researcher based on the results of the statistical analysis.

The results show that the mean International Trade Concentration Index (HHI) was 0.3279, with a standard deviation of 0.0825, indicating variation in the degree of trade concentration across the observations included in the analysis.

The mean Geopolitical Risk Index (GPR) was 75.9519, with a standard deviation of 18.0019. The mean tariff rate was 3.4192, while the mean foreign direct investment value was 3.6095% of GDP. The mean GDP growth rate was 2.9450%.

Overall, the descriptive statistics indicate substantial variation in the geopolitical and economic characteristics of the observations included in the empirical analysis.

Second: Graphical Representation of Descriptive Statistics

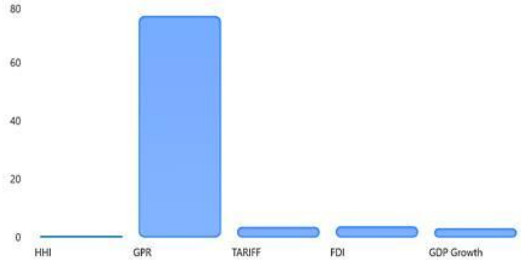


Figure 4. Mean Values of the Study Variables

Figure 4 presents the mean values of the variables included in the empirical analysis. The Geopolitical Risk Index (GPR) has the highest numerical mean (75.9519), followed by foreign direct investment (3.6095), the average tariff rate (3.4192), GDP growth (2.9450), and the Trade Concentration Index (HHI) (0.3279).

Note: The variables are measured in different units and on different scales. Therefore, differences in bar height should not be interpreted as indicating differences in economic importance, explanatory power, or relative effect on trade concentration.

Source: Prepared by the researcher based on the results of the statistical analysis.

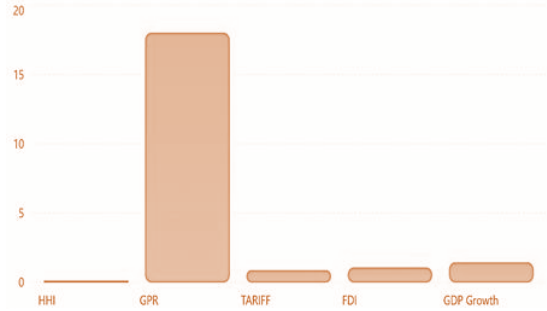


Figure 5. Standard Deviations of the Study Variables

Figure 5 presents the standard deviations of the variables included in the empirical analysis. The Geopolitical Risk Index (GPR) shows the highest numerical standard deviation (18.0019), followed by GDP growth (1.4108), foreign direct investment (1.0351), the average tariff rate (0.8398), and the Trade Concentration Index (HHI) (0.0825). These values indicate different degrees of dispersion within each variable over the observations included in the study.

Note: Because the variables are measured in different units and on different scales, their standard deviations should not be directly compared as measures of relative economic importance.

Source: Prepared by the researcher based on the results of the statistical analysis.

Third Requirement: Analysis of the Correlation Between the Study Variables

Correlation analysis is used to examine the direction and strength of the relationships between the International Trade Concentration Index (HHI) and the explanatory variables, as well as the relationships among the explanatory variables themselves. The correlation coefficients provide a preliminary indication of the patterns of association among the study variables before the estimation of the panel regression model.

Table 3. Correlation Matrix of the Study Variables

Variable	HHI	GPR	TARIFF	FDI	GDP Growth
HHI	1.0000	0.5210	0.4173	-0.1290	-0.0633
GPR	0.5210	1.0000	0.6124	-0.2566	-0.1180
TARIFF	0.4173	0.6124	1.0000	-0.2169	-0.1030
FDI	-0.1290	-0.2566	-0.2169	1.0000	0.0322
GDP Growth	-0.0633	-0.1180	-0.1030	0.0322	1.0000

Source: Prepared by the researcher based on the results of the statistical analysis.

The correlation matrix shows a positive association between the International Trade Concentration Index (HHI) and the Geopolitical Risk Index (GPR), with a correlation coefficient of **0.5210**. This indicates that higher levels of geopolitical risk tend to be associated with greater trade concentration.

The correlation between HHI and tariffs is also positive, with a coefficient of **0.4173**, suggesting that higher tariff levels tend to be associated with greater concentration of international trade.

By contrast, HHI shows a weak negative correlation with foreign direct investment (**-0.1290**) and a very weak negative correlation with GDP growth (**-0.0633**). Among the explanatory variables, the strongest correlation is observed between geopolitical risk and tariffs (**0.6124**), indicating that higher geopolitical risk tends to be associated with higher tariff levels within the study sample.

Negative correlations are also observed between geopolitical risk and FDI (**-0.2566**), tariffs and FDI (**-0.2169**), geopolitical risk and GDP growth (**-0.1180**), and tariffs and GDP growth (**-0.1030**).

Overall, none of the reported pairwise correlations exceeds commonly used thresholds associated with severe multicollinearity. Nevertheless, multicollinearity is examined more formally using the Variance Inflation Factor (VIF) as part of the diagnostic analysis.

Note: Correlation coefficients indicate the direction and strength of statistical association between variables and should not be interpreted as evidence of causality.

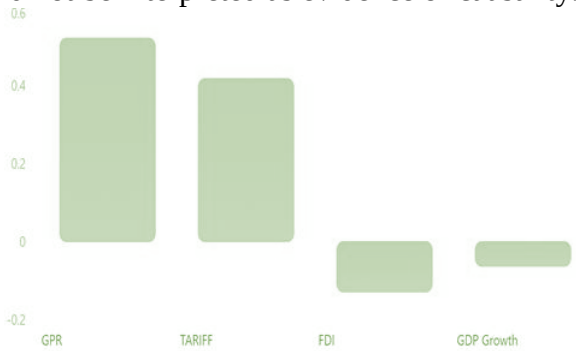


Figure 6. Heatmap of the Correlation Matrix

Associations Between HHI and the Explanatory Variables

Figure 6 illustrates the correlation coefficients between the International Trade Concentration Index (HHI) and the explanatory variables. Positive and negative values indicate the direction of the associations. The results show that geopolitical risk and tariffs have stronger positive associations with the Trade Concentration Index than the other explanatory variables. However, correlation coefficients indicate statistical association and should not be interpreted as evidence of causality.

Fourth Requirement: Econometric Analysis and Estimation of the Fixed Effects Model

First: Results of the Model Estimation

A baseline panel fixed effects model was estimated to examine the statistical associations between geopolitical risk, tariffs, foreign direct investment, economic growth, and international trade concentration. Given the methodological limitations of the available analytical outputs, the estimated coefficients are interpreted as conditional statistical associations within the specified model rather than as causal effects.

The estimation results are presented in Table 4.

Table 4. Results of the Panel Fixed Effects Regression Model

Independent Variable	Estimated Coefficient	Standard Error	t-Statistic	p-Value
Intercept	0.1603	0.010578	15.154	<0.001
Geopolitical Risk (GPR)	0.0018	0.00008472	21.245	<0.001
Tariffs (TARIFF)	0.0184	0.001845	9.973	<0.001
Foreign Direct Investment (FDI)	-0.0017	0.001219	-1.395	0.164
GDP Growth	-0.0021	0.000879	-2.389	0.017

Number of countries: 16

Study period: 2005–2024

Country fixed effects: Included

Source: Prepared by the researcher based on the results of the econometric analysis.

The coefficient of geopolitical risk is positive (0.0018) and statistically significant ($p < 0.001$), indicating a positive relationship between geopolitical risk and international trade concentration. The tariff coefficient is also positive (0.0184) and statistically significant ($p < 0.001$), indicating that higher tariff levels are associated with greater trade concentration.

The coefficient of foreign direct investment is negative (-0.0017) but statistically insignificant ($p = 0.164$). Therefore, the estimated model does not provide sufficient statistical evidence of a relationship between FDI and international trade concentration.

GDP growth has a negative coefficient (-0.0021) and is statistically significant at the 5% level ($p = 0.017$), indicating a negative relationship between economic growth and trade concentration. The tariff variable has the largest numerical positive coefficient, followed by geopolitical risk. However, the magnitudes of these coefficients should not be directly compared as indicators of relative importance because the explanatory variables are measured in different units and on different scales. A direct comparison of relative effects would require standardized coefficients or estimation using standardized variables.

Fifth Requirement: Testing the Study Hypotheses

Hypothesis testing is used to determine whether the estimated relationships between the explanatory variables and international trade concentration are statistically significant.

The study adopts a significance level of **5% ($\alpha = 0.05$)**. Accordingly, the null hypothesis is rejected when the reported p-value is less than 0.05.

First: Testing the First Hypothesis

H1: Geopolitical risk has a statistically significant positive relationship with international trade concentration.

Null hypothesis (H0): The coefficient of geopolitical risk is not statistically different from zero.

Alternative hypothesis (H1): The coefficient of geopolitical risk is positive and statistically different from zero.

The estimated coefficient of geopolitical risk is **0.0018**, with a t-statistic of **21.245** and a p-value of **<0.001**.

Since the p-value is below 0.05, the null hypothesis is rejected.

Conclusion: The results provide evidence of a positive and statistically significant relationship between geopolitical risk and international trade concentration.

Second: Testing the Second Hypothesis

H2: Tariff levels have a statistically significant positive relationship with international trade concentration.

Null hypothesis (H0): The coefficient of tariffs is not statistically different from zero.

Alternative hypothesis (H1): The coefficient of tariffs is positive and statistically different from zero.

The estimated tariff coefficient is **0.0184**, with a t-statistic of **9.973** and a p-value of **<0.001**. Since the p-value is below 0.05, the null hypothesis is rejected.

Conclusion: The results provide evidence of a positive and statistically significant relationship between tariff levels and international trade concentration.

Third: Testing the Third Hypothesis

H3: Foreign direct investment has a statistically significant relationship with international trade concentration.

Null hypothesis (H0): The coefficient of foreign direct investment is not statistically different from zero.

Alternative hypothesis (H1): The coefficient of foreign direct investment is statistically different from zero.

The estimated FDI coefficient is **-0.0017**, with a t-statistic of **-1.395** and a p-value of **0.164**. Since the p-value exceeds 0.05, the null hypothesis is not rejected.

Conclusion: The results do not provide sufficient statistical evidence of a relationship between foreign direct investment and international trade concentration.

Fourth: Testing the Fourth Hypothesis

H4: Economic growth has a statistically significant relationship with international trade concentration.

Null hypothesis (H0): The coefficient of economic growth is not statistically different from zero.

Alternative hypothesis (H1): The coefficient of economic growth is statistically different from zero.

The estimated coefficient of GDP growth is **-0.0021**, with a t-statistic of **-2.389** and a p-value of **0.017**.

Since the p-value is below 0.05, the null hypothesis is rejected.

Conclusion: The results provide evidence of a negative and statistically significant relationship between economic growth and international trade concentration.

Fifth: Assessment of the Main Hypothesis

Main Hypothesis: Geopolitical and economic factors are significantly associated with changes in the structure and concentration of international trade.

The estimation results provide support for the main hypothesis. Geopolitical risk and tariffs have positive and statistically significant relationships with the International Trade Concentration Index, while economic growth has a negative and statistically significant relationship. Foreign direct investment, however, does not show a statistically significant relationship with trade concentration.

The empirical evidence therefore provides **partial support for the main hypothesis**, particularly through the geopolitical risk, tariff, and GDP growth variables.

The implications of these empirical findings for economic security are discussed separately, as economic security itself is not directly included as a dependent variable in the estimated model.

Table 5. Summary of Hypothesis Testing Results

Hypothesis	Estimated Direction	p-Value	Statistical Decision
Geopolitical Risk (H1)	Positive	<0.001	Reject H0; H1 supported
Tariffs (H2)	Positive	<0.001	Reject H0; H2 supported
Foreign Direct Investment (H3)	Negative	0.164	Do not reject H0; H3 not supported
GDP Growth (H4)	Negative	0.017	Reject H0; H4 supported

Conclusion of the Hypothesis Tests

The hypothesis tests indicate that geopolitical risk and tariffs are positively and statistically significantly associated with international trade concentration, while GDP growth is negatively and statistically significantly associated with trade concentration. Foreign direct investment does not exhibit a statistically significant relationship with the dependent variable within the estimated model.

Overall, the results provide partial empirical support for the study's main hypothesis.

Sixth Requirement: Discussion of the Results and Their Implications for Economic Security

The baseline fixed effects estimates indicate a positive and statistically significant association between geopolitical risk and international trade concentration. Within the specified model, higher levels of geopolitical risk are associated with greater concentration of trade relationships. The estimated coefficient of tariffs is also positive and statistically significant, suggesting an association between higher tariff protection and a more concentrated structure of international trade. By contrast, GDP growth has a negative and statistically significant estimated coefficient. Within the model, stronger economic growth is therefore associated with lower trade concentration and a more diversified structure of trading relationships. Foreign direct investment has a negative estimated coefficient, but the relationship is not statistically significant. Consequently, the baseline model does not provide sufficient evidence of a systematic association between FDI and international trade concentration within the study sample.

The econometric findings should not be interpreted as direct evidence of the relocation of production centers or the restructuring of global supply chains. The HHI employed in the model captures the concentration of trading relationships rather than the geographical organization of

production. Therefore, the discussion of reshoring, near-shoring, friend-shoring, and changes in global supply chains is derived from the qualitative analysis and the literature reviewed in the preceding sections of the study, rather than from the estimated HHI regression coefficients.

These findings have several potential implications for economic security:

1. **Security of Supply:** Greater trade concentration may increase vulnerability to supply disruptions when trade relations are affected by geopolitical or economic crises.
2. **Economic Resilience:** Diversification of trading partners and markets may reduce excessive dependence on a limited number of countries or supply sources.
3. **Supply Chain Stability:** Diversifying import sources and production locations may strengthen the capacity of economies to respond to external shocks and disruptions.

From an economic-security perspective, these findings highlight the importance of flexible trade policies, diversification of trading partners, development of domestic productive capacity, and reduced excessive dependence on individual sources of strategically important goods.

Seventh Requirement: Multicollinearity Assessment and Methodological Limitations

As an additional diagnostic assessment, multicollinearity among the explanatory variables was examined using the Variance Inflation Factor (VIF). The VIF values were calculated from the correlation structure of the explanatory variables.

Table 6. Variance Inflation Factor (VIF) Results

Variable	VIF
Geopolitical Risk (GPR)	1.65
Tariffs (TARIFF)	1.61
Foreign Direct Investment (FDI)	1.08
GDP Growth	1.02

All VIF values are substantially below the commonly used threshold of 5, indicating that severe multicollinearity is not present among the explanatory variables. Although geopolitical risk and tariffs exhibit a moderate positive correlation, this relationship does not appear to create a serious multicollinearity problem in the estimated specification. Nevertheless, the econometric results should be interpreted with appropriate caution. The fixed effects specification controls for unobserved country-specific characteristics that remain constant over time; however, additional panel-data diagnostic tests for serial correlation, groupwise heteroskedasticity, and cross-sectional dependence could not be reproduced from the available analytical outputs. Accordingly, the estimated coefficients should be interpreted as statistical associations conditional on the specified fixed effects model rather than as causal effects. Future research should replicate the analysis using a fully documented country-year dataset and apply additional robustness procedures, including tests for serial correlation, heteroskedasticity, and cross-sectional dependence, as well as robust standard-error estimators.

Conclusions and Recommendations

Conclusions

1. **Geopolitical Risk and Trade Concentration:** The baseline fixed effects estimates indicate a positive and statistically significant association between geopolitical risk (GPR) and international trade concentration (HHI). Within the specified model, higher geopolitical risk is associated with a greater concentration of trade relationships.
2. **Tariffs and Trade Concentration:** The estimated coefficient of tariff protection (TARIFF) is positive and statistically significant, suggesting that higher tariff levels are associated with a more concentrated structure of international trade relationships.

3. **Economic Growth and Trade Concentration:** GDP growth has a negative and statistically significant estimated coefficient, indicating that stronger economic performance is associated with lower trade concentration within the specified model.
4. **Foreign Direct Investment:** The estimated coefficient of foreign direct investment (FDI) is negative but statistically insignificant. Therefore, the econometric model does not provide sufficient evidence of a systematic association between FDI and international trade concentration.
5. **Supply Chain Restructuring:** The qualitative analysis and the literature reviewed in the study indicate an increasing policy and corporate emphasis on supply chain resilience, including strategies such as reshoring, near-shoring, and friend-shoring. These developments should be understood as findings of the qualitative component of the study and not as direct outcomes measured by the HHI regression model.
6. **Production and Investment Relocation:** Evidence concerning the geographical relocation of production and investment centers is derived from the reviewed international literature and the broader analysis of recent changes in the global economy. The econometric model itself does not directly measure changes in production locations.
7. **Implications for the Global Trading System:** Taken together, the qualitative and quantitative components suggest that contemporary international trade is increasingly influenced by both economic and geopolitical considerations. The econometric evidence concerns changes in the concentration of trading relationships, while the qualitative evidence provides the broader context of supply-chain resilience, strategic autonomy, and changes in global production networks.

Recommendations

The following recommendations are derived from the combined interpretation of the quantitative findings, the qualitative analysis, and the international literature reviewed in the study.

1. **Enhancing Supply Chain Resilience:** Governments and policymakers should diversify import sources and maintain appropriate strategic reserves of critical commodities, energy resources, and food products in order to reduce vulnerability to sudden geopolitical disruptions.
2. **Balancing Economic Security and Trade Openness:** Emerging and developing economies should avoid excessive economic isolation and instead adopt flexible trade policies that safeguard national economic security while maintaining active participation in regional and multilateral trade frameworks.
3. **Promoting Regional Economic Integration:** Strengthening regional trade agreements and South–South cooperation may help developing countries reduce their exposure to the adverse effects of fragmentation among major economic powers and bilateral trade conflicts.
4. **Strengthening Domestic Production Capabilities:** Policymakers should improve domestic infrastructure, logistics, technological capabilities, and human capital in order to enhance national competitiveness and attract foreign investment seeking stable alternative production locations.
5. **Reducing Tariff and Trade Restrictions:** Governments should make greater use of diplomatic channels, bilateral negotiations, and multilateral trade mechanisms to reduce unnecessary tariff barriers and prevent retaliatory protectionism from escalating into broader trade fragmentation.
6. **Promoting Technological Capacity and Innovation:** Developing countries should invest in domestic research and development, digital infrastructure, and technological capabilities in order to reduce excessive technological dependence and support sustainable industrial development.

7. **Strengthening Multilateral Trade Governance:** International organizations, particularly the World Trade Organization (WTO), should continue strengthening mechanisms for trade dispute resolution, regulatory transparency, and international cooperation in order to support the stability and predictability of the global trading system.

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