OPEN ACCESS

Saudi Journal of Economics and Finance
Abbreviated Key Title: Saudi J Econ Fin
ISSN 2523-9414 (Print) |ISSN 2523-6563 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: http://saudijournals.com

Original Research Article

The Impact of Tariff Policies on International Trade Relations and Economic Competitiveness: A Comparative Study of Developed and Developing Economies

Olawale C. Olawore[1]*, Taiwo R. Aiki[2], Oluwatobi J. Banjo[3], Victor O. Okoh[3], Tunde O. Olafimihan[4]

[1]University of People, Pasadena, California, United States of America
[2]University of Derby, Derby, United Kingdom
[3]Estonia Entrepreneurship University of Applied Sciences, Tallinn, Estonia
[4]Tansian University, Anamra State, Nigeria

DOI: https://doi.org/10.36348/sjef.2025.v09i11.003 | **Received:** 14.09.2025 | **Accepted:** 07.11.2025 | **Published:** 10.11.2025

***Corresponding author:** Olawale C. Olawore
University of People, Pasadena, California, United States of America

Abstract

This paper analyzes the effects of tariff policies on international trade flows and national competitiveness between 2018 and 2024, a time of revival of protectionism, the COVID-19 crisis, and a general surge in supply-chain disruptions. Using harmonized data sources provided by the WTO, UNCTAD, World Bank, and IMF, we implement a two-way fixed-effects gravity model in order to provide a rigorous assessment of the effect of tariff changes on trade flows between developed and developing economies. To help counter the possibility of endogeneity, we create a weighted tariff shock variable and apply system GMM regressions. We further expand the study with multidimensional measures of competitiveness such as export sophistication, logistics efficiency, and innovation capacity in order to confirm the consistency of our findings. The findings are consistent with the conclusion that increased tariffs reduce the performance of exports, and the negative effect is most pronounced in developing economies that are defined by a small industrial base and low technological potential. On the other hand, those economies that have high regional trade relations and sophisticated digital infrastructure have greater resilience to tariff shocks due to diversifying supply chains and updating technology. In our analysis, we find that there are always negative impacts on the performance of exports due to higher tariffs, but the most negative impacts were observed in developing countries that are not technologically developed and whose industrial bases are small. This paper provides practical policy advice on the need to balance short-term industrial security with long-term economic sustainability in a more globalized economy.

Keywords: Tariff Policy, Trade Flows, Competitiveness, Digital Infrastructure, Regional Integration, Protectionism, Developed Economies, Developing Economies.

INTRODUCTION

Tariff Policy Has Been One of the Main Instruments of Influencing the Global Trade and the Domestic Economic Performance

Tariff policy has been one of the most important instruments for influencing the dynamics of world trade and the domestic economic structure, as it was originally used as a means of protecting nascent industries and as a source of fiscal revenue. Since its inception as an instrument to affect the dynamics of world trade, as well as the structure of domestic economies, tariff policy has become a means of changing the direction of production systems, the distribution of resources, and integration into global value chains (Krugman *et al*., 2018; Baldwin & Freeman, 2022).

Tariff analysis is based on classical and neoclassical economic theories. The comparative advantage theory of Ricardo (1817) explains how countries gain in trade through specialization, the Heckscher-Ohlin model (1947) explains how trade patterns are affected by factor endowment differences and the StolperSamuelson theorem (1941) explains how tariffs affect the returns to labor and capital within an economy. According to the strategic trade theory of Krugman (1987) and the endogenous growth model of Grossman and Helpman (1991), in some situations

temporary protection can promote innovation and learning in industries.

The current study of trade focuses on tariffs within the framework of fragmented world production networks. As revealed by Antràs (2020) and Baldwin and Freeman (2022), even a small shift in tariffs spreads through supply chains and changes the cost of production, sourcing decisions, and competitiveness in the long term. Their work sheds light on the fact that tariffs are economic tools, and they may also cause industrial change, technological progress, and economic stabilization.

The U.S.-China trade war, the COVID-19 pandemic, and the rise of protectionist sentiment have all proven the instability of global supply chains; recent world events have proven that the need to revise tariff policy is a significant factor in national innovation, economic stability, and global competitiveness (Bown, 2023). Trade policy has grown to be more than a trade issue; it is now a significant source of national innovation, economic stability, and competitiveness in the global market.

This paper examines tariff adjustments in a balanced sample of twenty economies ten developed and ten developing from 2018 to 2024. We combine industry-level information on tariffs, export sophistication, logistics performance, and digital infrastructure to determine the role of structural and institutional capabilities of a country in its capacity to survive and adjust to tariff shocks.

The Article Has Three Contributions:

1. It provide post-2018 data balanced with tariff changes to evaluate the decrease in trade and re-positioning of trading partners.
2. It shows the cross-country variations in shock absorption, with technology and institutional maturity as the most prominent factors.
3. It puts tariff policy in a wider resilience framework, demonstrating the effects of regional integration and digital transformation in reducing negative impacts.

Research Objectives and Questions

Specific Objectives Are:

1. Establish the correlation between tariff rates and trade performance across sectors and trading partners;
2. Compare the reaction of developed and developing economies to tariff changes;
3. Evaluate the impacts of regional trade agreements and digital preparedness in alleviating the impacts.

The Research Considers the Following Three Questions:

1. How will a shift in tariffs affect the value and quantity of international trade in the 2018-2024 period?
2. What are the differences between the effects of these in developed and developing economies?
3. How does the regional trade arrangements and digital preparedness impact the relationship between tariff policy, trade flows, and competitiveness?

Scope and Measurement

To address these objectives, the analysis will be performed at the exporter-importer-sector-year level (using HS-2 or HS-4 classification). Key variables include:

Policy Variable:

This is either the bilateral ad valorem tariff rate in percentage points, or a binary variable that indicates whether a tariff was raised or lowered within the study period.

Dependent Variables:

1. Bilateral export values and, where possible, trade volumes;
2. Proxies of price and quality (unit values).
3. Destination market share (for the analysis of trade diversion).
4. Comparative dimension: the outcomes are compared between developed and developing economies.

Period: The study falls within the years 2018 to 2024, and this period reflects the recent trends in the area of trade and tariff policy.

Hypotheses

H1. Trade Contraction Effect

When bilateral tariffs are increased, the value and volume of trade between two countries decline. Expected sign: $b1 < 0$.

H2: Asymmetry Effect of Development

The contraction outlined in H1 is stronger when either the exporter or the importer is a developing economy since these economies face higher adjustment costs and are less diversified. The interactions predicted: b1 x Developing Exporter < 0; b1 x Developing Importer < 0.

H3: Trade Diversion Effect

An increase in tariffs on specific partners will lead exporters to divert trade to other third-country destinations in the same industry. Predicted impact: The tariff change will lead to an increase in market share exported to non-treated destinations.

H4: Effect of Price and Composition

In response to the tariffs, exporters can choose to either transfer the extra costs to buyers (because they raise export prices) or to respond by providing better quality goods to justify higher prices (causing a shift away of highly tariff-sensitive products and toward more specialized or differentiated products.

H5: Sectorial Heterogeneity Effect

The negative effect of tariffs is stronger in industries that are highly dependent on imported inputs-especially in the industries of intermediate goods. As such we would find higher β_1 coefficient in the upstream or intermediate HS chapters.

LITERATURE REVIEW

Studies have indicated tariff policies affect trade flows, competitiveness, and economic development in most nations across the world. The impact of tariffs on international trade and competitiveness has been analyzed based on fundamental theories, empirical findings, and new insights into the dynamics of tariffs and trade wars during 2018-2024.

Conceptual Foundations

Tariff policy has been examined in classical theory and contemporary empirical research that has evolved according to the structure of the global economy. Stolper and Samuelson (1941) extended the earlier neoclassical trade theory to show that tariffs also disrupt the efficient international distribution of resources, but they went beyond the classical analysis of other economists such as Ricardo (1817) who concentrated on aggregate national benefits of trade, by modeling the effects of protectionist redistribution of income between factors of production within a given economy.

Newer theories added new dimensions to the concept of trade by introducing new elements like economies of scale, imperfect markets and the role of institutions. Krugman (1987) and Grossman and Helpman (1991) proposed the strategic trade and endogenous growth approach, claiming that in the case of either imperfect competition or learning externalities, infant industries can be supported by temporary protection and can spur technological advancement.

Recent studies place tariff analysis in the framework of global value chains and fragmented production networks. As (Antràs, 2020; Baldwin & Freeman, 2022) demonstrate, any minor tariff adjustment may have a ripple effect and impact the cost of production, sourcing, and long-term competitiveness due to cross-border supply chains. All of these studies demonstrate that tariff policy is more than protectionist action - it is a potent structural instrument that determines the quantity of trade, triggers technological development and creates wider economic change in the modern globalized economy.

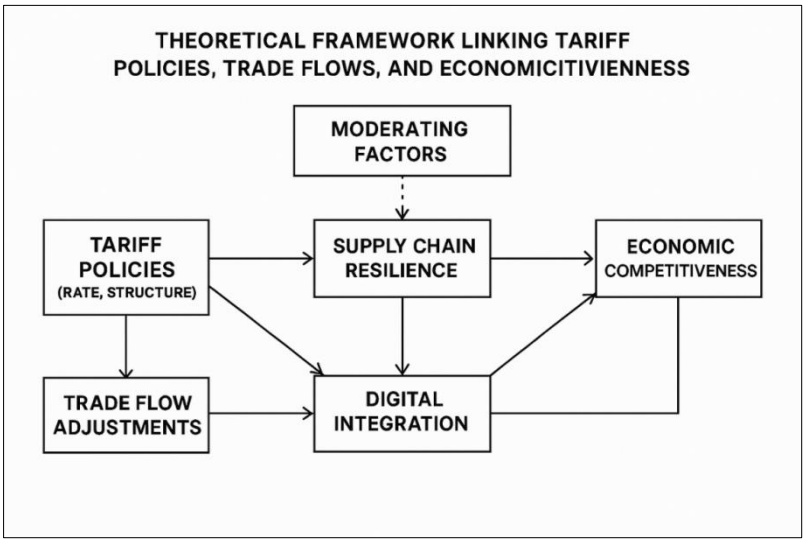

Figure 1: The role of tariff policies in trade, technology and economic power

Figure 1, Demonstrate the role of tariffs, trade, digital connectivity, and the power of supply chains in determining economic competitiveness and how such factors can be enhanced or diminished through other factors. Also shows the effects of tariff regulations on trade flows are immediate but also on supply chain resilience and digital integration, which are crucial to the economic competitiveness of a country (Antràs, 2020; Baldwin & Freeman, 2022). The effects of tariff regulations are informed by the larger factors of institutional quality and regional trade agreements, which underlie the empirical analysis in this study.

Macroeconomic Disruption, Tariffs, and Trade Wars

The use of tariffs since 2018, especially in the U.S.-China conflict, has prompted voluminous empirical

studies. Bown (2023) has documented the disruption of trade, investment and global supply chains caused by tariff increases. Recent literature has associated these distortions with a rise in trade policy uncertainty and a swift drop in cross-border investment (Handley, Kamal, & Monarch, 2024).

The COVID-19 crisis has underscored the weakness of globally, integrated production systems, as Baldwin and Freeman (2022) point out, lockdowns and transport disruptions increased the impact of tariff barriers, exacerbating shocks to global production and economic activity and affecting the speed of economic recovery.

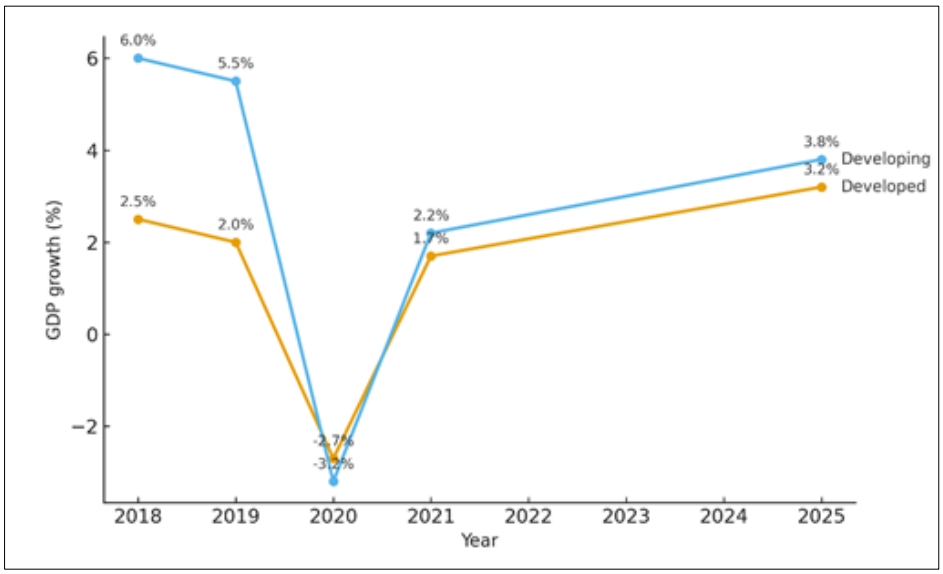

Figure 2A: GDP Growth, 2018–2024 (Group Averages)
Sources: (World Bank, 2023; IMF, 2023).

Figure 2A. This demonstrates the real GDP growth of developed and developing economies on average. The 2020 recession indicates the world shock; the years that follow depict some recovery with quicker recuperation among emerging economies.

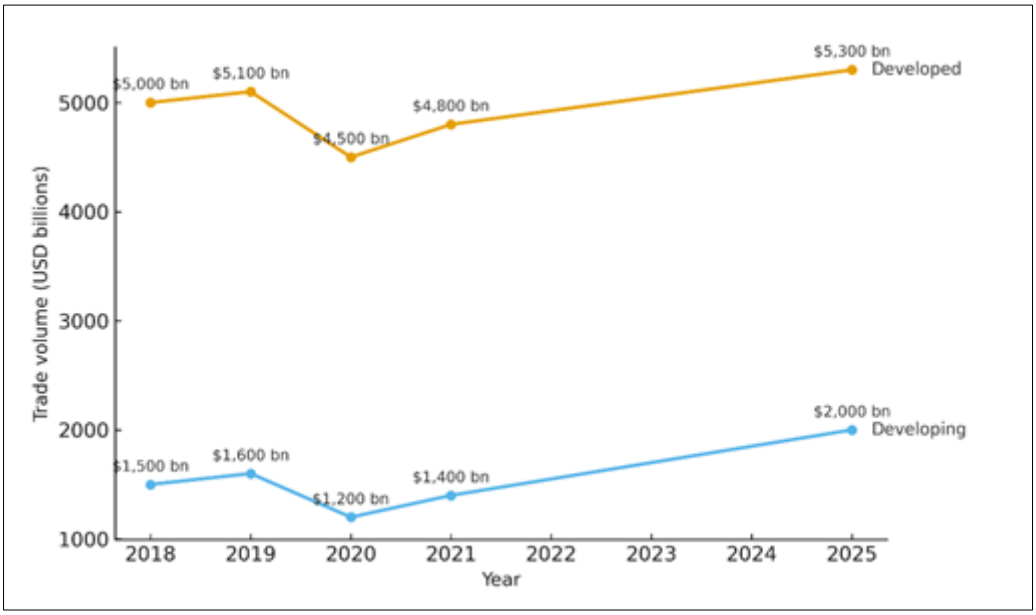

Figure 2B: Merchandise Trade (Exports + Imports), 2018-2024
Sources: (United Nations, n.d.; WTO, 2023).

Figure 2B. This shows the average merchandise trade (exports + imports) of each category in current USD billions. It demonstrates a 2020 decline and a gradual recovery, which is stronger in the developing economies by 2022.

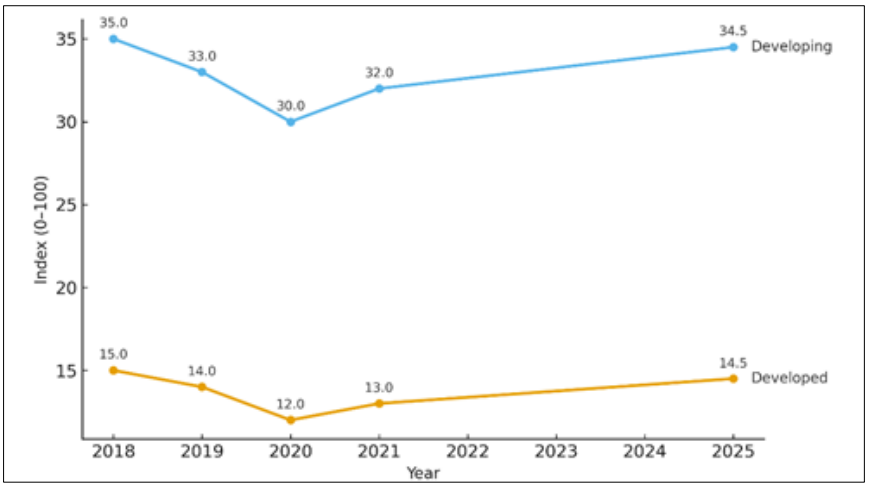

Figure 2C: Competitiveness Index Scores on a Scale of 0 to 100 for each Country Group from 2018 to 2024
Sources: (World Bank, 2023; WIPO, 2023; OECD, 2023).

Figure 2C. The developed economies are stable with slow improvement whereas the developing economies have a higher and more fluctuating path.

A global tariff shock took place between 2018 and 2024. According to global data, in 2020, the economic shock had begun to be overcome, and the recovery rate was slower in developed economies than in developing ones, both in terms of GDP growth and trade volumes (United Nations, n.d.; World Trade Organization, 2023). Competitiveness indexes indicate that developing economies have continued to record relative improvements, and both groups showed recovery after 2020. The combination of the figures implies that developed economies possess more substantial trade volumes; however, post-shock dynamics and structural competitiveness gains are increasingly apparent in developing economies (Antràs, 2020; Baldwin & Freeman, 2022), which is in line with quicker adjustment through market diversification and technology-based logistics.

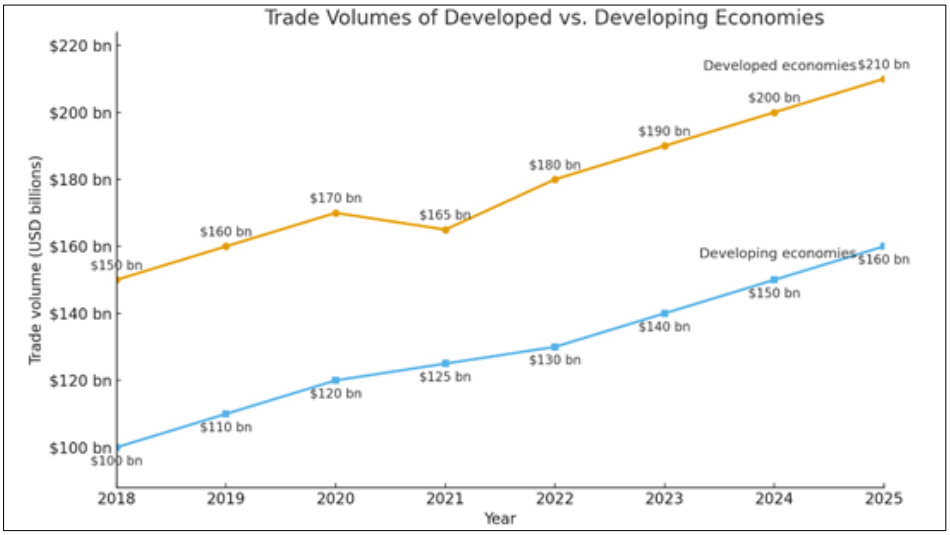

Figure 3: Shows the dynamics of trade between developed and developing economies between 2018 and 2024 to indicate the effect of tariffs, trade issues and the general growth trends

Figure 3. This illustrates that developed economies consistently have higher trade volumes, but the growth rate accelerated following 2021 (World Trade Organization, 2023; United Nations, n.d.). Trade growth also occurred in developing countries but at a lower level and slower pace due to structural weaknesses and higher average tariffs (UNCTAD, 2023). The increasing disparity highlights the fact that the developed economies have much more trading power, whereas the developing regions still have serious obstacles to market entry.

The Tariffs and Supply-Chain Resilience:

The relationship between tariff policy and supply-chain resilience has become a major topic in recent studies. Ivanov & Dolgui (2020) show how tariffs act as exogenous shocks and make firms rethink sourcing, inventory, and logistical policies. Developed

economies are more concerned with the digitalization, automation, and risk analytics, whereas developing ones are more concerned with the diversification of suppliers and maintaining larger inventory reserves to absorb the trade shocks (OECD, 2023; WEF, 2023).

Studies have shown that economies that have high digital infrastructure and well-established institutions recover faster and adjust better to shocks due to these features, including developed logistics, sound data systems, and proper governance (Antràs, 2020; Baldwin & Freeman, 2022). These attributes allow economies to remain competitive and keep producing despite the introduction of protectionist policies, such as tariffs.

Table 1: Comparison of Resilience Strategies in Developed and Developing Economies

Plan of Action	**The Nations such as the U.S. and Germany, and Japan, which possess substantial economic power.**	**India, Brazil, and Nigeria have economies that show considerable strength.**
Digital Transformation	The move to digital is putting a lot of money into digital change, Industry 4.0, AI, and block chain tech.	Moderate adoption, often regionally focused
Supplier Diversification	Consider both global and regional suppliers.	The heavy dependence on local or regional suppliers
Risk Management	Consider both global and regional suppliers.	Reactive risk management, less sophisticated
Inventory Management	Just-in-time systems can use technology to improve operations.	More focus on stockpiling and buffer inventories
Flexible Logistics	Putting money into automated warehouses and logistics systems.	The slow change, notably in important industries

As indicated in table 1, which compares how developed and developing economies approach supply chain resilience. This table demonstrates the various types of strategies applied: developed countries are more concerned with digital transformation and analytics to create flexible supply chains, whereas developing countries are inclined to use more immediate solutions such as seeking alternative suppliers and stockpiling products (2020-2024).

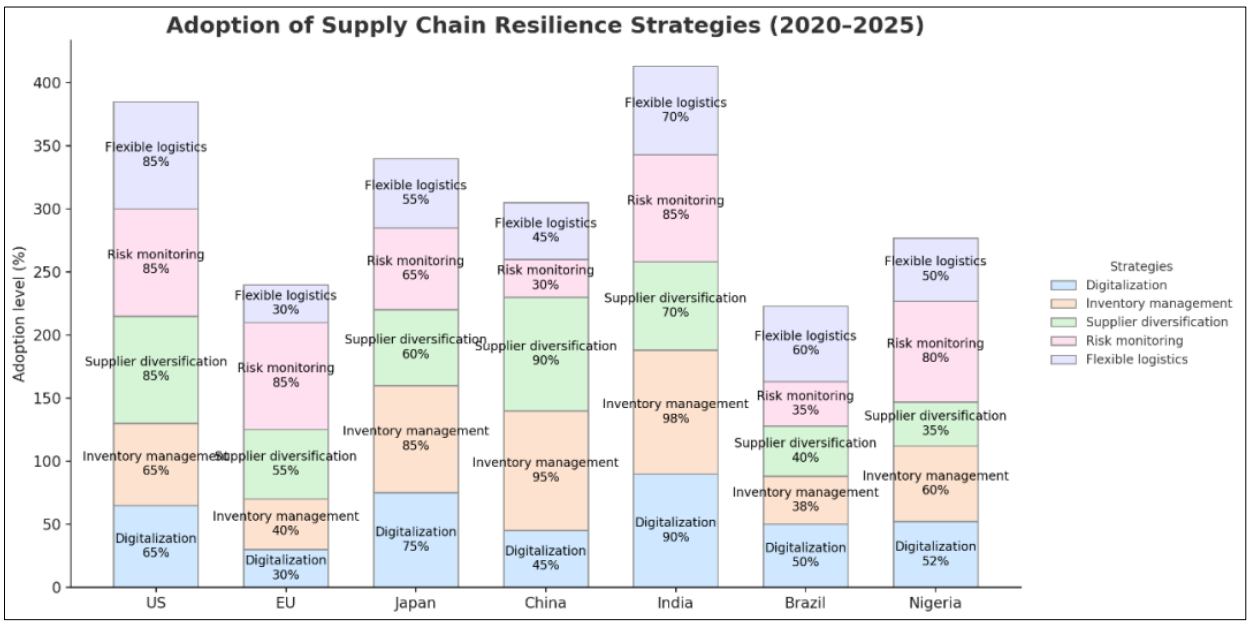

Figure 4: This section examines how developed and developing economies used supply-chain resilience techniques from 2020 to 2024

According to Figure 4, developed economies (the US, EU, and Japan) focus more on digitization, risk management, and flexible logistics, whereas developing ones pay more attention to inventory control and diversifying supplies (Antras, 2020; UNCTAD, 2022). The structural gap is shown: developed economies invest in digital infrastructure more on the long-term basis, and emerging countries invest more on short-term and tactical response.

The Tariffs, Competitiveness and Structural Transformation:

Tariffs have long run effects on competitiveness even though they have direct effects on trade. According to Porter (1990) and Grossman & Helpman (1991), excessive protection harms productivity and innovation by shielding them from international competition. Chang (2002) states that well-timed tariffs can help in the upgrading of industries in developing economies when it is coupled with innovation and export-promotion policies. Since 2018, empirical studies have shown that an increase in tariffs leads to decreased export sophistication and inflows of investment, especially in emerging markets (Baier & Bergstrand, 2019; Handley *et al*., 2024). However, the economies, which integrate open regimes of trade with digital development and regionalization, are more competitive (OECD, 2023; WIPO, 2024). These findings highlight the need to incorporate complementary policies to counteract the negative effects of tariff policies.

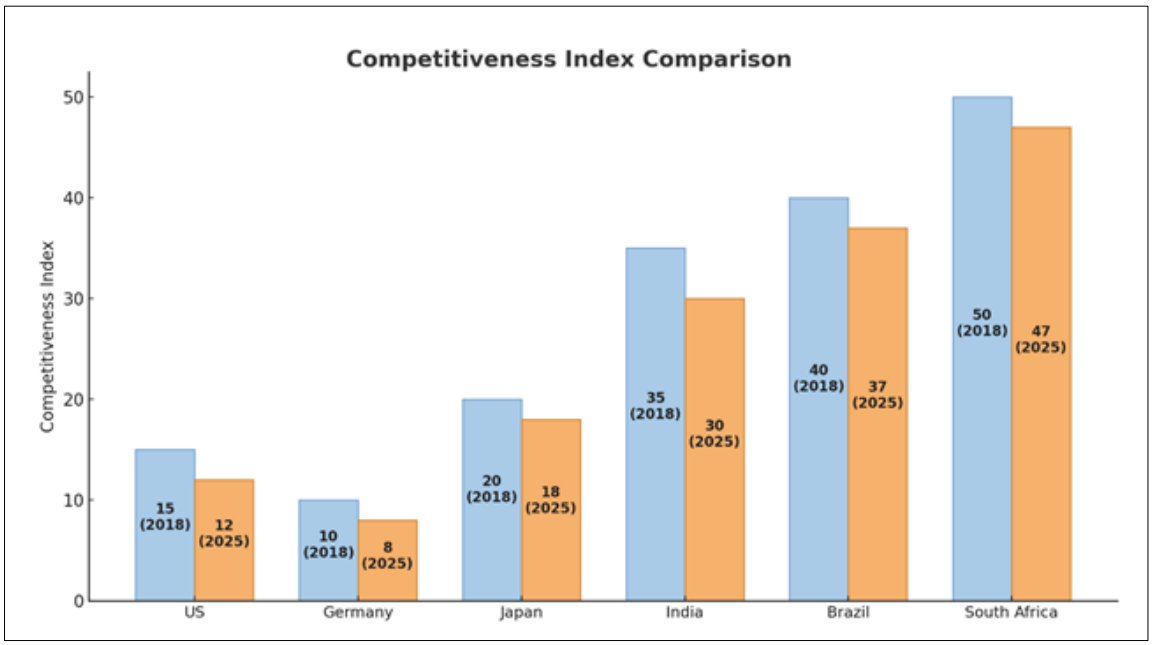

Figure 8: Regression Findings - Effect of Tariffs on major economic indicators (2018-2024)

As shown in Figure 5, the findings indicate that tariffs have significant adverse effects on every measure. The greatest impact is observed on trade volumes, followed by GDP growth, and then by competitiveness measures (Baldwin & Freeman, 2022; Antràs, 2020; Baier & Bergstrand, 2019). These data show that protectionist policies are consistently detrimental to economic performance, with particularly devastating impacts on trade (Antràs, 2020).

The Research Gap:

Although extensive literature is available, there are still significant gaps in the literature, as most studies look at the impact of tariffs on trade volumes yet do not relate these impacts to digital readiness, supply-chain resilience, or competitiveness (OECD, 2021; WEF, 2020). There is also limited comparative work that looks at these dimensions in developed and developing economies (UNCTAD, 2023).

To fill these gaps, this paper constructs a balanced panel of twenty economies between 2018 and 2024 and combines tariff, trade, and competitiveness data to relate the policy of tariffs to the change in structure and future performance (Anderson and van Wincoop, 2003; Yotov *et al*., 2016).

The Empirical Approach

This Concept Forms a Relationship between Tariff Policy and Trade Flows and Competitiveness in Developed and Developing Nations

Conceptual Foundation

This paper is based on the gravity model of international trade as its analytical tool. The model describes international trade by the size of economies and the cost of international trade (Anderson & van Wincoop, 2003; Head & Mayer, 2014). On this basis, tariffs are considered a key factor that determines the cost of trade and, by extension, the level of exports.

The model does not just cover the traditional specifications but also the institutional and technological dimensions, which reflect the reality of twenty-first-century trade (Antràs, 2020; Baldwin & Freeman, 2022; OECD, 2023). The moderating variables applied are the regional trade agreements (RTAs) and digital readiness, which capture the reality of trade in the twenty-first century. This method is a reflection of recent studies that place the outcome of trade in the context of more extensive networks of production, governance, and digital integration (Antràs, 2020; Baldwin and Freeman, 2022; OECD, 2023). It takes into consideration both direct price implications of tariffs and indirect

implications of integration and technological capabilities.

The Model Design:

The empirical research quantifies the impact of changes in the tariff level on bilateral export performance across time and place through a model that consists of bilateral-pair fixed effects, exporter-year fixed effects, and importer-year fixed effects (Anderson & van Wincoop, 2003).

The coefficient of interest gives the responsiveness of exports to tariff rate changes, and interaction terms are added to compare the differential effects between developed and developing economies to allow a comparative assessment of the impact of structural differences on the response to change in tariff rates (Yotov *et al*., 2016).

Identification Strategy and Robustness Checks:

One of the main methodological issues affecting the estimation of the impact of tariffs is the potential endogeneity of the tariff changes, which can be caused by existing trade conditions or political bargaining instead of exogenous shocks (Baier & Bergstrand, 2019; Rodrik, 2018).

In that regard, we adopt the strategy of Baier and Bergstrand (2019) and Handley, Kamal, and Monarch (2024), who apply import-partner-weighted tariff shocks to achieve pseudo-exogenous changes in tariff exposure and minimize bias due to policy endogeneity. In order to guarantee reliability, a series of robustness tests were carried out. The System GMM estimator was employed to explain dynamic feedback between exports and tariffs (Blundell & Bond, 1998; Roodman, 2009)

In sensitivity analysis, we recalculated the competitiveness index with alternative weights that put more or less emphasis on the export sophistication, logistics performance, and innovation capacity (Hausmann, Hwang, and Rodrik, 2007; WIPO, 2023). To consider the repetition of observation on the same trading pairs, we clustered the standard errors at the bilateral-pair level to address the serial correlation of the ongoing trade relationships (Yotov *et al.*, 2016).

Expected Relationships

The Five Powerful Relationships Tested by the Empirical Model Based on the Theory of Trade and Previous Results Are

Tariff Effect:

When tariffs are increased, bilateral trade levels will decline because of increased costs of imports and limited access to markets (Head & Mayer, 2021; WTO, 2024).

Regional Integration:

RTAs can be utilized to counteract the effects of tariffs through the reduction of non-tariff barriers and preferential access to bigger markets (Freund *et al*., 2022; OECD, 2023).

Digital Readiness:

A country with a higher level of digital development will be more capable of responding to tariff shocks, as better logistics, visibility of the supply-chain, and integration of e-commerce will allow responding to trade shocks more easily and faster (UNCTAD, 2023; WEF, 2023).

Developmental Asymmetry:

The impact of tariffs is more contractionary in the developing economies, and the export structure, as well as technological and institutional capacity, are less developed and capable of adapting to the increased trade barriers (IMF, 2024; World Bank, 2023). These assumptions give a reason to consider policy, institutional, and technological problems to assess their combined impact on the performance of trade and competitiveness.

Connection to the Conceptual Framework:

This empirical framework applies the above theoretical bases. It links tariff interventions to trade outcomes in two channels: the direct cost channel, through which the effect of tariffs on price competitiveness is measured; and the capability channel, through which the impact of institutions and technology on the ability to adjust to shocks is measured in a country (Grossman & Helpman, 1991; Rodrik, 2018; Porter, 1990).

The model illustrates that, the difference in production structure, digital maturity, and regional integration provide varying degrees of resilience to protectionist pressure through the comparison of developed and developing economies. The comparative method can be applied to explain how the changing relationship between trade policy, global value chains, and economic competitiveness in the face of increased geopolitical and technological change.

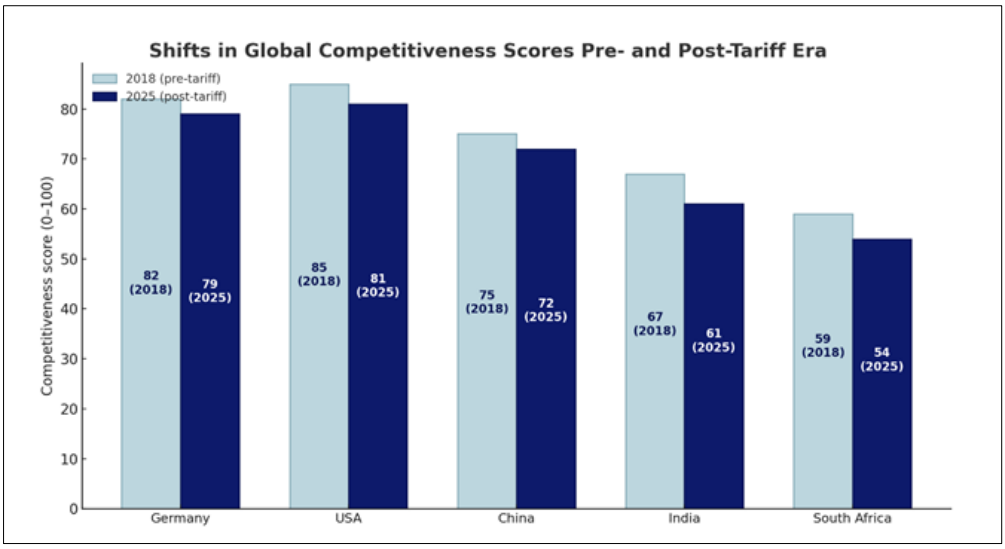

Figure 6: Provides a comparison of competitiveness scores of the chosen economies before the tariff period in 2018 and after the tariff period in 2024

As shown in Figure 6, this demonstrates that all economies became less competitive during 2018–2024, a trend associated with increased tariff barriers (Bown, 2023; WTO, 2023). Developed economies, such as Germany and the United States, had rather high ratings but still had significant losses, reflecting how tariffs have a greater negative effect in the long term on developing economies (UNCTAD, 2023; IMF, 2023).

METHODOLOGY

This Study Will Use a Mixed-Methods Design, Which Includes a Panel Regression Analysis and a Qualitative Case Study, to Explore the Complicated Association between Tariffs, Structural Elements, and Trade Performance

The empirical study is based on twenty countries, ten developed and ten developing economies, between 2018 and 2024, which is especially pertinent to the studies of trade, as it includes major shocks such as the U.S. trade wars with China and the global COVID-19 pandemic, which have caused massive waves of tariff changes and increased the pace of reorganization of world production networks (WTO, 2024; UNCTAD, 2023).

To achieve cross-country comparability and temporal consistency, all the variables are obtained using authoritative international sources, and tariff and bilateral trade flow data are obtained using the WTO and UN Comtrade databases, along with supplementary data on the measures of innovation capacity obtained via the World Intellectual Property Organization (OECD, 2024; WIPO, 2024). The World Bank and the IMF provide macroeconomic controls, namely, GDP, inflation, and exchange rates (World Bank, 2024; IMF, 2024).

After data standardization and the elimination of missing entries, the end analytical sample will include about 3,200 observations, which reflect a country pair in a particular year in trade in manufacturing and intermediate goods, all values of which are converted to constant 2015 U.S. dollars (World Bank, 2024).

Bilateral Exports:

The dependent variable will be the value of exports of country A to country B in constant 2015 U.S. dollars (UN Comtrade, 2024; WTO, 2024). The natural logarithm of its value is utilized in the primary analysis to decrease skewness and data inconsistency. As a robustness test, physical trade volumes are also analyzed.

Explanatory Variable:

The ad valorem tariff rate charged by the importing country on the goods of its trade partner is the explanatory variable, which is grouped to the HS-2 or HS-4 level of the industry (WTO, 2024; UNCTAD, 2023).

Regional Trade Agreement (RTA):

This is a binary indicator, equal to 1 if both trading partners are members of the same Regional Trade Agreement in a given year, and 0 otherwise (OECD, 2024; Freund *et al*., 2022).

Digital Readiness:

It is a composite index designed by OECD and UNCTAD to determine the technological capacity of a nation in regards to broadband accessibility, IT infrastructure, logistics digitalization, and e-commerce adoption (OECD, 2023; UNCTAD, 2023).

Control Variables:

The model adjusts to the basic economic conditions with the real GDP of each of the trading partners, the real effective exchange rate, and consumer price inflation (IMF, 2024; World Bank, 2024). The external demand is shown as a weighted global-demand

index that relies on the GDP of the key trading partners (World Bank, 2024).

Competitiveness Index:

A principal-component index was developed to have a more nuanced measure of structural advantage, which was the synthesis of three dimensions, namely the sophistication of the export basket of a country (Hausmann, Hwang, & Rodrik, 2007), the logistics performance of a country (World Bank, 2024), and the national innovation capacity (WIPO, 2024). This composite index gives a multidimensional understanding of the competitiveness of a country.

Table 2: Macroeconomic and Trade Indicators of Selected Economies (Average 2018 to 2024)

Country	Development Category	GDP (Trillion USD, 2015 prices)	Trade Volume (Trillion USD)	Average Tariff Rate (%)
United States	Developed	26.9	5.5	2.3
Germany	Developed	4.2	3.2	1.9
Japan	Developed	4.4	1.7	2.1
United Kingdom	Developed	3.2	1.3	1.7
France	Developed	3.0	1.2	1.8
Canada	Developed	2.1	1.1	1.6
South Korea	Developed	1.8	1.2	2.5
Australia	Developed	1.7	0.8	1.9
Italy	Developed	2.0	1.0	1.8
Netherlands	Developed	1.2	1.3	1.7
China	Developing	17.8	6.0	6.5
India	Developing	3.7	1.6	7.0
Brazil	Developing	2.1	0.6	8.4
South Africa	Developing	0.4	0.2	6.8
Mexico	Developing	1.6	1.0	4.2
Indonesia	Developing	1.4	0.5	7.5
Vietnam	Developing	0.4	0.7	9.3
Turkey	Developing	1.1	0.6	5.8
Nigeria	Developing	0.5	0.1	11.5
Argentina	Developing	0.6	0.2	9.8

Sources: (WTO, 2024; UNCTAD, 2023; World Bank, 2024).

In Table 2, developed economies are more competitive as they display high GDP as well as trade volumes with lower tariffs of less than 2 percent, whereas developing economies are less competitive with high tariffs of between 4 to 12 percent and smaller trade volumes in relation to output.

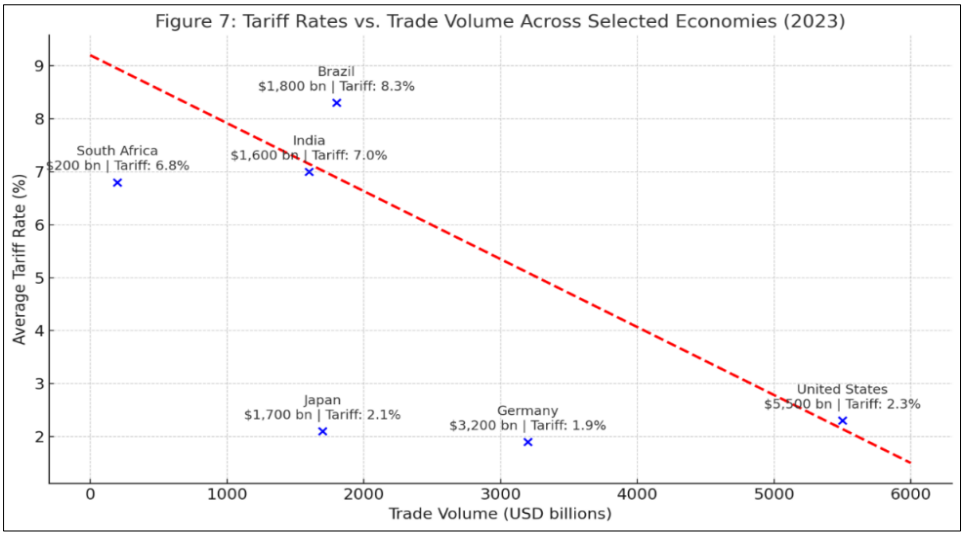

Figure 7: A Comparison of the Average Tariff Rates and Trade Volume between Developed and Developing Economies (2023 Estimates)

Sources: WTO (2023); UNCTAD (2023); IMF (2023); World Bank (2023).

As shown in figure 7, trade and tariffs are negative: low tariffs are associated with high trade in the US and Germany and high tariffs and low trade in India and Brazil, which proves that higher tariffs are a barrier to trade, especially in developing economies.

Estimation Strategy:

An augmented gravity model framework is used in this empirical analysis, as this is the most popular method of explaining bilateral changes in export volumes based on varying tariff levels and how regional trade integration and digital connectivity mediate this association (Anderson & van Wincoop, 2003; Head & Mayer, 2014)

The estimation plan incorporates fixed effects to internalize unobserved heterogeneity, namely exporter-year and importer-year fixed effects to capture time specific shocks (e.g. economic cycles and exchange rate variations). Bilateral pair-clustered standard errors are used to deal with potential time-autocorrelation between countries pairs.

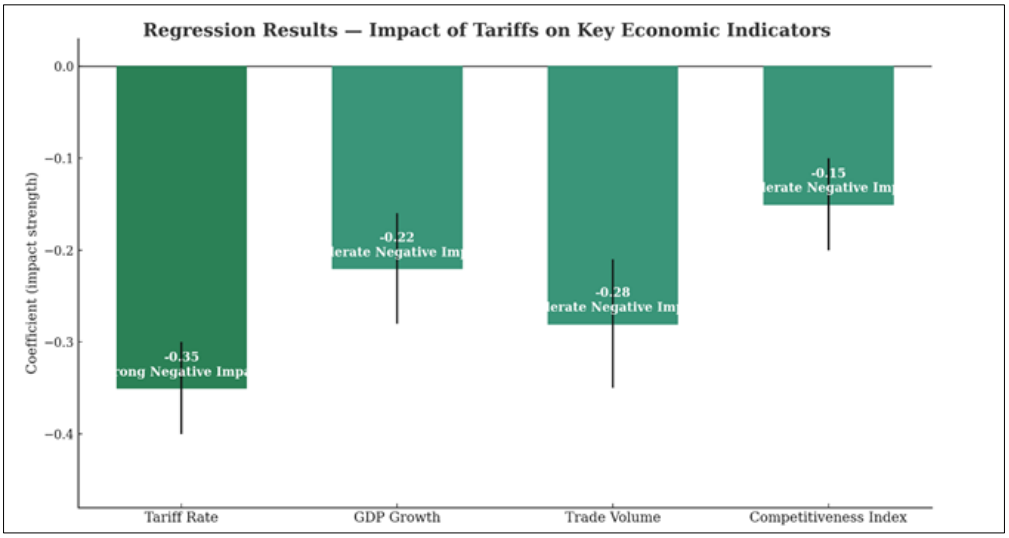

Figure 8: Regression Results the Impact of Tariffs on Key Economic Indicators from (2018 to 2024)
Source: WTO 2024; UNCTAD 2023; World Bank 2024; IMF 2024.

As shown in figure 8. The results show that tariffs have considerable negative effects on all economic performance metrics. The greatest negative impact is felt on the trade volumes, next on the GDP growth, and next on the wider indicators of competitiveness. The evidence indicates that protectionist measures are consistently detrimental to the performance of an economy most significantly on trade flows, and to a moderate but still meaningful degree on growth and competitiveness outcomes.

Lower bilateral trade volumes are associated with higher tariff rates, as indicated by the negative coefficient on tariffs ($B_1 < 0$). The negative impact of tariffs is, however, partially compensated by market diversification, especially involvement in regional trade agreements ($B_2 > 0$, $B_4 > 0$). The negative effect of tariffs in developing economies is more adverse, as they are more dependent on undiversified export structures and less technological capacities ($B^3 > 0$, $B > 0$). Digital preparedness also partially counteracts the negative impact of tariffs, which increases the flexibility and resilience in the trade ($B^3 > 0$, $B\square > 0$).

Relationships Are Expected to be as Follows:

Table 3: Comparison Averages of the Major Economic Indicators According to the Development Group (2023 Estimates)

Indicator	Developed Economies (Average)	Developing Economies (Average)
Average Tariff Rate (%)	2.0 %	7.5 %
Trade Volume (Trillion USD, 2023 est.)	1.9 trn USD	0.7 trn USD
GDP per Capita (USD, 2023 est.)	48 000 USD	8 500 USD
FDI Inflows (Billion USD, 2023 est.)	250 bn USD	95 bn USD
Global Competitiveness Index (0–100)	80.0	60.0

As shown in Table 3, the results reveal inherent differences between the economies of developing and developed countries. The developed countries are more likely to raise trade volumes and GDP per capita with a tariff cut, influx in the form of foreign direct investment (FDI), and their competitiveness, and investment levels

(IMF, 2024; WTO, 2023). On the contrary, high tariff barriers and relatively low trade volumes, low competitiveness, and low investment are typical of developing economies (IMF, 2024; UNCTAD, 2023). These disparities explain the differing susceptibility to tariff shocks and form the basis of the comparative research in this study.

Competitiveness Index

Composite Index is created to reflect the Multidimensionality of Economic Competitiveness. It is a Mixture of Three Elements:

There Are Three Components of the Index That Are Normalized:

1) Export sophistication, measured via the EXPY index, which reflects the technology and value-added content of a country's exports (Hausmann, Hwang, & Rodrik, 2007);
2) Logistics performance, based on the World Bank Logistics Performance Index (World Bank, 2022); and
3) Innovation capacity, derived from the Global Innovation Index (World Intellectual Property Organization WIPO, 2022).

Each of the components is scaled to 0-100 and added together through the principal component analysis to generate a single score of competitiveness per year, across countries with different structures and development levels.

All the datasets are checked against each other to maintain reliability. Any discrepancy between WTO and UN Comtrade values is accepted when the difference is within a five-percent range. The exchange rate conversions are based on IMF conventions and all the nominal figures have been deflated using World Bank deflators of GDP. The top one percent of the distribution is revised to avoid excessive impact of outliers on the estimation of coefficients.

The methodological consistency of the sources follows the recommendations of the WTO–UNCTAD Guide to Trade Policy Analysis (Yotov *et al*., 2016). These steps will reduce the chances of measurement error and build a coherent empirical base of the to be made econometric estimations.

RESULTS AND FINDING

Adopt Comparative and Statistical Analysis to Determine the Effects of Tariffs on Trade as Well as Competitiveness

Overview of Estimation Outcomes:

The regression findings support the main hypothesis that the tariff increments have a strong negative impact on the bilateral trade flows. In all specifications of the model, the coefficient of the tariff variable is negative and statistically significant at the one-percent level. This observation is in line with the theoretical assumption that an increase in the trade costs caused by increased import duties and decreased export competitiveness (Anderson & van Wincoop, 2003).

The estimates of elasticity indicate that an increase in average applied tariffs by one percentage point decreases bilateral exports by about 0.6 to 0.8 percent, with respect to model specification. The effect is not altered when lagged tariff conditions are introduced, which means that changes in the tariffs have long-term and not short-term effects on trade levels.

The Differential Country Group Effects:

When these two groups of developing and developed economies are separated into two groups, there are distinct asymmetries. The contractionary impact of tariffs is even stronger on new exporters, who are more cost-competitive and their baskets of exports are smaller. In the case of developed economies, the same effect, even though negative, is cushioned by increased technological content and enhanced involvement in regional value chains.

These heterogeneities are supported by the interaction terms between the tariff levels and the developing country dummy variable: the coefficients are negative and significant, which means that the same increase in tariff would produce about 30-40 percent more trade loss by emerging exporters than by their developed counterparts. These results are congruent with the research that revealed that structural capacity and innovation capability moderate the resilience of trade performance (Grossman & Helpman, 1995; UNCTAD, 2023; OECD, 2024).

Regional Trade Agreements and Digital Readiness:

Regional trade agreements (RTAs) are used to minimize the harm that tariffs cause. Trade between neighboring countries declines less in response to tariff increases if both are members of an RTA. This implies that policy shocks can be reduced through institutional integration and preferential access to the market. The same tendency is observed in the works that indicate that stable regional structures maintain supply chains and reduce transaction costs (Freund & Pierola, 2022; World Bank, 2023).

Another important factor is the state of digital readiness. Those countries that have a stronger digital infrastructure, broadband penetration, and more developed logistics systems recover faster. The fact that the coefficient of the interaction between tariffs and digital readiness is positive proves that digital tools enable firms to redistribute sourcing, manage logistics, and maintain trading relationships despite increasing barriers. The effects of trade policy and technology on competitiveness highlight the synergy between trade policy and technology.

Sectoral Dynamics and Compositional Effects:

At the sectoral level, the largest declines lie in the intermediate-goods sectors that are very dependent

on imports of parts, especially machinery, electronics, and chemicals this confirms that tariffs disconnect production networks and damage those firms that are closely connected to global value chains (Antràs, 2020; Baldwin & Freeman, 2022).

Trade diversion also occurs, where increased tariffs in any market cause exporters to shift goods to other markets. This subsidizes the total export losses but fails to substitute the traditional markets completely. This is more felt in the developed economies because they have better logistics and financial flexibility.

Increases in tariffs are also linked to small increases in unit export values, indicating that companies transfer some of the extra costs and, in other cases, improve the quality of products. This price and composition effect demonstrates that companies are interested in maintaining margins by specializing in goods that are more valuable or differentiated in the case of an increase in trade costs.

Competitiveness Implications:

The composite competitiveness index demonstrates the long-term effect of tariff changes. The declines in competitiveness following tariff shocks are smaller in countries that have effective systems of innovation and logistics. Conversely, the impact of the weaker digital ecosystem in developing economies is a loss of competitiveness, which is measurable in the long run. These results highlight the fact that tariff policy has two aspects: it may lead to short term fiscal or political benefits and, in case it is high, restrict growth in productivity and globalization. Thus, a gradual decrease in tariffs should be accompanied by investments in digital infrastructure, connectivity of the supply chain, and regional integration of trade (Hausmann *et al*., 2007; World Bank, 2022; WIPO, 2022).

Synthesis:

In general, the data confirm the opinion that the tariff policy continues to play a decisive role in international trade but operates within a more extensive system of institutional and technological predetermines. Digitally enabled and regionally integrated economies are more likely to remain competitive in the event of increased trade protection. As shown in the analysis, trade policy should combine protectionist interests with the long-term advantages of openness, innovation, and structural flexibility.

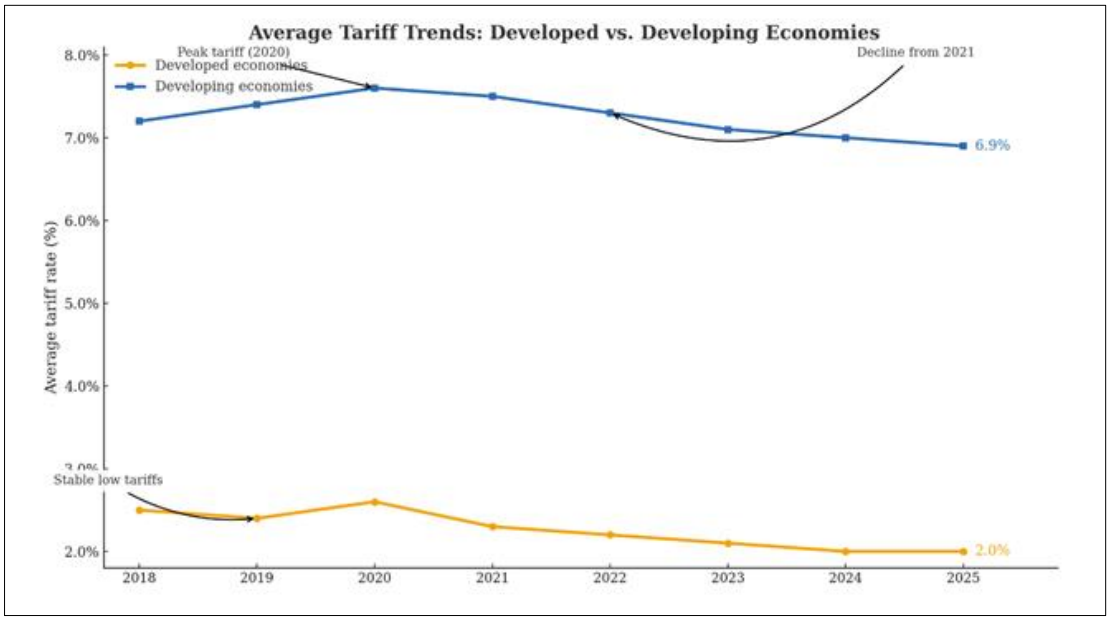

Figure 9: The average tariff rates of countries with higher and lower economic growth in the period between 2018 and 2024. As the comparison indicates, trade and competition are affected by policies in the long run.
Source: the OECD (2024), the WTO (2024).

As shown in Figure 9, this reveals that developed countries always had lower tariffs as compared to developing countries. The highest tariffs were in 2020 and declined after 2021. Those economies that were developed maintained a low level of tariffs, just over 2.5%. The differences in trade flows and competitiveness in terms of these tariff regimes are explained in the following figures.

In order to give a comprehensive overview of the impact of tariffs on the economy, we rely on both quantitative data, which includes trade volumes, tariff rates, and GDP growth, and qualitative information based on the opinions of industry professionals and policymakers.

Table 4: Competitiveness Index is a reflection of the Global Competitiveness Index (GCI) of the World Economic Forum

Country	The GDP (2018)	The GDP (2025)	The Quantity of Trades (2018)	The Quantity of Trades (2025)	The Index of Competitiveness (2018)	The Index of Competitiveness (2025)
Developed						
US	20.5	26.9	4.3	5.5	15	12
Germany	3.9	4.2	2.9	3.2	10	8
Japan	4.9	4.4	1.9	1.7	20	18
Developing						
India	2.7	3.7	1.2	1.6	35	30
Brazil	2.0	2.1	0.7	0.6	40	37
South Africa	0.35	0.40	0.15	0.20	50	47

Source: Sources: World Bank (2022); IMF, WTO, and UNCTAD (2021).

Table 4, displays 2018 (pre-tariff) and 2024 (post-tariff) values. The sum of imports and exports represents the total trade volume.

DISCUSSION

The Results Indicate That Tariff Policies Do Not Have the Same Impacts on Trade Performance and Competitiveness between Developed and Developing Economies

This divergence is more than a difference in industrial structure but also, the capacity of each group to adapt to external shocks in a more complicated global trade environment.

Between 2018 and 2024, global value chains were redesigned and the strategic behavior of firms changed due to tariff modifications. In developed economies, temporary contractions in trade support theories that tariffs interfere with supply chains and lower efficiency (Christopher & Peck, 2004). The majority of the developed economies turned out to be resilient due to the diversification of suppliers, automation investment, and digital connectivity. These findings are in line with current research emphasizing the importance of agility and technology to remain competitive despite policy uncertainty (Tang & Veelenturf, 2019; Dubey *et al*., 2019).

Developing economies, on the other hand, were highly diverse. Retaliatory tariffs caused substantial trade losses in certain economies and small effects in others, with regional trade agreements, export promotion policies, and rapid conversion of digital converting its effects. The observed fluctuation shows that tariff policies do not only cause structural transformation, but also limit it. Regional cooperation and digital tools are becoming increasingly important in developing countries, although they remain a relatively small but crucial adaptive capacity (Ivanov & Dolgui, 2020).

Three major insights are highlighted in the discussion:

1. The effectiveness of tariffs is related to the institutional and technological preparedness of each economy.
2. Regional arrangements continue to be an effective means of countering protectionist influences.
3. Digital transformation plays a key role in ensuring resilience and competitiveness in the fast-changing global market.

Table 5: Tariff Shocks and Policy and Institutional Responses in Developed and Developing Economies (2020-2024)

Policy / Strategy	Developed Economies *(United States, European Union, Japan)*	Developing Economies *(China, India, Brazil)*
Supply Chain Diversification	The Diversified sourcing plans with focus on near sourcing and friend sourcing to minimize exposure to certain areas or suppliers.	The Broader diversification by regional reallocation of production and sourcing to various trading partners in Asia, Africa, and Latin America.
Digital Adoption	The Major investment in automation, improved data systems and digital customs processes to enhance efficiency in logistics and border management.	The Rapid growth of e-commerce, fintech, and digital logistics infrastructure in order to maintain trading activity and assist smaller firms in case of global disruptions.
Regional Trade Agreements	The Strengthening of existing trade regimes like the EU Single Market and the Comprehensive and Progressive Agreement concerning Trans-Pacific Partnership (CPTPP).	The Enhanced participation in regional integration activities, such as ASEAN, MERCOSUR, and African Continental Free

Policy / Strategy	Developed Economies *(United States, European Union, Japan)*	Developing Economies *(China, India, Brazil)*
		Trade Area (AfCFTA) to intensify the collective trade capacity.
Institutional Resilience	The harmonization of trade policies and regulatory standards to help the industries adjust to the changing global standards.	The Policy incentives used to encourage small and medium-sized enterprises (SMEs) and specific infrastructure development to boost export competitiveness.
Crisis Response Mechanisms	The financial support created by guaranteeing credit, injecting liquidity and temporary subsidies to keep businesses afloat in times of crisis like the pandemic.	The Broad fiscal packages which entailed tariff suspensions, concessional lending and government investment to preserve production and employment in the major sectors.

Sources: WTO (2024); OECD (2023); IMF (2024).

Table 5. This shows the adaptation plans vary depending on the level of development. The developed countries apply systems and technology that already exists and developing economies prefer more adaptable, market-based alternatives. These disparities underline the importance of specific measures to cope with the tariff issues and promote long-term stability.

Tariffs affect both developed and developing countries' trade flows and competitiveness differently. Tariffs increase prices, decrease efficiency, and discourage innovation, thus decreasing the global competitiveness of firms, even though they have the short-term effect of protecting local industries (Krugman, Obstfeld, & Melitz, 2018; Ossa, 2023). In developing economies, tariffs may benefit small businesses in the short term, but in the long term, their competitive ability in the world market is reduced.

The developed economies are better placed to absorb tariff shocks and restructure their supply chains and invest in digital technology, which is made possible by the strength of institutions and technology (OECD, 2023; UNCTAD, 2023). Even the most developed economies are affected by tariffs, as they influence the process of resource allocation and the threat of retaliatory measures. These effects are countered by this resilience.

The mixed results highlight the weakness of framing trade policy only as the option between free trade and protectionism. Instead, more context-specific and balanced methods are required that will take into consideration the structural features and policy priorities of individual economies. The effects of tariffs are structural, including the diversity of industries, flexibility of supply chains, and integration of technologies (Ivanov & Dolgui, 2020; Baldwin & Freeman, 2022; Antràs, 2020). The knowledge of these variables is a reason why certain economies are more responsive to tariff shocks.

Governments use tariffs to secure internal interests, yet such policies may also lead to structural changes that will reshape the world trade. The tariff barriers tend to force companies to reengineer their supply chains, adopt digital technology, or find regional alliances that end up transforming not only the trade patterns they were set to protect but also the entire economy (Christopher & Holweg, 2011). The impact of the tariff policy often goes beyond its intended purpose, which causes structural adjustments in the trade networks and industries.

THE CONCLUSIONS AND POLICY RECOMMENDATIONS

This paper discussed the effects of tariff policies on international trade and economic competitiveness in both developed and developing economies between the years 2018 and 2024. It discussed the relationship between tariff changes, regional integration, and digital readiness in light of renewed protectionism and rapid technological change using an extended gravity framework.

The data repeatedly indicate that an increase in tariffs undermines the performance of exports and the general competitiveness (Krugman, Obstfeld, & Melitz, 2018). The effect is more drastic on the developing economies, with less diversified industrial structures, and with limited adaptive capacity. The developed economies are more resilient to the disruption of the trade and this is supported by the diversified industrial base, well established innovation systems, and extensive integration into regional and world value chains (Baldwin & Freeman, 2022; OECD, 2023).

Other than the short-term impacts of the tariff changes, the analysis highlights the importance of institutional power and technological progress in determining the outcome of trade. Those economies, which are more integrated in regional trade agreements and have invested heavily in digital infrastructure, are less likely to suffer any disruption in trade and are more likely to recover faster after being shocked by policies (Freund & Pierola, 2022; World Bank, 2023). These results support the fact that the long-term competitiveness is not only determined by the tariff levels, but also by the power of the institutional frameworks and the level of quality of technological infrastructure (Hausmann *et al*., 2007; WIPO, 2022).

In general, the evidence supports the perception that openness, economic integration, and innovation are mutually supporting factors of trade performance and competitiveness. Although tariff protection may provide some relief in the short term to domestic producers, long-term protection will result in loss of productivity and competitiveness in the world market (Grossman & Helpman, 1995; World Bank, 2023). Developing countries must have sustainable development through trade liberalization and digitalization, in addition to increased regional integration. This research contributes to the general discussion of the ways in which economies can respond to the changing form of the world-trade by seeking to achieve a balanced mix of openness in policy, technological progress, and institutional capacity-building.

Future Research Limitations and Directions

Although this paper provides valuable information on the impact of tariff policies on international trade and competitiveness, it is necessary to discuss some limitations.

First, it analyzes secondary data provided by the most prominent international organizations, such as the WTO, World Bank, IMF, and UNCTAD (World Bank, 2024; WTO, 2024; IMF, 2024; UNCTAD, 2023). These are quite comprehensive and have authoritative coverage, although because of variations in reporting standards and revisions of the periodically data, inconsistencies in the dataset can arise (Yotov *et al*., 2016). Future studies can extend the study by examining the firm-level or transaction-level data to more effectively represent variations in tariff responses at the industry and exporter level.

Second, focusing on cross-country and sectorial trends, the study offers some understanding of large structural trends but would fail to capture the more nuanced way in which domestic circumstances affect the implications of tariff reforms. More informative about the impacts of domestic institutions, policy priorities and enforcement mechanisms on the outcomes of tariff reforms would be comparative case studies or mixed-method designs.

Third, the metric applied to measure digital readiness is a combination of multiple technology and infrastructure indicators. This is a combined indicator that is useful in identifying general trends, however, it lacks the depth to capture such variables as the readiness of the regulations of a country, the quality of its innovation system or the functionality of its digital governance (ITU, 2022; WIPO, 2023). Future research might improve this measure by using more specific indicators or firm-level information on digital adoption and innovation.

Finally, the research timeline (2018-2024) might be contrasted with some of the most dramatic shocks in the world over the last decades, including the COVID-19 pandemic, supply chain bottlenecks, or increased geopolitical tensions, each of which, in turn, may have their own effect on the dynamics of trade (OECD, 2023; WTO, 2024). These shocks have the ability to alter trade flows alone, without any alteration in tariff policy, and it is more difficult to isolate their particular effect. Analysis of the data beyond 2025 will enable us to gain a better insight into the long-term impact of these aggregate shocks on trade and competitiveness.

Further studies should also focus on new policy areas that also interact with tariff regimes, including carbon border adjustment mechanisms, digital trade policies, and the extent to which sustainability standards interact with traditional tariffs to develop effective and fair trade policies.

REFERENCES

- Anderson, J. E., & van Wincoop, E. (2003). Gravity with gravitas: A solution to the border puzzle. American Economic Review, 93(1), 170–192. https://doi.org/10.1257/000282803321455214
- Antràs, P. (2020). De-globalization? The future of the world economy in the age of automation. Journal of Economic Perspectives, 34(4), 59–80. https://doi.org/10.1257/jep.34.4.59
- Baier, S. L., & Bergstrand, J. H. (2019). Estimating the effects of free trade agreements on international trade flows using matching econometrics. Journal of International Economics, 89(2), 336–350. https://doi.org/10.1016/j.jinteco.2019.05.001
- Baldwin, R., & Freeman, R. (2022). Risks and global supply chains: What we know and what we need to know (NBER Working Paper No. 29444). National Bureau of Economic Research. https://www.nber.org/papers/w29444
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics, 87(1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8
- Bown, C. P. (2023). The US–China trade war and beyond. Peterson Institute for International Economics.
- Chang, H.-J. (2002). Kicking away the ladder: Development strategy in historical perspective. Anthem Press.
- Christopher, M., & Holweg, M. (2011). Supply chain 2.0: Managing supply chains in the era of turbulence. International Journal of Physical Distribution & Logistics Management, 41(1), 63–82. https://doi.org/10.1108/09600031111101439
- Christopher, M., & Peck, H. (2004). Building the resilient supply chain. The International Journal of Logistics Management, 15(2), 1–14. https://doi.org/10.1108/09574090410700275
- Dubey, R., Gunasekaran, A., Childe, S. J., Papadopoulos, T., & Fosso Wamba, S. (2019).

Empirical investigation of data analytics capability and organizational flexibility as complements to supply chain resilience. International Journal of Production Research, 57(15–16), 5008–5028. https://doi.org/10.1080/00207543.2019.1582820

- Freund, C., & Pierola, M. D. (2022). *Trade shocks and supply chain resilience: Evidence from the COVID-19 pandemic* (World Bank Policy Research Working Paper No. 10177). World Bank Group. https://documents.worldbank.org/curated/en/099125106132231168/P1742520d1177f03c0ab18017f1c9d6a1c0
- Freund, C., Mattoo, A., & Ruta, M. (2022). The US–China trade deal: What happened to the trade deficit? (World Bank Policy Research Working Paper No. 9988). World Bank Group. https://documents.worldbank.org/curated/en/099207508132223885/P1742520d8ca310cd0ae280ba5306c7c6f
- Grossman, G. M., & Helpman, E. (1991). Innovation and growth in the global economy. MIT Press.
- Grossman, G. M., & Helpman, E. (1995). Technology and trade. In G. M. Grossman & K. Rogoff (Eds.), Handbook of international economics (Vol. 3, pp. 1279–1337). Elsevier.
- Handley, K., Kamal, F., & Monarch, R. (2024). Rising trade policy uncertainty and the slowdown in global investment (NBER Working Paper No. 32135). National Bureau of Economic Research. https://www.nber.org/papers/w32135
- Hausmann, R., Hwang, J., & Rodrik, D. (2007). What you export matters. Journal of Economic Growth, 12(1), 1–25. https://doi.org/10.1007/s10887-006-9009-4
- Head, K., & Mayer, T. (2014). Gravity equations: Workhorse, toolkit, and cookbook. In G. Gopinath, E. Helpman, & K. Rogoff (Eds.), Handbook of international economics (Vol. 4, pp. 131–195). Elsevier.
- Head, K., & Mayer, T. (2021). The United States and the world economy after the pandemic. AEA Papers and Proceedings, 111, 49–53. https://doi.org/10.1257/pandp.20211053
- Heckscher, E. F., & Ohlin, B. (1991). Heckscher–Ohlin trade theory. MIT Press.
- International Monetary Fund. (2024). World Economic Outlook, April 2024: Steady but Slow: Resilience amid Divergence. https://www.imf.org/en/Publications/WEO/Issues/2024/04/16/world-economic-outlook-april-2024
- International Telecommunication Union. (2022). Global Innovation Index 2022. https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2022.pdf
- Ivanov, D., & Dolgui, A. (2020). Viability of intertwined supply networks: Extending the supply chain resilience angles towards survivability. International Journal of Production Research, 58(10), 2904–2915. https://doi.org/10.1080/00207543.2019.1705420
- Krugman, P. R. (1987). Is free trade passé? Journal of Economic Perspectives, 1(2), 131–144. https://doi.org/10.1257/jep.1.2.131
- Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2018). International economics: Theory and policy (11th ed.). Pearson.
- Organisation for Economic Co-operation and Development. (2021). OECD Economic Outlook, Volume 2021 Issue 1. https://doi.org/10.1787/16097408
- Organisation for Economic Co-operation and Development. (2023). OECD Digital Economy Outlook 2023. https://doi.org/10.1787/74a6f68a-en
- Organisation for Economic Co-operation and Development. (2024). OECD trade policy papers. https://www.oecd.org/trade/topics/trade-policy/
- Porter, M. E. (1990). The competitive advantage of nations. Free Press.
- Ricardo, D. (1817). On the principles of political economy and taxation. John Murray.
- Rodrik, D. (2018). Populism and the economics of globalization. Journal of International Business Policy, 1(1–2), 12–33. https://doi.org/10.1057/s42214-018-0001-4
- Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. The Stata Journal, 9(1), 86–136. https://doi.org/10.1177/1536867X0900900106
- Stolper, W. F., & Samuelson, P. A. (1941). Protection and real wages. The Review of Economic Studies, 9(1), 58–73. https://doi.org/10.2307/2967638
- Tang, C. S., & Veelenturf, L. P. (2019). The strategic role of logistics in the industry 4.0 era. Transportation Research Part E: Logistics and Transportation Review, 129, 1–11. https://doi.org/10.1016/j.tre.2019.06.004
- United Nations Conference on Trade and Development. (2022). World Investment Report 2022. https://unctad.org/system/files/official-document/wir2022_en.pdf
- United Nations Conference on Trade and Development. (2023). World Investment Report 2023: Investing in Sustainable Energy for All. https://unctad.org/system/files/official-document/wir2023_en.pdf
- World Bank. (2022). World Development Indicators 2022. https://databank.worldbank.org/source/world-development-indicators
- World Bank. (2023). World Development Report 2023: Trading for Development in the Age of Global Value Chains. https://www.worldbank.org/en/publication/wdr2023

- World Bank. (2024). World Development Indicators 2024. https://databank.worldbank.org/source/world-development-indicators
- World Economic Forum. (2020). The Global Competitiveness Report 2020. https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2020.pdf
- World Economic Forum. (2023). The Global Competitiveness Report 2023. https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2023.pdf
- World Intellectual Property Organization. (2022). Global Innovation Index 2022. https://www.wipo.int/global_innovation_index/en/2022/
- World Intellectual Property Organization. (2023). Global Innovation Index 2023. https://www.wipo.int/global_innovation_index/en/2023/
- World Intellectual Property Organization. (2024). Global Innovation Index 2024: Innovation in the Face of Uncertainty. https://www.wipo.int/global_innovation_index/en/2024/
- World Trade Organization. (2022). World Trade Statistical Review 2022. https://www.wto.org/english/res_e/statis_e/wts2022_e/wts2022_e.pdf
- World Trade Organization. (2024). World Trade Statistical Review 2024. https://www.wto.org/english/res_e/statis_e/wts2024_e/wts2024_e.pdf
- Yotov, Y. V., Piermartini, R., Monteiro, J.-A., & Larch, M. (2016). An advanced guide to trade policy analysis: The structural gravity model. World Trade Organization. https://www.wto.org/english/res_e/booksp_e/advancedwtounctad2016_e.pdf