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GLOBAL TRADE RESILIENCE UNDER UNCERTAINTY

The article addresses the problem of ensuring trade resilience under conditions of increasing global uncertainty, market fragmentation, and intensifying geoeconomic competition. The relevance of the study follows from the transformation of the global trade system, where external shocks, such as pandemics, tariff restrictions, supply chain disruptions, and climate-related risks, have become systemic rather than episodic, making trade resilience a key determinant of national competitiveness.

The hypothesis of the study states that trade resilience is determined by the level of diversification of trade linkages, the depth of integration into global and regional production networks, and the quality of the institutional environment shaping regional resilience clusters. The aim of the article is to identify the patterns underlying the formation of trade resilience under conditions of global uncertainty and to substantiate the influence of structural and regional factors on the ability of economies to withstand external trade shocks. The methodological framework is based on comparative analysis combined with an index-based approach. The empirical foundation relies on the Global Trade Resilience Index (GTRI), used for cross-country and cross-regional comparisons. The findings empirically confirm the proposed hypothesis.

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СТІЙКІСТЬ СВІТОВОЇ ТОРГІВЛІ В УМОВАХ НЕВИЗНАЧЕНОСТІ

Висвітлено проблему забезпечення стійкості торговельної діяльності в умовах зростання глобальної невизначеності, фрагментації ринків та посилення глобальної конкуренції. Актуальність розвідки зумовлена трансформацією світової торговельної системи, в якій зовнішні шоки, зокрема пандемія, тарифні обмеження, порушення ланцюгів постачання та кліматичні ризики, набули системного, а не епізодичного характеру, роблячи стійкість торгівлі ключовим чинником національної конкурентоспроможності.

Дослідження ґрунтується на гіпотезі, що стійкість торговельної діяльності визначено рівнем диверсифікації торговельних зв'язків, глибиною інтеграції у глобальні та регіональні виробничі мережі, а також якістю інституційного середовища, що формує регіональні кластери стійкості. Метою дослідження є виявлення закономірностей формування стійкості торговельної діяльності в умовах глобальної невизначеності та обґрунтування впливу структурних і регіональних чинників на здатність економік протидіяти зовнішнім торговельним шокам. Методологічно дослідження ґрунтується на порівняльному аналізі у поєднанні з індексним підходом. Емпіричну



Higher levels of trade diversification and deeper integration into production networks reduce vulnerability to external shocks and enhance adaptive capacity, while institutional quality acts as a system-forming factor that strengthens coordination and predictability. The conducted analysis revealed significant regional heterogeneity in the impact of the U.S. isolationist tariff policy: European economies demonstrate the highest resilience, whereas Mexico, Canada, and Vietnam exhibit greater vulnerability. The obtained results highlight the need to implement policies aimed at diversifying trade flows, deepening integration into production networks, and strengthening institutional capacity. The analysis reveals significant regional heterogeneity in the impact of U.S. isolationist tariff policies: European economies demonstrate the highest resilience, whereas economies highly dependent on the U.S. market exhibit greater vulnerability. The results substantiate the need for policies focused on diversification, deeper integration, and strengthening institutional capacity to ensure trade resilience.

Keywords: trade resilience, global trade, regional trade clusters, institutional quality, trade shocks, economic resilience, Global Trade Resilience Index (GTRI).

JEL Classification: F10, F14, F15, O57, H12, F13.

базу становить Global Trade Resilience Index (GTRI), який використовується для порівняння країн та регіонів. Результати дослідження емпірично підтверджують висунуту гіпотезу. Вищий рівень диверсифікації торгівлі та глибша інтеграція у виробничі мережі знизують вразливість до зовнішніх шоків і підвищують адаптивну спроможність, тоді як якість інституцій виступає системоутворюючим чинником, що посилює передбачуваність та координацію економічних процесів. Проведений аналіз виявив значну регіональну неоднорідність впливу ізоляціоністської тарифної політики США: європейські економіки демонструють найвищу стійкість, тоді як Мексика, Канада та В'єтнам демонструють більшу вразливість. Отримані результати засвідчують необхідність реалізації політики, спрямованої на диверсифікацію торговельних потоків, поглиблення інтеграції у виробничі мережі та підвищення інституційної спроможності.

Ключові слова: стійкість торгівлі, глобальна торгівля, регіональні торговельні кластери, якість інституцій, торговельні шоки, економічна стійкість, Global Trade Resilience Index (GTRI).

Introduction

One of the key expressions of the growth of global uncertainty in 2025 in the field of international trade was the transformation of US trade policy. The introduction of additional duties on certain categories of goods (in particular, steel), the escalation of the trade confrontation with China, as well as the spread of tariff restrictions to most US trading partners significantly increased the turbulence of the global trading environment.

Seeking to minimize the impact of exceptionally high tariffs, U.S. trade partners were compelled to adapt to the new rules of the game by concluding bilateral agreements that partially mitigated the tariff regime. The partial restriction of access to one of the world's largest markets stimulates trade reorientation, diversification of partnerships, and the search for alternative distribution channels, which becomes a key factor in ensuring the resilience of trade activity under conditions of global uncertainty.

The need to rethink approaches to the formation of trade policy and the organization of international economic interaction is gaining particular importance. Traditional models based on predictability and liberalization are giving way to strategies of diversifying partnerships, strengthening digital infrastructure, regional integration, and increasing institutional flexibility.

Thus, the study of the resilience of trade activity under conditions of global uncertainty is both timely and necessary, as it is aimed at developing

the theoretical and practical foundations for enhancing the adaptability of trade systems to external shocks and ensuring their long-term competitiveness.

Modern economic science views resilience not merely as a system's ability to return to its original state but as a complex process of dynamic adaptation and transformation. Literature identifies three levels of defense in trade systems: absorptive capacity (the ability to absorb shocks without loss of functionality), adaptive capacity (the ability to reorganize internal processes), and restorative capacity (the speed of returning to target indicators) (Gaudenzi, 2024).

Uncertainty acts as a hidden tax on investment, causing firms to delay capital-intensive projects and reduce export activity. Recent research further clarifies that the impact of uncertainty is nonlinear, particularly as countries reassess offshore investments after the COVID-19 pandemic and increasingly reorganize supply chains toward politically, culturally, and geographically aligned partners through the concept of friendshoring (Özsalman & Bayat, 2025; Jakubik & Ruta, 2023).

Recent studies have shifted focus toward how supply chain structures determine resilience. Ferrari and Pesaresi (2025) propose a theory of supply chain formation where intermediate producers choose to "over-specialize" their goods to increase productivity during normal times. However, this creates a network externality: such specialized inputs are harder to replace after a shock, making the overall system less resilient than is socially desirable.

The affect of geoeconomic pressure as on trade activity of enterprises was measured by Clayton et al. (2025). They utilize large language models to show that firms respond differently based on the instrument of pressure: tariffs primarily lead to price changes, whereas export controls force firms to disproportionately increase investment in R&D to ensure technological sovereignty. Similarly, Shkuropadska (2018) assessed the level of resilience of Ukraine's external sector by analyzing economic indicators and shock influences between 2008 and 2016. The findings show that external sector of economy exhibits high sensitivity to nominal and real shocks, such as debt growth and GDP reduction.

The links between resilience and automation and reshoring was investigated by Firooz et al. (2025) who argue that trade uncertainty creates an "expenditure-switching effect," encouraging firms to reshore production. However, this reshoring is often coupled with increased automation to maintain productivity, which can weaken the bargaining power of low-skilled workers and increase wage inequality.

Grossman et al. (2023) address the optimal policy debate, suggesting that while reshoring is often touted by policymakers, subsidies for international diversification are more likely to achieve social optimum than forcing production back home. This is supported by Faber et al. (2025), who state that high uncertainty in developing countries with advanced automation technologies (robots) drives the reshoring of global value chains to high-

income countries. Correspondingly, Afonso et al. (2024) suggest that in times of extreme uncertainty, nations tend to concentrate their trade among their top 5 most reliable partners to minimize coordination costs.

Chunikhina et. al. (2024) explore how global shifts, including geopolitical upheavals and technological innovations, impact international alliance strategies and trade policies. They find that the protectionist measures and shifting political orders disrupt global supply chains, forcing states and businesses to adapt by diversifying trading partners and increasing regional cooperation.

Li and Jiang (2025) investigate how the development of service trade contributes to strengthening export resilience at the regional level. They find that expansion in service trade, such as IT, financial, and tourism services, significantly improves a region's capacity to maintain and recover export performance in the face of external shocks, thereby improving export resilience. To support that, provincial data in China shows a significant positive effect of digital trade on regional economic resilience (Wan & He, 2025).

Regional trade agreements remain the primary institutional mechanism for reducing uncertainty. Research confirms that "deep" regional trade agreements effectively mitigate the negative impact of domestic uncertainty on exports (Bag, Sun chan, 2025). This is supported by Melnyk and Kovalova (2023) on the example of positive affects of regional agreements, particularly "customs visa-free" status of Ukrainian traders on EU market on the competitiveness of Ukrainian goods.

The hypothesis of the article states that the resilience of trade activity is determined by the level of diversification of trade chains, the depth of integration into global and regional production networks, and the quality of the institutional environment that shapes regional clusters of resilience.

The aim of the article is to identify the patterns underlying the formation of trade resilience under conditions of global uncertainty and to substantiate the influence of structural and regional factors on the ability of economies to withstand external trade shocks.

This study applies a comparative cross-sectional *research methods* to examine the structural and regional determinants of trade resilience under conditions of global uncertainty. Trade resilience is conceptualized as a multidimensional characteristic shaped by (i) diversification of trade linkages, (ii) depth of integration into global and regional value chains, and (iii) quality of the institutional environment forming regional resilience clusters. The empirical analysis is primarily based on the Global Trade Resilience Index (GTRI), which serves as a composite indicator for cross-country and cross-regional comparison. Forecasts and scenario projections from the Whiteshield platform are used to assess the differentiated regional impact of the "U.S. trade shock".

The methods used combine systemic and structural-functional analysis with index-based comparative assessment. Cross-sectional analysis of GTRI scores was used to identify regional clusters, stratification patterns,

and structural asymmetries in resilience capacity. Descriptive statistics and comparison analysis were employed to explore relationships between diversification, network integration, institutional quality, and resilience outcomes.

The structure of the article is as follows. First, the factors ensuring the resilience of trade activity are analyzed. Next, the level of resilience of regional trade clusters is assessed based on the Global Trade Resilience Index (GTRI). Finally, the regional impact of the U.S. trade shock is determined through a comparison of GTRI data with forecasts provided by the Whiteshield platform.

1. Factors ensuring trade resilience

Global trade operates in conditions of permanent affects of destabilizing factors of geopolitical conflicts and economic shocks, such as COVID-19 crisis, trade war between the USA and China. The combination of these factors causes the increase in volatility of international markets and actualizes the problem of ensuring trade resilience as a systemic characteristic of national economies. Today, trade resilience is considered not as an additional advantage, but as a strategic prerequisite for maintaining the continuity of the movement of goods, services and capital and ensuring macroeconomic stability.

Theoretical understanding of the category of "trade resilience" involves its interpretation as the ability of the economy to absorb external shocks, adapt to changes in the global environment and transform the structure of trade relations without losing long-term competitiveness. The formation of trade resilience is based on a number of interrelated components, including diversification of trade partnerships, development of transport and digital infrastructure, availability of effective financial protection mechanisms, as well as flexibility of state policy and labor market.

Analysis of historical retrospective of global trade shocks from the Great Depression of the 20th century to modern tariff conflicts shows that economies that proactively invest in ensuring the structural foundations of resilience demonstrate a higher level of adaptability and recovery from crisis events. At the same time, the strengthening of protectionist tendencies and the growth of geo-economic tensions are shaping new scenarios for world trade development, which require a reorientation of state and business strategies towards long-term risk management.

Trade resilience should be interpreted as an integral characteristic of the national economy, reflecting its ability to counteract external trade shocks, minimize their negative impact and ensure continuity of goods movement, services and capital. In this context, resilience is not only a reaction to crisis phenomena, but a systemic property of the state's trade model.

From the standpoint of a *functional approach*, a resilient trade system is characterized by three interrelated capabilities: first, *the ability to absorb* short-term shocks using financial reserves, stabilization policy instruments

and rapid response mechanisms; second, *adaptability* in the medium term through the diversification of sales markets, changing logistics routes and reorienting suppliers; third, the *ability to recover* and transform in the long run, which involves the structural modernization of industries, updating trade strategies and increasing competitiveness. Thus, trade resilience is a dynamic category that combines elements of stabilization, adaptation and strategic development, forming the basis for ensuring the long-term economic resilience of state in conditions of global uncertainty.

The formation of a resilient trade system is based on a complex of interrelated structural and institutional factors, the effectiveness of which is confirmed by the empirical evidence of different countries (*Table 1*). The combination of these complementary factors determines the ability of the national economy to respond in a timely manner to external trade shocks, minimize their negative consequences and ensure the stability of foreign economic activity in the long term.

Table 1

Factors ensuring the resilience of a country's trade activity

Factors	Description
Diversification of Trade Partners and Products	Reducing dependence on specific countries or narrow product specialization by expanding the geography of exports and imports and diversifying the product range
Participation in Global Supply Chains	Integration into international production and logistics networks, providing access to technologies, markets, and resources, and enhancing competitiveness
Maintaining of Strategic Reserves and Resource Security	Building reserves of critical resources (energy, food, raw materials) to minimize the risks of supply disruptions
Geo-Strategic Location and Trade Routes	Leveraging advantageous geographic positioning to develop transit potential and diversify logistics routes
Developed Infrastructure and Logistics	Availability of modern transport, port, digital, and warehousing infrastructure ensuring the continuity of trade flows
Access to Trade Finance and Insurance	Availability of effective mechanisms for financing, guarantees, and insurance of export-import operations to reduce financial risks
Strong Institutions	Quality of governance, stability of the regulatory environment, and efficiency of customs and control procedures
Flexible and Skilled Labor	The ability of the labor market to quickly adapt to structural changes, supported by a workforce with relevant skills and competencies
Agile Trade Policy and Crisis Response	The capacity of the state to promptly adjust trade instruments in response to changes in the external environment
Stable Economy	Low inflation, manageable public debt, a stable currency system, and overall financial balance
Access to Multiple Trade Routes	The ability to reorient trade flows through alternative transport corridors in case of disruption of primary routes
Robust Domestic Demand	A developed domestic market capable of partially offsetting external losses and sustaining economic activity

Source: (Whiteshield Partners, 2025a).

Diversification of trade partners and products is an important mechanism for reducing economic risks for a country. Excessive dependence on a limited number of export markets or a single product makes the economy vulnerable to external shocks and instability in the world market. Expanding

the range of trading partners and product range allows for effective risk sharing and ensures the stability of foreign trade. An example of successful diversification is Canada, which, going beyond the traditional US market, has concluded agreements such as CETA with the European Union and CPTPP with countries in the Asia-Pacific region (Donovan et al., 2025). Accordingly, this has provided the country with alternative buyers and suppliers, reducing the risks associated with protectionist policies and fluctuations in the world economy. Thus, diversification not only increases the economy's resilience to external shocks, but also expands access to new markets even during periods of global economic downturns.

Participation in global supply chains is also an important factor in increasing trade resilience. Integration into regional and global production networks promotes specialization, expands access to external markets, and at the same time provides greater flexibility to shocks. A good example is Thailand, which benefits from deep integration into East Asian production networks and participation in agreements such as RCEP (Srisangnam, 2024). Accordingly, this allows the country to quickly change its sources of supply and export destinations in the event of external shocks.

Strategic reserves and resource security involve the formation of stocks of critical resources and the diversification of their supply sources, which create an additional buffer of protection in crisis situations. Following China's introduction of restrictions on rare earth metal exports in 2010, Japan implemented a comprehensive policy of import diversification, invested in the recycling of secondary raw materials, and expanded its strategic reserves (World Trade Organization, 2023). Accordingly, this allowed the country to reduce dependence on a single supplier and increase autonomy in critical sectors.

Geostrategic location and trade routes are associated with the country's geographical advantages. In particular, access to several transport corridors and transit routes allows for diversification of logistics routes and minimizes the risks of disruptions in the event of regional instability. A good example is Turkey, which is located at the crossroads of Europe and Asia. Using infrastructure investments and regional trade agreements, the country maintains the stability of trade flows even in the face of geopolitical tensions in neighboring regions (Aguiar, 2025, July 16). Similarly, Panama gains strategic advantages through control of the Panama Canal, which provides the ability to quickly redirect maritime trade flows during periods of global logistical disruptions.

Developed infrastructure and logistics are key prerequisites for trade resilience, as efficient transport and logistics systems enable the rapid redirection of trade flows in times of crisis. The availability of modern ports, multimodal hubs and developed warehousing areas reduces transaction costs and minimizes the risks of delays in delivery. A good example is the Jebel Ali Port in Dubai, which, combined with extensive logistics areas, has enabled the region to maintain its status as a key distribution hub during the

COVID-19 pandemic. Thanks to a high level of infrastructure readiness and flexibility in logistics services, trade continuity has been ensured even in the face of global supply chain disruptions (García-Alzórriz, 2020, April 9).

Access to trade finance and insurance is a strategic component of maintaining business liquidity during economic downturns. Trade credit, export guarantees and insurance instruments reduce the risks of non-payment and ensure the continuity of foreign trade activities even in conditions of increased uncertainty. One example is the creation in 2020 of the Export-Import Bank of Saudi Arabia, which provided loans and insurance instruments to support non-commodity exporters during the COVID-19 pandemic. Accordingly, this allowed to maintain foreign trade volumes and mitigate the negative impact of the global recession (World Trade Organization, 2019).

Strong institutions and policy frameworks are a fundamental prerequisite for trade resilience. Transparent, predictable and consistent trade policies reduce uncertainty for economic agents and enable a rapid response to crises. New Zealand is an example, with a strong institutional environment (Ministry of Foreign Affairs and Trade (New Zealand), 2023). This model builds trust with international partners and contributes to the stability of foreign trade relations. At the same time, the EU Single Market legal framework enables a coordinated response to supply disruptions, allowing member states to act in a coordinated manner in the face of crisis challenges.

A flexible and skilled labor is one of the key prerequisites for economic and trade resilience. The ability of the labor force to quickly adapt to changes in the structure of demand, technological transformations and external shocks ensures the continuity of production and trade processes. An example is Germany, where the system of vocational education and dual training model allows for rapid reorientation of workers between sectors of the economy, mitigating the effects of fluctuations in export markets (Haasler, 2020).

Agile trade policies and crisis response are important mechanisms for reducing the negative impact of external shocks on the economy. Rapid adaptation of trade rules, tariff regimes and customs procedures allows minimizing supply disruptions and maintaining the competitiveness of exporters. One example is Vietnam, which during the COVID-19 pandemic quickly eased restrictions and adapted customs protocols, which allowed to maintain export flows and attract investments in re-shoring projects.

Stable Economy ensures the rise of trade resilience. Macroeconomic stability supports investor confidence, provides predictability for business, and creates conditions for the economy to adapt quickly to external shocks. A good example is Switzerland, where stable fiscal policies and disciplined monetary independence have historically supported investment confidence and trade (International Monetary Fund, 2024). Countries with high levels of foreign exchange reserves and low public debt-to-GDP ratios are able to implement countercyclical measures without significant negative market reactions, which further increases their resilience to external shocks.

Access to multiple trade routes implies the existence of diversified transport corridors, which allows for rapid re-routing of trade flows in the event of disruptions, reducing dependence on a single route and minimizing the risks of logistical delays. A relevant example is the Netherlands, where the Port of Rotterdam, combined with an integrated European logistics network, ensures the resilience of trade flows and reduces the risks of concentration on individual routes (European Environment Agency, n. d.).

Robust domestic demand provides an alternative to export markets and supports employment and production even in conditions of reduced global demand. An example is China, which during the trade war with the US increased domestic consumption and investment, which allowed it to partially compensate for the reduction in external demand and mitigate economic losses (Zhao, 2025).

2. Resilience of regional trade clusters

The Global Trade Resilience Index (GTRI) is a flagship initiative developed by Whiteshield, an international strategic development and public policy consultancy, in collaboration with experts from Harvard University and the OECD. GTRI was launched in 2023 as a strategic analytical tool to support countries in strengthening their trade integration while reducing their vulnerability to external shocks (Whiteshield Partners, 2025b)

Unlike traditional indices that mostly capture current trade activity, GTRI uses the tools of complex network theory and scenario modeling to assess the potential behavior of countries under different types of trade disruptions. Structurally, GTRI measures trade resilience in two key areas:

Absorptive Capacity. This component reflects the country's ability to withstand the immediate impact of external shocks while maintaining relative stability of trade operations at the initial stage of destabilization. It concerns the structural diversification of trade flows, centrality in global networks, the availability of alternative trade partners, as well as the quality of institutions and infrastructure that ensure a prompt response to risks.

Recovery Capacity. This component characterizes the ability of the state to restore trade activity and adapt to changed conditions in the short and medium term after the onset of a shock. It covers the flexibility of the economic structure, innovation potential, the effectiveness of government policies and the ability to reorient supply chains.

The methodological basis of GTRI involves a comprehensive assessment of the ability of national economies to absorb, adapt and recover from trade shocks. The index integrates indicators of the network structure of international trade (in particular, the level of centrality in global value chains, significance in world flows and the degree of diversification of trading partners), as well as indicators of institutional quality, operational efficiency and infrastructure development. Thus, the GTRI combines structural parameters of foreign economic integration with characteristics of domestic economic capacity. In 2025, the GTRI was calculated for

132 countries of the world, which provides representative coverage of the global trade system. In order to outline the main trends and identify leading countries in trade resilience, it is advisable to refer to the analysis of the positions of the top thirty of the rating (*Figure 1*).

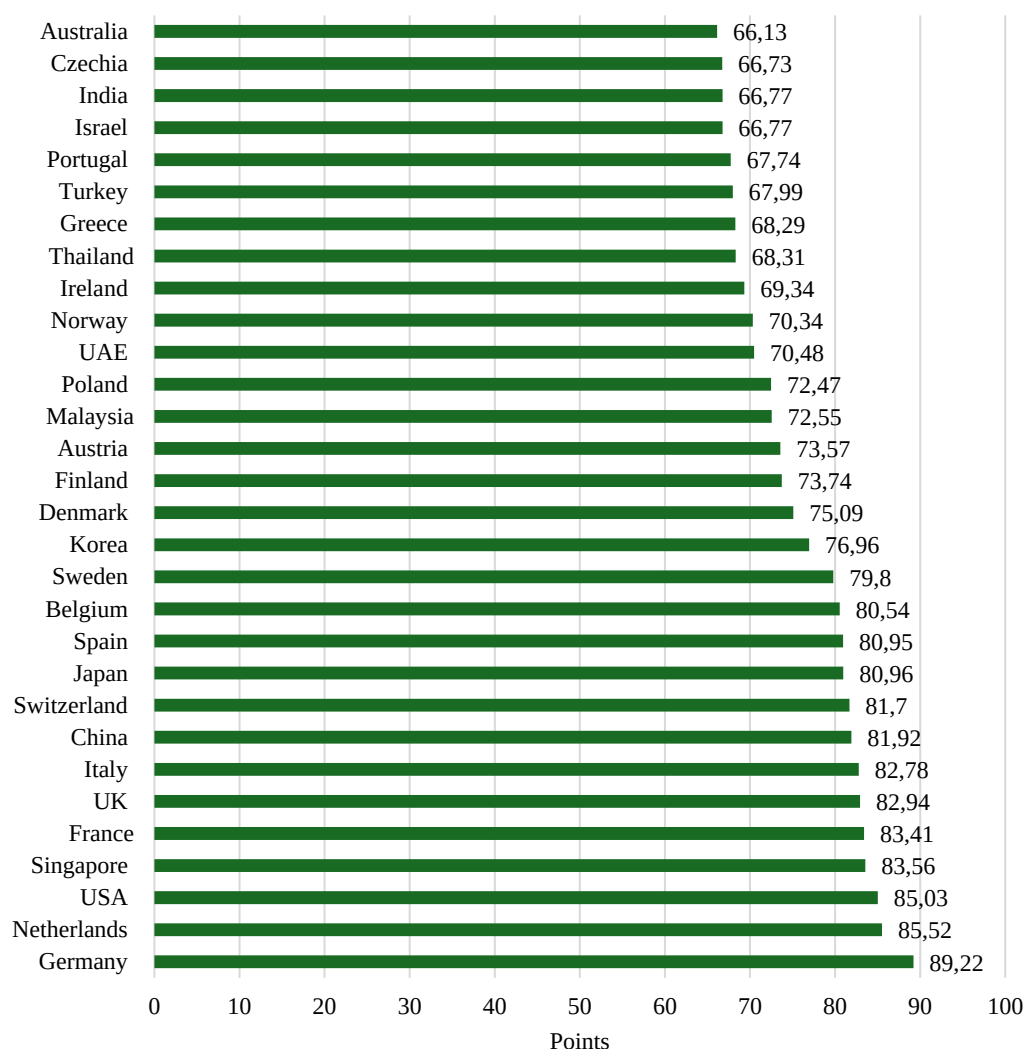


Figure 1. Top 30 performers in the GTRI 2025.

Source: (Whiteshield Partners, 2025a).

The European region maintains its leading position at the top of the GTRI ranking, as 16 of the 30 countries are from Europe (Germany, the Netherlands, France, the United Kingdom, Italy, Switzerland, Spain, Belgium, Sweden, Denmark, Finland, Austria, Poland, Greece, Portugal, the Czech Republic, Ireland). This concentration reflects the region's leadership, which is due to a high level of intra-regional and global integration, a developed infrastructure base and stable institutions.

North America is represented in the top 30 only by the United States (3rd place). The region's relatively limited representation is explained by the smaller number of independently integrated economies and the high

concentration of trade flows within the USMCA, which makes it more vulnerable to internal shocks of individual partners.

East and Southeast Asia are represented by countries such as China, Japan, South Korea, Singapore, Malaysia and Thailand. Accordingly, this illustrates the region's strategic importance as a hub for manufacturing and technology networks, providing high network integration and operational efficiency.

Other regions include the Middle East (United Arab Emirates, Israel) and South Asia (India), which indicate a gradual increase in the trade resilience of economies with high growth potential. Australia (30th place) demonstrates the regional importance of Oceania in global trade networks.

In general, the top five countries in the ranking are Germany, the Netherlands, the United States, Singapore, and France. An analysis of their positions suggests a common model for ensuring trade resilience, based on a combination of several complementary factors:

- high-quality transport, logistics, and digital infrastructure;
- effective public administration institutions and a stable regulatory environment;
- significant innovation potential and technological capabilities;
- deep integration into global and regional production networks.

It is important to note that the leadership of these countries is not limited solely to the size of their economies or export volumes. Instead, it reflects the systemic nature of their competitiveness, where institutional quality, infrastructure, and network positioning mutually reinforce each other.

At the regional level, countries can be aggregated into four relatively homogeneous clusters based on their GTRI scores (*Figure 2*). Despite significant differences between clusters, within each group, countries exhibit relatively similar levels of trade resilience: North America and Europe; Middle East and North Africa (MENA) and East Asia and the Pacific; Central Asia, South Asia and Latin America and the Caribbean; Sub-Saharan Africa.

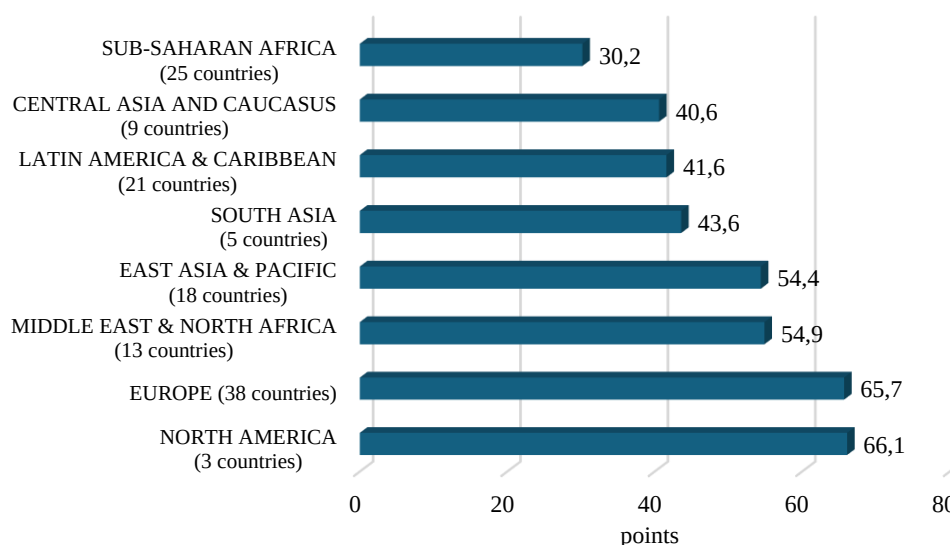


Figure 2. Regional GTRI in 2025 performance

Source: (Whiteshield Partners, 2025a).

North America shows the highest level of trade resilience. The decisive role in this is played by the economic power of the United States, which accumulates about 14% of world imports and ranks third in the global GTRI ranking. In contrast, Canada (45th place) and Mexico (58th place) are characterized by a significantly lower level of resilience compared to the United States.

Europe generally shows a level of trade resilience comparable to North America, but the regional average hides significant internal differentiation. Almost half of European countries are in the top 30 of the global ranking. At the same time, eight of the ten lowest-ranked European countries are located in Eastern Europe, including Belarus, Moldova and Albania. These countries are characterized by limited international trade integration, weaker institutional governance mechanisms and underdeveloped infrastructure, which increases their vulnerability to external shocks. Therefore, the use of aggregated regional indicators can mask local structural imbalances, which necessitates a targeted policy to increase trade resilience in structurally weaker areas of Europe.

The second cluster is formed by East Asia and the Pacific, together with the MENA countries, which show significantly lower results compared to the leaders. In East Asia and the Pacific, 7 out of 17 countries are in the top 30, but at the same time three countries have positions below 100th place, which indicates significant inter-country differentiation. In the MENA region, the distribution of indicators is more even, from 20th place, which is occupied by the United Arab Emirates, to 83rd place by Lebanon. In South Asia, the regional leader is India (28th place), while other countries lag significantly behind in terms of trade resilience. A similar situation is observed in Central Asia, where Turkey (25th place) significantly outperforms other countries in the region. In Latin America and the Caribbean, only five out of 22 countries rank in the top half of the ranking, indicating the region's limited ability to adapt to global trade turbulence.

The lowest scores are recorded in sub-Saharan Africa, which forms the least trade-resilient cluster. Only South Africa (39th) ranks in the top half of the global ranking. Most other countries in the region rank outside the top 100, reflecting systemic challenges in trade infrastructure, institutional capacity, and global positioning.

Thus, the GTRI regional analysis confirms the existence of a clearly defined hierarchy of trade resilience in the global economy, and also reveals significant intra-regional asymmetries that need to be taken into account when formulating policies to ensure economic resilience and trade resilience to external shocks.

3. Regional impact of the "US trade shock"

Given the growing role of the US in the global trade and financial system, a potential economic shock in the US has a distinct regional dimension and can affect countries around the world differently depending

on their level of integration into US-centric value chains. The degree of dependence on the US market, the structure of exports, the nature of trade flows and the depth of intra-regional cooperation determine how vulnerable or, conversely, resilient regions are to such a shock.

The essence of the "US shock" lies in sudden or significant changes in economic policy, financial conditions or macroeconomic dynamics that have a systemic impact on the world economy due to the high level of US global integration. Such a shock can manifest itself in several dimensions:

The trade dimension is the introduction of protectionist measures (increasing tariffs, quotas, sanctions), revising trade agreements or restricting access to the US market. Accordingly, this directly affects countries whose exports are largely oriented towards the United States.

The financial dimension is a sharp change in monetary policy (for example, an increase in interest rates by the Federal Reserve), which causes capital outflows from developing countries, a strengthening of the dollar and an increase in the cost of servicing external debt.

The demand-cyclical dimension is an economic recession in the United States, which reduces global demand for goods and services, affecting global value chains.

The geopolitical dimension is a change in foreign economic or sanctions policy, which transforms trade routes and the structure of international economic relations.

Thus, the essence of the shock lies not only in the negative impact on the US economy itself, but in its transmission through trade, financial and institutional channels to other regions. The degree of impact is determined by the depth of a country's integration into US-centric supply chains, its dependence on the dollar as a reserve currency and the structure of its foreign trade.

Countries with higher absorptive capacity tend to be better prepared to counter targeted trade policy shocks, in particular sudden tariff increases or the introduction of other protectionist measures. To explore this relationship, we compared the GTRI absorptive capacity indicators with the Whiteshield platform forecasts (Trade Navigator tool), which estimate the expected changes in exports for 20 of the US's top trading partners under a scenario of full implementation of the reciprocal tariffs announced by the US, together with the expected retaliatory measures from trading partners.

The GTRI Index and Trade Navigator provide complementary approaches to assessing trade resilience. GTRI analyzes a country's structural positioning within 96 commodity-specific global trade networks, focusing on the extent of its integration and diversification of trade across products and partners. Trade Navigator, in turn, combines country-specific tariff rate data with trade elasticity measures to model the likely response of trade flows to changes in trade policy, including the introduction of new tariffs or countermeasures. Combining GTRI's structural approach with Trade Navigator's policy-sensitive modeling provides a more comprehensive

and multidimensional understanding of both the long-term resilience and short-term vulnerability of countries to changes in U.S. trade policy. As shown in *Figure 3*, U.S. trading partners can be roughly divided into three groups based on their level of resilience and projected impact on trade.

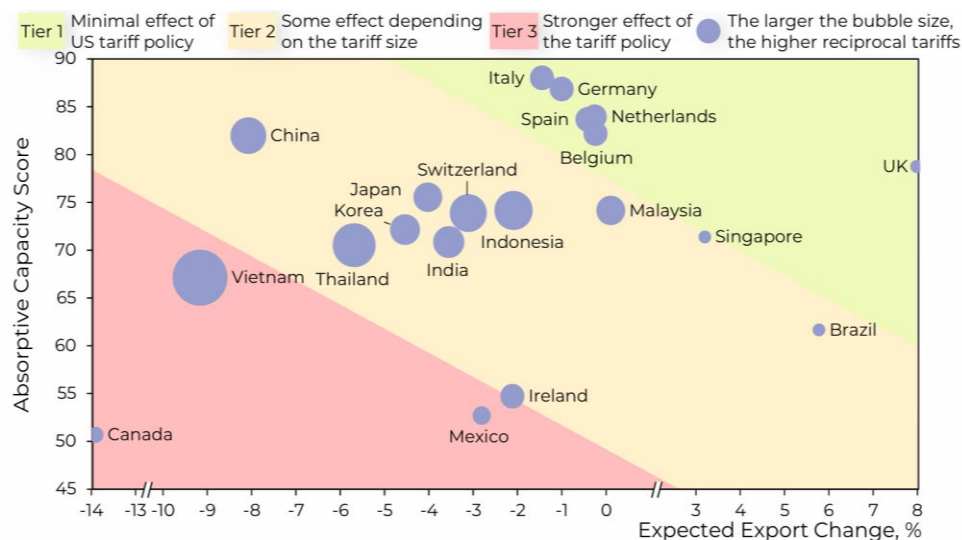


Figure 3. Countries' absorptive capacity vs. expected trade impact from U.S. reciprocal and retaliation tariffs for top 20 U.S. trade partners

Source: (Whiteshield Partners, 2025a).

Tier 1 includes countries that are expected to experience minimal disruption to trade flows from new tariffs. These economies combine high absorptive capacity with low to moderate levels of reciprocal tariffs, resulting in little projected change in trade volumes. A good example is the United Kingdom, which demonstrates a high level of structural adaptability and can at the same time benefit from relatively low tariffs by increasing its market share at the expense of less resilient partners. This group also includes leading European economies, such as Germany and the Netherlands, which are characterized by exceptional structural resilience. Singapore is also in Tier 1, and despite only moderate absorptive capacity, its relatively low tariff rate (10%) allows it to withstand the shock relatively well. Tier 2 consists of countries that are moderately affected by US tariffs. They are characterized by higher tariff rates combined with moderate levels of absorptive capacity. This group mainly includes East and South Asian economies, including China, South Korea, Japan, India and Indonesia. While these countries may face significant trade losses, their structural resilience partially mitigates the magnitude of the shock.

Tier 3 covers the most vulnerable countries, characterized by either high trade dependence on the United States, low absorptive capacity, or a combination of both. Canada and Mexico are particularly vulnerable due to their concentrated orientation towards the US market, even despite moderate tariffs. Vietnam suffers from the double negative effect of a high tariff

burden and only moderate absorptive capacity. Ireland is on the edge of this group and may suffer primarily due to its relatively low structural adaptability, even if its tariff rates are not at their maximum.

Although the GTRI methodology does not directly account for tariff differentiation between countries, there is a moderate correlation between absorptive capacity and the projected impact on exports. Over 0.3 for the full sample and over 0.5 for the top ten US trading partners. Accordingly, this suggests that higher absorptive capacity is generally associated with lower expected export losses.

At the same time, the variability of tariff rates partially weakens this relationship. Under the condition of modeling a unified shock (without inter-country tariff differences), the correlation coefficient increases to 0.6, which further confirms the significant role of structural stability in mitigating the consequences of trade policy changes.

Thus, the "US trade shock" acts as a stress test for the global economic system, revealing not only the current dependence of countries on the US market, but also the deep structural characteristics of their trade model. Regional trade resilience in this context is determined not only by the scale of tariff impact, but primarily by the ability of economies to diversify, adapt, and quickly restructure trade relations.

Conclusions

The modern global trade system is in a phase of profound transformation, characterized by increasing uncertainty, market fragmentation, and increased strategic competition between countries. Escalation of tariff restrictions, disruption of supply chains due to the pandemic, climate instability, and the use of critical technologies as a tool of geoeconomic influence have shown that shocks have become not episodic phenomena, but a systemic feature of global trade. Under such conditions, the trade resilience is transformed from a desirable characteristic into a key factor in ensuring national competitiveness.

The study has made it possible to empirically confirm the hypothesis put forward regarding the key determinants of the trade resilience. The results obtained indicate that regional clusters with a high level of diversification of trade relations demonstrate less vulnerability to external shocks and faster adaptation to changes in the world markets. Deeper integration into global and regional production networks provides a risk-sharing effect and supports the continuity of value chains even under trade restrictions. At the same time, the quality of the institutional environment acts as a system-forming factor that enhances adaptability, predictability and coordination of economic processes within clusters.

The analysis of the scenario of an isolationist tariff policy by the United States indicates significant regional differentiation of impacts. European countries incur the lowest losses, which can be explained by their

high absorptive capacity and relatively low level of reciprocal tariffs imposed by the United States. The combination of a diversified trade structure and well-developed intra-regional cooperation creates an additional resilience buffer for Europe.

In contrast, Mexico, Canada and Vietnam demonstrate higher vulnerability. For Mexico and Canada, the key risk factor is limited absorptive capacity combined with high dependence on the American market. Vietnam, in turn, faces one of the highest levels of reciprocal tariffs, which amplifies the negative effect.

East Asian and MENA economies, in particular Singapore, South Korea, and the United Arab Emirates, appear to be more sensitive to a US isolation scenario, despite their generally high level of trade resilience. Their deep integration into US-oriented supply chains increases the risk of losses in the event of sharp changes in trade policy.

Thus, the findings of the study confirm that the resilience of regional trade clusters is shaped by structural, integration, and institutional factors. Ensuring this resilience requires policies aimed at diversifying trade flows, deepening integration into production networks, and strengthening institutional capacity. Further research should focus on developing dynamic and multi-level approaches to analyzing trade resilience, including deeper sectoral disaggregation, and the assessment of technological and digital factors influencing global value chains, while also expanding the geographical scope to include economies undergoing structural transformation and post-crisis recovery, in order to better understand the interaction between trade resilience and broader dimensions of economic resilience.

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