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Trade Wars and Economic Decoupling: A Geographical Simulation Analysis of Global Value Chain Disruption

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Abstract

This paper examines the economic impacts of trade wars and economic decoupling using the Institute of Developing Economies' Geographical Simulation Model (IDE-GSM), focusing on Trump's "reciprocal tariff" policies announced on April 2 and July 31, 2025. Simulation analysis reveals that protectionist trade policies generate substantial negative-sum outcomes, with the United States experiencing GDP contractions of 3.5-5.2% and the global economy declining by 0.9-1.3%. The analysis shows that relative tariff rates across countries, rather than absolute levels, become the primary determinant of economic impacts for individual countries. Regional economic integration emerges as an effective mitigation strategy, with RCEP deepening generating 1.5 percentage point GDP improvements and CPTPP deepening providing 0.6 percentage point gains for the member countries.

Keywords

trade wars, reciprocal tariffs, spatial economics, regional trade agreements, economic decoupling

1. Introduction

The global economy is facing an unprecedented reversal of globalization, which has fundamentally altered the architecture of international trade. The era of accelerating globalization that characterized the late twentieth and early twenty-first centuries has given way to a complex landscape of trade wars, economic decoupling, and supply chain fragmentation over the past decade. This transformation is most evident in the escalating US-China trade conflict, which has evolved from targeted tariffs in 2018 to comprehensive export controls, particularly centered on semiconductors, under the Biden administration. These bilateral tensions have generated cascading effects throughout global value chains, fundamentally reshaping patterns of production, trade, and economic geography.

The COVID-19 pandemic from 2020 to 2021 and the Ukraine war since February 2022 have further accelerated these fragmentation trends, exposing vulnerabilities in globally integrated supply chains while simultaneously highlighting the enormous costs of economic ‘decoupling,’ which describes situations where economic interdependence between nations diminishes as a

result of declining trade relations, supply chain restructuring, restrictions on technology transfer, and strengthened investment regulations, driven by geopolitical tensions, national security concerns, and intensified technological competition. ,. The pandemic alone reduced global trade by 9% in 2020 (UNCTAD 2022), while Russia's invasion of Ukraine has disrupted critical supply chains for energy, agricultural products, and strategic materials. These overlapping crises, combined with the US-China trade war, have prompted policymakers to prioritize supply chain resilience over efficiency, leading to widespread "friend-shoring" and "near-shoring" initiatives that are fundamentally altering the spatial organization of global production.

Additionally, the "reciprocal tariffs" announced by President Trump on April 2, 2025, dealt a significant blow to the global economy. Since the content of the tariff measures announced at that time was higher in rate and broader in scope than had been anticipated beforehand, markets reacted immediately after the announcement. Stock markets in countries around the world uniformly recorded significant declines, and concerns about tariff policy spread globally. The reaction in US markets was particularly severe. In just two days, from April 3 to 4, the entire US stock market lost $6.6 trillion in market capitalization, the largest loss in history. The VIX index, which indicates the degree of market participants' anxiety, reached 57.96 points on April 9, the highest level since the COVID-19 pandemic, with investor sentiment extremely deteriorated. Against the backdrop of such market turmoil, on the same day, the Trump administration issued an emergency statement announcing a 90-day suspension of tariff measures exceeding 10% on all countries except China. If these "reciprocal tariffs" were fully implemented, they would deal a decisive blow to the free trade system, extending beyond the US-China confrontation.

This paper addresses two critical research questions about the economic impacts of trade wars and economic decoupling. We examine the extent to which trade-impeding policies and events, ranging from the 2018 US-China trade war to 'reciprocal' tariff measures, have affected the global economy, and conduct a quantitative analysis of the degree to which such impacts can be mitigated by regional trade agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Regional Comprehensive Economic Partnership (RCEP).

We employ the Institute of Developing Economies Global Spatial Model (IDE-GSM) to provide quantitative answers to these questions. IDE-GSM is a computable general equilibrium (CGE) model that uniquely incorporates realistic geography, transport costs, and agglomeration effects to analyze how trade policy and infrastructure development shocks propagate through space and influence the reshaping of economic activity. The IDE-GSM's capability to model sub-national regions and transport networks makes it particularly suitable for analyzing the complex

interactions between trade policy, connectivity, and regional development.

The policy relevance of this research extends beyond academic interest to urgent contemporary challenges. As the Trump administration's reciprocal tariff policies threaten to increase the average US tariff rate to 27.6% (Budget Lab at Yale, 2025) – the highest level in over a century – understanding the economic consequences becomes essential for effective policy design. Our findings suggest that while reciprocal tariffs may appear politically attractive to the Trump administration, they generate substantial losses for the US economy.

Our empirical analysis identifies enhanced regional economic integration as the principal mechanism for mitigating the adverse effects of trade-restricting policies and protectionist measures. While bilateral trade conflicts generate negative-sum outcomes—with estimated GDP contractions of 1.3% for the world economy—the deepening of regional integration frameworks can substantially counteract these welfare losses. Specifically, our quantitative findings demonstrate that trade liberalization initiatives, particularly the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Regional Comprehensive Economic Partnership (RCEP), generate economic gains sufficient to offset one-third of trade war-induced losses in the world economy, with many RCEP/CPTPP member countries experiencing complete mitigation of negative impacts. These results suggest that multilateral cooperation among economies committed to free trade principles represents a viable strategy for neutralizing the economic disruptions caused by unilateral protectionist policies, thereby preserving the benefits of international economic integration in an increasingly fragmented global trading environment.

This paper is structured as follows. In Chapter 2, we review relevant literature on trade wars and GVC disruptions, as well as past simulation results on these geopolitical tensions. In Chapter 3, we briefly introduce the IDE-GSM, the simulation model we utilize in analyzing Trump's reciprocal tariff measures. In Chapter 4, we explain scenarios for simulation analysis. In Chapter 5, we present the simulation results and their interpretation. In Chapter 6, we present policy implications based on the simulation results. Chapter 7 provides the conclusion of this paper.

2. Literature Review and Theoretical Framework

2-1. Trade War Literature

Trade wars can be seen as the mirror opposite of free trade agreements, effectively "negative FTAs" that raise barriers instead of lowering them (Kimura 2025). In a tariff war between two countries, both sides experience the reverse of trade-creation benefits: a reduction in mutual trade

(negative trade creation) and a re-routing of commerce toward third parties (trade diversion). For example, Kimura (ibid) notes that when Countries A and B engage in a tariff duel, their bilateral trade shrinks substantially, while third countries (Country C) may capture some of the lost trade flows if they can supply substitutes. This outcome is analogous to classic trade diversion as proposed by Viner (1950) but driven by protectionism rather than preferential liberalization.

The US-China trade war caused substantial losses for both countries. Li, Balistreri, and Zhang (2020) demonstrate that both the United States and China incurred substantial welfare losses comparable in magnitude (though opposite in direction) to gains from major trade liberalizations such as China's WTO accession. Using a GTAP-based CGE model, they find China's real income fell 1.7% while the US declined 0.2%, with bilateral trade plummeting as China's exports to the US dropped 52.3%. Significant trade diversion occurred as China redirected exports to the EU, Canada, and Mexico.

Itakura (2020) extends this analysis using dynamic CGE modeling, finding that full trade war escalation (including tariffs, investment deterrence, and productivity decline) could reduce GDP by 1.35% in the US and 1.41% in China. When global value chains are incorporated, while the direct impact on the two countries becomes smaller, the disruption spreads more widely through interconnected supply chains, increasing world GDP losses from $374 billion to $450 billion.

Amiti, Redding and Weinstein (2019) provide comprehensive empirical evidence that the US tariff increases against China in 2018 functioned as taxes paid primarily by domestic consumers, with import prices. The policy generated substantial trade destruction, with a 1% tariff increase reducing import quantities by approximately 6% and redirecting $183 billion worth of trade annually by December 2018. These trade disruptions created significant welfare losses, including $8.2 billion in cumulative deadweight losses throughout 2018 and $1.4 billion in monthly efficiency losses by year-end, alongside $15.6 billion in tariff revenues transferred from consumers to the government. The findings confirm that trade wars impose real income losses on participating countries while distorting global trade flows, reinforcing traditional trade theory predictions about the substantial costs of protectionist policies.

2-2. Past IDE-GSM Estimations on Trade Wars and Economic Decoupling

IDE-GSM has been applied to analyze multiple trade disruption scenarios, providing crucial insights into the economic impacts. The 2018 US-China trade war study by Kumagai et al. (2021) examined a "full-confrontation" scenario with mutual 25% additional tariffs imposed by both

countries for three years, finding GDP impacts of -0.4% for the US and -0.5% for China, with East Asia (excluding China) gaining 0.1%.

The "US vs. World" scenario analysis, which examined a situation where the United States imposes 25% additional tariffs on all countries worldwide, which can be said to have partially anticipated the reciprocal tariff situation, revealed that multilateral trade wars generate much larger impacts than bilateral conflicts, with the global economy declining by 0.8% compared to only 0.1% for bilateral US-China tensions. This finding highlights the detrimental effects of preventing trade war escalation beyond the US-China confrontation.

The analysis of Russian sanctions over the Ukraine invasion, conducted using IDE-GSM (Kumagai et al. 2022), provides insights into economic sanctions and their circumvention mechanisms. The "full sanctions" scenario, completely blocking trade with Russia, generated a 15.8% GDP decline for Russia and a 0.7% GDP decline for the global economy, while the analysis revealed that if China does not participate in Russian sanctions, the impact on the Russian economy would be significantly mitigated to a 4.6% GDP decline.

The three-bloc world decoupling study by Kumagai et al. (2023) analyzed scenarios with the Western alliance, which consists of 34 countries and regions with high diplomatic policy similarity to the United States, the Chinese-Russian alliance, comprising 16 countries that were subject to some form of economic sanctions by the United States as of January 2023, and neutral countries, where 100% high non-tariff barriers are imposed on trade between the two alliances. Under this scenario, the negative impact on the global economy is substantial, reaching 7.9% of the baseline GDP in 2030. The analysis also found that neutral countries, particularly those in ASEAN and South America, benefit most from bloc confrontation through trade diversion effects. These analytical results presage the current situation in which the Global South is increasing its presence amid US-China rivalry.

3. Methodology: IDE-GSM

3-1 IDE-GSM Framework

Theoretical Foundation of the Economic Model

The IDE-GSM is a computable general equilibrium (CGE) model that uniquely incorporates realistic geography, transport costs, and agglomeration effects to analyze the impacts of trade and

transport facilitation measures. Built on the theoretical foundations of Spatial Economics, the model extends traditional CGE approaches by explicitly modeling at the level of sub-national regions and realistic multimodal transport networks. This spatial dimension proves crucial for understanding how trade and transport policy shocks propagate through space and reshape patterns of economic activity.

The basic structure of this model is closely related to the theoretical framework presented in Chapter 16 of Fujita, Krugman, and Venables (1999), which focuses on differentiated manufacturing under monopolistic competition, omitting agriculture. This generalization demonstrates that agglomeration dynamics emerge solely from industrial linkages, resulting in a unified, closed general-equilibrium framework. It is fundamentally grounded in the monopolistic competition theory developed by Dixit and Stiglitz (1977). However, to ensure consistency with the dataset used in IDE-GSM, we have implemented several modifications. While the FKV Chapter 16 model excludes agriculture and mining sectors and focuses on inter-industry linkages within manufacturing, the IDE-GSM incorporates both agricultural and mining sectors.

The model takes the number of regions and countries as given by the actual data, adopting administrative divisions one or two levels below the national level, and classifies eight industries as follows: agriculture, mining, automotive, electronics and electrical equipment, textiles and garments, food processing, other manufacturing, and services. Each consumer is endowed with one unit of labor and a specified amount of land. The amount of land in each region is fixed and is distributed equally among the population of that region. The exogenous share of land in production is set for agriculture, with the remaining share allocated to mining.

Consumer Behavior

The model assumes a nested utility structure for consumer preferences over goods produced across eight industries. At the upper level, consumers exhibit Cobb-Douglas preferences over composite goods corresponding to each industry, implying constant expenditure shares across industries. At the lower level, within each industry, consumers have CES preferences over differentiated varieties, where the elasticity of substitution between varieties remains constant. Consumer optimization proceeds in two stages: first, utility maximization subject to budget constraints determines the optimal quantity of each composite good; second, expenditure minimization subject to the CES constraint determines the consumption of individual varieties within each industry. The price index for each composite good is defined such that total expenditure on varieties equals the product of the price index and the quantity of the composite

good. Consumer income, comprising wage earnings and land rents, is allocated entirely across the eight composite goods, with no savings assumed in the model.

The model assumes iceberg transport technology, meaning that the amount produced at the factory gate must exceed consumer or firm demand by a factor equal to transport costs, with the excess melting away during transportation. Consequently, the delivered price becomes the mill price multiplied by transport costs, including tariffs and non-tariff barriers.

Production Structure

All products are used for both final consumption and intermediate inputs for production. Labor is employed in all industries, while land is primarily used in the agriculture and mining sectors. The eight industries are divided into two distinct settings: primary industries (agriculture and mining) and the remaining industries. Primary industries are assumed to employ constant returns to scale technology under perfect competition, whereas the remaining industries utilize increasing returns to scale technology under monopolistic competition. Following the Armington assumption, products from a region in a primary industry and products in the same industry from different regions are imperfect substitutes. Products of each firm in the manufacturing and service industries are differentiated within their industry.

The production function for agricultural or mining sectors takes a Cobb-Douglas form, where output in each region and industry is expressed as a function of total factor productivity, labor input, land input, and intermediate inputs from each industry. Profit maximization conditions yield the nominal wage rate for each region and industry, while profit maximization with respect to intermediate inputs determines the demand for intermediate inputs. Using the zero-profit condition for agriculture and mining, the budget constraint for a representative consumer in each region is derived.

In the manufacturing and service sectors, an input composite is expressed as a Cobb-Douglas function of labor and intermediate goods, which is used to calculate both fixed costs and marginal costs of firms. Profit maximization yields the price of varieties produced by firms in each industry and location. Using the definition of price indices, expressions for nominal wage rates in each region and industry are derived.

Dynamic Adjustment Mechanism

Two replicator equations determine the movement of workers between industries and regions. First, the rate of change in the share of workers for each industry within a region is determined by comparing the real wage rate in that industry with the average real wage rate in the region. The real wage rate is calculated as the nominal wage plus allocated land rent, divided by the price index of the eight types of goods. This dynamic determines workers' choice of industry within a region.

Second, the rate of change in the share of workers for each region is determined by comparing the average real wage rate in that location with the average real wage rate of the country to which the region belongs. This dynamic determines the interregional movement of workers within countries.

Labor moves between industries and regions according to real wage differentials, but the speed of this movement is subject to upper limits, ensuring that wage gaps do not adjust instantaneously. This realistic feature captures the various frictions that impede labor mobility, including relocation costs, information constraints, sector-specific human capital, and regional amenities. Each simulation cycle of the IDE-GSM represents one year and concludes with this labor movement process. Based on the new distribution of labor across industries and regions, wages, regional-level GDP (GRDP), price indices, and other economic variables are recalculated as short-run equilibrium outcomes for the subsequent period.

Through this theoretical framework, it becomes possible to comprehensively analyze the impact of changes in transport costs (in this study, changes in tariff policy) on production, consumption, and labor allocation across regions and industries through the mechanisms of agglomeration and dispersion in spatial economics.

3-2. Spatial Units and Data Requirements

The IDE-GSM employs a hierarchical spatial structure that models economic activity at sub-national levels while maintaining global coverage. The dataset encompasses 169 countries and economies, as well as 3,265 sub-national regions. We have constructed regional-level GRDP data for the eight sectors mentioned above, for 2015. Data compilation methods vary by region but follow consistent methodological approaches. Typically, we utilize GDP and GRDP data provided by national statistical offices, along with industrial surveys and censuses, to disaggregate the GDP into finer sub-sectors when a country lacks GDP data by sub-national region and industry. For countries without GRDP by industry, such as most African countries, the model utilizes satellite

imagery, land cover data, population data, and mining locations to disaggregate national sectoral GDP to sub-national regions.

The model requires extensive data on transport networks, including highways, railways, sea routes, and air shipment connections. Regarding the transport network data, the number of routes included in the dataset used in the simulation is 20,212 (land: 13,009, sea and inland waterway: 1,317, air: 2,672, railway: 3,139, high-speed railway: 75). The route data consists of start cities, end cities, the distances between the cities, and the quality of the route represented by the vehicle's speed running on the route.

Regarding the consistency of economic data over time, we calibrate each country's technological progress rate to ensure that the simulation can reproduce country-level real GDP trajectories from 2015 to the latest World Economic Outlook (WEO) forecast (five years from the current period) by IMF. Similarly, for population dynamics, we set country-level population growth rates so that the simulated national populations evolve in accordance with the UN Population Division's medium-variant projections. The model endogenously determines the distribution of population across regions within each country.

3-3. Transport and Other Parameters

Trade cost modeling in the IDE-GSM framework incorporates multiple modes of transportation and optimizes realistic route choices according to the lowest-cost combination of routes for each trade flow. This multi-modal approach proves essential for analyzing how connectivity improvements in one mode affect overall trade costs and economic geography.

Trade costs in IDE-GSM (Figure 1) encompass multiple determinants. When goods are transported from producers to consumers, transport costs arise as freight charges proportional to distance. Simultaneously, time costs occur in proportion to transportation duration, which varies by commodity type. Electronic products have high time costs, while mining products have low time costs. Furthermore, when goods cross national borders, additional monetary and temporal costs are incurred at border crossings. Additionally, import tariffs, non-tariff barriers, and social and cultural barriers add to trade costs.

[Insert Figure 1 around here]

We estimate the sum of tariffs and non-tariff barriers (TNTBs) using the log odds ratio approach

developed by Head and Mayer (2000). Industry-level TNTBs are directly estimated for 69 countries, while estimates for the remaining countries are derived based on their per capita GDP levels. Non-tariff barriers (NTBs) are subsequently calculated by subtracting tariff rates from TNTBs.

Tariff data are sourced from the World Integrated Trade Solution's TRAINS database. For each country pair, we aggregate the lowest available tariff rates across all tariff schemes at the industry level using simple averages. These schemes include multilateral FTAs, bilateral FTAs, and other arrangements such as the Generalized System of Preferences. For ASEAN countries, we incorporate gradual tariff elimination schedules from AFTA (ASEAN Free Trade Area) and six ASEAN+1 FTAs. Product-level information on zero tariff achievement in ASEAN+1 FTAs is obtained from ERIA's FTA database.

This methodology yields differentiated bilateral tariff rates and importer-specific NTBs by industry on a tariff-equivalent basis. Total transport costs are calculated as the product of physical transport and time costs combined with the sum of tariff rates and NTBs.

Industry-specific parameters are presented in Table 1. We primarily adopt the elasticity of substitution for manufacturing sectors from Hummels (1999) and estimate it for the services sector. Estimates for the elasticity of services are derived from estimating standard gravity equations for trade in services, incorporating independent variables such as the importer's GDP, the exporter's GDP, the importer's corporate tax rate, geographical distance between countries, an FTA dummy variable, a linguistic commonality dummy, and a colonial relationship dummy. For this estimation, we primarily employ data from the Organisation for Economic Co-operation and Development (OECD) Statistics on International Trade in Services.

[Insert Table 1 around here]

The consumption share by industry is uniformly determined across the entire region in the model. While varying shares by country or region would enhance realism, this approach is precluded by the absence of sufficiently reliable consumption data. A single labor input share for each industry is uniformly applied throughout the region and time period in the model. Although these may vary across countries and regions over time, we employ an average value derived from Thailand, a country at an intermediate stage of economic development, using data from the Asian International Input-Output Table for 2005 published by IDE-JETRO. For manufacturing sector data, we utilize information collected in the survey conducted by JETRO (2013). Specifically,

this data is used to calculate labor input shares for manufacturing industries.

3-4. Scenario Design and Calculation of Regional Impacts

The IDE-GSM scenario design process involves establishing baseline projections that incorporate expected economic growth, demographic changes, and infrastructure development. The baseline scenario assumes continuation of the current situation, providing a reference point for analyzing alternative policy scenarios. This approach enables the isolation of trade policy impacts from other economic trends affecting regional development.

Comparative scenarios are designed to capture the full range of potential impacts of changes in trade policy and upgrades to transport infrastructure. The model examines how these changes impact GRDP by industry and regional population.

4. Scenario Analysis

4-1. Baseline Scenario

In the baseline scenario, we assume a business-as-usual situation with the following assumptions:

Each country's national population is assumed to increase at the rate forecasted by the United Nations Population Division until 2030.

International labor migration is prohibited. We make this assumption because international migrants are fewer in number compared to domestic migrants, and migration flows are difficult to predict due to their dependence on individual countries' immigration policies and other factors.

Tariffs are adjusted according to free trade agreements (FTAs) and economic partnership agreements (EPAs) currently in effect, following the phased-in tariff reduction schedules specified by these agreements. This includes the tariff reduction schedules under the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Regional Comprehensive Economic Partnership (RCEP), as well as the US-China tariff increases implemented between 2018 and 2019.

We assign different exogenous growth rates to each country's technological parameters to replicate the real GDP growth trend from 2015 to 2029, as estimated and provided in the IMF’s

WEO, April 2025. After 2029, we gradually reduce the calibrated growth rates of technological parameters to half over a 20-year period.

The above assumptions are maintained in the following two scenarios, unless otherwise specified.

4-2. 'Reciprocal Tariff' (April 2, 2025) Scenario

The 'reciprocal tariff' (April 2, 2025) scenario assumes that the tariff rates announced by President Trump on April 2 will remain in effect throughout the presidential term. This scenario incorporates the following key assumptions.

The country-specific tariff rates announced by the United States on April 2 in Executive Order 14257(Table 2) are assumed to be in effect and will continue until 2028. However, these tariffs are not applied to the automotive industry; instead, a separate 25% additional tariff is imposed under Section 232 of the Trade Expansion Act. For China, reciprocal tariffs (34%) are added to the 20% additional tariffs introduced immediately after the inauguration of the second Trump administration under the International Emergency Economic Powers Act (IEEPA), and totaling 45% for the automotive industry (20% + 25%). For Mexico and Canada, the United States-Mexico-Canada Agreement (USMCA) is assumed to apply to all goods, and neither these tariffs nor the additional tariffs on the automotive industry are imposed. For other countries where country-specific tariff rates have not been published, a 10% additional tariff, which took effect on April 5, is assumed. Retaliatory tariffs from each country against the United States are not assumed.

Regarding exempt items listed in Annex II of Executive Order 14257—iron, steel, aluminum, copper, pharmaceuticals, semiconductors, lumber, specific critical minerals, energy, and energy products—these cannot be clearly separated within IDE-GSM's industrial classification and are therefore not addressed separately; consequently, they are subject to reciprocal tariffs in the scenario here. Countries with high proportions may have their negative impacts overestimated in the current simulation.

[Insert Table 2 around here]

4-3. 'Reciprocal Tariff' (July 31, 2025) Scenario

The 'reciprocal tariff' (July 31, 2025) scenario assumes that the tariff rates on Executive Oder

14326 announced by President Trump on July 31(Table 2) will remain in effect throughout the presidential term. This scenario incorporates the following key assumptions.

For China, two assumptions were prepared. One is a case where the total tariff rate of 54% remains the same as on April 2, and the other is a case where tariffs are reduced to 30% by combining the 20% fentanyl tariff with the minimum 10% reciprocal tariff.

The assumptions regarding Mexico, and Canada from the 'Reciprocal Tariff' (April 2, 2025) scenario are maintained. For country-specific additional tariff rates for remaining countries, the tariff rates announced on July 31 are applied, with a 10% additional tariff rate imposed on countries not specified in that announcement. For the automotive sector, the April 2 scenario settings are maintained for countries that do not have the agreements described below.

This scenario reflects only U.S. tariff rates and does not incorporate tariffs, non-tariff barriers, investment commitments, or promises to purchase specific products from counterpart countries. Because, while U.S. tariff rates can be confirmed through presidential orders and other official documents, the concessions made by counterpart countries to the United States are, in most cases, not published as formal documents and remain extremely opaque.

For the United Kingdom, automotive imports are subject to a low-tariff quota of up to 100,000 units at an MFN tariff of 2.5% + 7.5% = 10%. Since the UK's actual passenger car exports to the United States in 2024 were approximately 100,000 units, the current tariff rate plus 7.5% is applied. For the EU, goods with current tariffs of 15% or below have their tariff rates adjusted to 15%, while goods with tariffs exceeding 15% maintain their existing rates. For Japan and South Korea, additional tariffs of 15% are applied to exports to the United States, excluding automotive products, while automotive products face an additional tariff of 12.5%.

4-4. Economic Integration Scenarios (CPTPP/RCEP)

The economic integration scenarios are as follows:

RCEP deepening: Non-tariff barriers (NTBs) among RCEP member countries are expected to be reduced by 10% from 2026 onward. RCEP comprises 15 member countries: the 10 ASEAN nations, China, Japan, South Korea, Australia, and New Zealand.

CPTPP deepening: Non-tariff barriers among CPTPP member countries are reduced by 20%

starting from 2026. The CPTPP comprises 12 member countries: Japan, Australia, Brunei, Canada, Mexico, Chile, Singapore, Malaysia, New Zealand, Peru, Vietnam, and the United Kingdom.

The rationale for setting the NTB reduction at 10% for RCEP and 20% for CPTPP is that CPTPP represents a higher-standard regional trade agreement compared to RCEP across multiple dimensions of trade governance, including comprehensive investor-state dispute settlement (ISDS) provisions, binding labor and environmental standards, detailed state-owned enterprise disciplines, robust intellectual property protections, and comprehensive coverage under binding dispute settlement with potential trade sanctions. Note that the CPTPP entered into force in December 2018, while the RCEP entered into force in January 2022. The baseline scenario already incorporates the tariff reduction schedules under both agreements; therefore, this analysis examines only the additional effects of NTB reductions.

In this analysis, we examine the impacts by adding these three scenarios to the July 31 reciprocal tariff framework.

5. Impact Analysis

5-1. Impacts of Reciprocal Tariff (April 2, 2025) Scenarios

The IDE-GSM simulation results for the reciprocal tariff (April 2, 2025) scenario reveal profound spatial economic impacts that extend far beyond the bilateral US-China trade war (Table 3). The analysis demonstrates that reciprocal tariff scenarios yield negative-sum outcomes with asymmetric regional distributions, fundamentally altering the global economic geography. The United States experiences a massive 5.2% decline in GDP compared to the 2027 baseline GDP. Given that the US economic growth rate in 2024 was 2.8%, this suggests a high probability of recession if the proposed tariff rates are implemented and remain in place throughout the presidential term. The global economy as a whole experienced a 1.3% decline in GDP, representing a substantial and non-negligible negative impact.

[Insert Table 3 around here]

The sectoral analysis of the US reveals differential impacts across industries. The automotive sector experiences the most severe disruptions, with output declining by 9.0% in the US, followed by services (-6.0%), mining (-3.3%), and agriculture (-2.6%). Conversely, sectors experiencing significant positive impacts include textiles (4.6%), other manufacturing (1.9%), food processing

(1.4%), and electrical and electronics (1.0%).

China experiences a 1.9% decrease in overall GDP, with all sectors except mining experiencing adverse effects. Other manufacturing (-3.6%), food processing (-3.5%), electrical and electronic products (-1.7%), and automotive (-1.3%) show the most significant negative impacts.

Mexico emerges as the primary beneficiary, with a 4.0% GDP increase, followed by Canada with a 2.9% increase, reflecting the exclusion of USMCA partners from reciprocal tariffs. Since this simulation assumes all products fall under USMCA coverage, these positive effects are likely overestimated.

Other countries exhibit mixed positive and negative impacts. Countries experiencing positive effects include Singapore (2.6%) and Chile (1.5%), as well as other South American nations. Conversely, countries experiencing negative impacts include Vietnam (-0.7%), Thailand (-0.5%), and Cambodia (-0.2%).

Japan's impact shows a 0.2% increase in overall GDP, although sectoral analysis reveals adverse effects in the automotive (-1.7%) and food processing (-0.6%) industries.

The Trump’s reciprocal tariffs impose the most severe negative impact on the US economy among all global economies. The impact on the US economy operates through three interconnected channels.

First, US consumers face direct negative impacts. Import tariffs force them to purchase goods at higher prices than before. Second, US producers experience adverse effects because many of them source materials and intermediate goods from overseas during their manufacturing processes. When tariffs are imposed on these imports, corporate profitability is compressed and production activities are constrained. Third, demand shifts toward domestic products occur. As import prices rise due to tariffs, US consumers and businesses may reduce purchases of foreign goods while increasing purchases of substitute domestic products. This creates increased demand for domestic producers, potentially leading to expanded production as a positive factor.

The simulation's comprehensive evaluation of these three elements reveals that, for the United States, the negative impacts (decline in consumer welfare and increases in production costs) substantially outweigh the positive impacts (substitution effects toward domestic production).

China also suffers significant adverse impacts, amounting to 1.9% in real GDP terms. This reflects China's assignment of a high 34% tariff rate under "reciprocal tariffs," with an additional 20% tariff severely disadvantaging Chinese exports compared to those of other countries.

Economic impacts on countries other than the US and China, including Japan, primarily result from the interaction of two opposing effects. Negative impacts occur when tariffs imposed on the home country's exports in the US market raise their selling prices and reduce price competitiveness. This decreases demand for these products in the US and reduces exports. Positive impacts arise through "trade diversion effects," whereby third-country products become relatively advantageous as high US tariffs on China reduce Chinese exports to the US. However, this trade diversion effect is limited in the automotive industry, which faces uniform 25% tariffs globally.

Negative impacts from US tariffs on home countries and positive impacts primarily from trade diversion from China offset each other. Which effect that dominates depends on various factors, including the tariff rates imposed by the US on each country, each country's export dependence on the US market, the domestic industrial structure (particularly the presence and scale of industries competing with Chinese products), and geographical positioning and competitive conditions relative to other countries. If positive effects exceed negative effects, Trump’s reciprocal tariffs could theoretically benefit specific industries in certain countries. The key issue is relative tariff rates compared with other countries, particularly whether they are higher or lower than those imposed on China.

Several factors may explain the seemingly counterintuitive "positive" impact on some countries including Japan in these calculations. First, IDE-GSM does not explicitly incorporate international capital movement elements, such as profit remittances (including dividends and interest income) from overseas subsidiaries, into its framework. The economic impacts on Japan as a geographical entity do not necessarily align with the impacts on Japanese companies (including globally operating multinationals) as a nationality-based classification. For example, while this analysis estimates negative effects on the US automotive industry, a portion of these impacts also affects Japanese automakers operating in the US. However, in the model, this appears as a decrease in US GDP and does not directly affect Japanese GDP.

Additionally, this model sets the policy evaluation time point at 2027, three years after the reciprocal tariff implementation (assuming policy continuation). This is intended to evaluate impacts after short-term market disruptions and adjustment processes have stabilized and

economic structures have adapted to the new tariff system. Therefore, adjustment costs expected to occur during reciprocal tariff implementation—such as modifications to corporate production plans, supply chain reorganization, and labor adjustment costs across industries and regions—may not be fully considered in this analysis.

Furthermore, this simulation model does not explicitly incorporate the effects of exchange rate fluctuations on the economy or the impacts of increased policy uncertainty, which can cause temporary stagnation or delays in corporate investment activities and international trade. In reality, trade policy uncertainty has a significant impact on corporate medium- to long-term capital investment plans and import-export contracts. This model analyzes the medium-term impacts of tariff changes on real economic production, consumption, and trade activities while abstracting from short-term uncertainty effects, which require careful consideration.

5-2. Impacts of Reciprocal Tariff (July 31, 2025) Scenarios

The impacts of the reciprocal tariff (July 31, 2025) scenario, assuming the 54% tariff rate on China remains unchanged, exhibit similar overall trends to those of the reciprocal tariff (April 2, 2025) scenario (Table 4). The impact on the global economy is a decline in GDP of 1.2%, representing a modest improvement of 0.1 percentage points from the April 2 scenario. The impact on the US economy is -4.9%, showing an improvement of 0.3 percentage points from the April 2 scenario, though the negative magnitude remains substantial. The impact on the Chinese economy is -2.0%, deteriorating by 0.1 percentage point from the April 2 scenario. This deterioration can be attributed to the fact that while US tariffs on China remain the same across both scenarios, tariff negotiations have reduced reciprocal tariff rates for many of the US's major trading partners, thereby worsening China's relative competitive position.

[Insert Table 4around here]

Countries that achieved reductions through tariff negotiations demonstrate improved economic impacts. Vietnam shows the most significant improvement, from -1.3% to 0.3%, representing a 1.6 percentage point improvement. This results from Vietnam's tariff rate being reduced from 46% on April 2 to 20% in the July 31 scenario. Other countries that had been assigned high tariffs on April 2 also show substantial improvements, including Sri Lanka (a 1.4 percentage point improvement), Cambodia (a 0.9 percentage point improvement), and Thailand (a 0.9 percentage point improvement).

The fact that overall trends remain largely consistent across both scenarios, despite substantial changes in tariff rates for non-China countries between April 2 and July 31, suggests that the exceptionally high tariffs on China (54%) within the reciprocal tariff framework are the dominant factor causing significant adverse effects not only on the US and Chinese economies but also on the global economy. US-China tariff negotiations are ongoing, and although the final settlement level remains uncertain, the decoupling of US-China trade will undoubtedly impose substantial costs, particularly on the US economy.

The impacts of the reciprocal tariff (July 31, 2025) scenario, with the assumption that the 30% tariff rate on China, exhibit smaller negative impacts on the global economy and the US-China economies compared to the reciprocal tariff (April 2, 2025) scenario (Table 4). The impact on the global economy is a decline in GDP of 0.9%, representing an improvement of 0.4 percentage points from the April 2 scenario. The impact on the US economy is -3.5%, showing a significant improvement of 1.7 percentage points from the April 2 scenario, though the negative magnitude remains substantial. The impact on the Chinese economy is -1.1%, improving by 0.8 percentage points from the April 2 scenario.

On the other hand, a considerable number of countries experience worse economic impacts compared to the April 2 scenario. Countries that enjoyed significant benefits under the April 2 scenario see their positive gains diminish, including Singapore (1.6 percentage points worse), Mexico (1.5 percentage points worse), and Canada (1.2 percentage points worse). Additionally, ASEAN countries such as the Philippines, Malaysia, Myanmar, and Thailand, as well as Japan, also experience deteriorating economic conditions compared to the April 2 scenario. This indicates that even though these countries may have achieved reduced reciprocal tariff rates through trade negotiations with the United States, if tariffs on China are substantially reduced, that effect outweighs the benefits, resulting in an overall negative economic impact.

5-3. Mitigation by Regional Integration Scenarios

We analyzed the deepening of RCEP and CPTPP in addition to the Reciprocal Tariff (July 31, 2025) scenario with the assumption that the 54% tariff rate on China remains unchanged.

The RCEP scenario analysis reveals particularly strong mitigation potential due to the close East Asian trade relationships and inclusion of China (Figure 2). Under the RCEP deepening scenario, the GDP of RCEP member countries is boosted by 1.5 percentage points compared to the 2027 baseline GDP. The magnitude of the boost ranges from 0.9 percentage points for China to 3.9

percentage points for Australia. The economic impact on China is also nearly halved, improving from -2.0% to -1.1%.

[Figure 2 inserted around here]

Meanwhile, the CPTPP deepening scenario is projected to boost the GDP of CPTPP member countries by 0.6 percentage points in 2027 (Figure 3). The magnitude of the boost ranges from 0.4 percentage points for Japan to 3.9 percentage points for Brunei. These results demonstrate that deepening RCEP and CPTPP serves as an effective mitigation measure against reciprocal tariffs. Particularly for small and medium-sized countries that are in a weak bargaining position vis-à-vis the United States in trade negotiations, the positive economic effects of such RTA deepening may well outweigh the negative impacts from US tariff increases.

[Figure 3 inserted around here]

6. Discussion and Policy Implications

The simulation analysis conducted in this study reveals that if the reciprocal tariffs conceived under the second Trump administration were to be fully implemented, the United States itself would suffer the most significant economic damage. This finding suggests that one of the optimal response strategies might have been to collectively ignore the reciprocal tariffs through international coordination and adopt a wait-and-see approach. In such a scenario, as the severe negative impacts on the US economy became apparent, the Trump administration might have been compelled to withdraw or substantially modify this policy unilaterally.

From a game-theoretic perspective, however, the current situation can be understood as resembling a "prisoner's dilemma." A prisoner's dilemma refers to a situation in which individual actors, pursuing only their interests, ultimately arrive at an outcome that is undesirable for all parties involved. In the present case, even if coordinated action by countries worldwide to ignore the Trump tariffs had been the optimal strategy for the collective good, each country faces strong incentives to negotiate individually with the Trump administration to secure tariff rates that are favorable (or less disadvantageous) to its economy, given that relative differences in tariff rates affect their economic interests. Consequently, the development whereby many countries engaged in separate trade negotiations with the United States was inevitable.

Regarding international negotiations surrounding these tariffs, the fact that countries pursued individual negotiations cannot necessarily be deemed entirely harmful for the global economy. If many countries succeed in negotiations with the United States, resulting in tariff rates being substantially reduced or eliminated compared to the original proposals, this would constitute a desirable outcome for the world economy.

Nevertheless, from a long-term perspective, significant questions remain regarding whether such an outcome would truly be beneficial for the healthy development of the global economy. The approach whereby a major power uses access to its large domestic market as a bargaining chip to compel unilateral concessions from other countries through bilateral negotiations represents a complete departure from the international community's efforts under the postwar GATT/WTO system to advance trade liberalization and dispute resolution based on multilateral rules.

Given the Trump administration's past statements and actions, as well as the opaque decision-making process behind the reciprocal tariff rates analyzed in this study, it is readily conceivable that even if agreements on tariff reductions are reached temporarily, the administration would resort to tariffs as a diplomatic pressure tool and demand new negotiations if subsequent US trade deficit reduction fails to proceed as expected. Viewed in this light, the situation in which countries are compelled to prioritize their short-term national interests and pursue individual negotiations with the Trump administration may indeed represent a form of the prisoner's dilemma. Such power politics-based trade relations carry the risk of undermining the predictability and stability of the international economic system as a whole, potentially becoming an impediment to long-term growth.

The appropriate response to such circumstances would be to advance the frameworks of existing and new Regional Trade Agreements (RTAs) such as the RCEP and the CPTPP, as demonstrated in this paper. Given the dysfunction of the WTO, deepening large-scale RTAs represents a viable direction for promoting free trade. Excessive dependence on exports to the US market poses high risks for both countries and enterprises. Diversification of export destinations should be pursued through the deepening of RTAs and other measures.

From a theoretical perspective, this research reveals a crucial distinction between bilateral trade wars and reciprocal tariff regimes in determining economic impacts. Unlike traditional bilateral trade conflicts, the reciprocal tariff framework demonstrates that relative tariff rates across countries, rather than absolute tariff levels, become the primary determinant of each country's economic outcomes. Particularly significant is the finding that China's tariff rates serve as a

benchmark against which other countries' competitive positions are evaluated. Countries that successfully negotiated lower tariff rates relative to China experienced positive trade diversion effects, while those facing similar or higher rates suffered corresponding disadvantages. This relative tariff mechanism fundamentally alters the strategic calculus of trade policy, as countries' welfare depends not only on their trade relationship with the tariff-imposing nation but also on the comparative treatment of their competitors.

7. Conclusion

This study presents a comprehensive numerical analysis of trade wars and economic decoupling using the IDE-GSM, with particular focus on the Trump administration's "reciprocal tariff" policies announced in 2025. Our findings reveal that protectionist trade policies, despite their political appeal, generate substantial negative-sum outcomes that disproportionately harm the implementing country. The simulation results demonstrate that the United States would experience the most severe economic damage under its reciprocal tariff regime, with GDP contractions of 3.5% to 5.2%, while global GDP would decline by 0.9% to 1.3%. These impacts extend far beyond bilateral US-China trade tensions, reshaping global economic geography through complex spatial transmission mechanisms.

The analysis identifies regional economic integration as the most effective mitigation strategy against trade war disruptions. The deepening of regional trade agreements such as RCEP and CPTPP can substantially offset welfare losses through trade diversion effects and enhanced connectivity. Specifically, RCEP deepening generates GDP improvements of 1.5 percentage points for member countries, while CPTPP deepening provides 0.6 percentage point gains. These findings suggest that multilateral cooperation among economies committed to free trade principles represents a viable strategy for preserving the benefits of international economic integration in an increasingly fragmented trading environment.

The policy implications of this analysis extend beyond academic interest to urgent contemporary challenges facing the global economy. While the current situation resembles a prisoner's dilemma in which countries pursue individual negotiations to minimize their losses, the optimal long-term strategy requires strengthening multilateral trade frameworks. The dysfunction of the WTO system makes regional trade agreements increasingly crucial as vehicles for maintaining open trade relationships. However, policymakers must recognize that short-term bilateral accommodations with protectionist powers may undermine the stability and predictability of the international economic system.

As geopolitical tensions continue to fragment global value chains, countries that invest in diversified regional partnerships and maintain their commitment to multilateral trade principles will be best positioned to navigate an increasingly uncertain international economic environment.

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Table 1. Industry-specific parameters in IDE-GSM

	Elasticity of substitution	Share of labor input	Share in consumption
Agriculture	3.8	0.41	0.035
Automotive	4	0.40	0.014
Electronics	6	0.40	0.022
Textile	8.4	0.37	0.015
Food	5.1	0.34	0.026
Others	5.3	0.44	0.129
Service	3	0.57	0.700
Mining	5.6	0.17	0.058

Source: Compiled by authors from various sources.

Table 2. Reciprocal Tariff Rates (April 2 ,2025 vs. July 31, 2025)

Country/Territory	July 31, 2025	April 2, 2025	Change	Country/Territory	July 31, 2025	April 2, 2025	Change
Afghanistan	15%	NA	-	Madagascar	15%	47%	-32%
Algeria	30%	30%	0%	Malawi	15%	17%	-2%
Angola	15%	32%	-17%	Malaysia	19%	24%	-5%
Bangladesh	20%	37%	-17%	Mauritius	15%	40%	-25%
Bolivia	15%	NA	-	Moldova	25%	31%	-6%
Bosnia and Herzegovina	30%	35%	-5%	Mozambique	15%	16%	-1%
Botswana	15%	37%	-22%	Myanmar (Burma)	40%	44%	-4%
Brazil	10%	NA	-	Namibia	15%	21%	-6%
Brunei	25%	24%	1%	Nauru	15%	30%	-15%
Cambodia	19%	49%	-30%	New Zealand	15%	NA	-
Cameroon	15%	11%	4%	Nicaragua	18%	18%	0%
Chad	15%	13%	2%	Nigeria	15%	14%	1%
China	NA	34%	-	North Macedonia	15%	33%	-18%
Costa Rica	15%	NA	-	Norway	15%	15%	0%
Côte d'Ivoire	15%	21%	-6%	Pakistan	19%	29%	-10%
DR Congo	15%	11%	4%	Papua New Guinea	15%	NA	-
Ecuador	15%	NA	-	Philippines	19%	17%	2%
Equatorial Guinea	15%	13%	2%	Serbia	35%	37%	-2%
European Union*	15%	20%	-5%	South Africa	30%	30%	0%
Falkland Islands	10%	41%	-31%	South Korea	15%	25%	-10%
Fiji	15%	32%	-17%	Sri Lanka	20%	44%	-24%
Ghana	15%	NA	-	Switzerland	39%	31%	8%
Guyana	15%	38%	-23%	Syria	41%	41%	0%
Iceland	15%	NA	-	Taiwan	20%	32%	-12%
India	25%	26%	-1%	Thailand	19%	36%	-17%
Indonesia	19%	32%	-13%	Trinidad and Tobago	15%	NA	-
Iraq	35%	39%	-4%	Tunisia	25%	28%	-3%
Israel	15%	17%	-2%	Turkey	15%	NA	-
Japan	15%	24%	-9%	Uganda	15%	NA	-
Jordan	15%	20%	-5%	United Kingdom	10%	NA	-
Kazakhstan	25%	27%	-2%	Vanuatu	15%	22%	-7%
Laos	40%	48%	-8%	Venezuela	15%	15%	0%
Lesotho	15%	50%	-35%	Vietnam	20%	46%	-26%
Libya	30%	31%	-1%	Zambia	15%	17%	-2%
Liechtenstein	15%	37%	-22%	Zimbabwe	15%	18%	-3%

Source: Compiled by author from Executive Orders 14257 and 14326.

Note: For the EU, 0% for goods with US tariff above 15%, otherwise 15% minus the US tariff rate.

Table 3. Economic Impacts of Reciprocal Tariff (April 2, 2025) Scenarios, Selected Countries(% of GDP, 2027).

	Agriculture	Automotive	E&E	Textile	Food Proc.	Oth. Mfg.	Services	Mining	GDP
United States	-2.6%	-9.0%	1.0%	4.6%	1.4%	1.9%	-6.0%	-3.3%	-5.2%
Mexico	2.8%	0.8%	2.8%	-3.2%	4.2%	9.0%	2.5%	2.5%	4.0%
Canada	1.2%	7.1%	-0.1%	-1.1%	1.7%	15.1%	0.9%	1.9%	2.9%
China	-0.1%	-1.3%	-1.7%	-0.2%	-3.5%	-3.6%	-1.1%	0.3%	-1.9%
Japan	0.0%	-1.7%	1.6%	0.2%	-0.6%	0.7%	0.1%	0.8%	0.2%
Korea	0.3%	-2.9%	-0.4%	-0.1%	-0.3%	1.3%	0.1%	0.6%	0.1%
Taiwan	-0.4%	0.4%	-1.6%	0.1%	-0.3%	0.7%	-0.2%	1.3%	-0.2%
Indonesia	0.2%	-0.3%	0.3%	1.1%	-3.1%	0.3%	0.1%	0.2%	0.0%
Malaysia	0.4%	0.2%	-1.5%	-0.6%	-0.2%	1.1%	0.1%	0.1%	0.0%
Singapore	0.1%	0.5%	2.8%	-0.3%	0.5%	5.7%	1.4%	0.2%	2.6%
Thailand	-0.1%	0.7%	-4.1%	1.0%	-1.9%	-0.5%	-0.2%	0.4%	-0.5%
Cambodia	0.0%	-0.1%	-0.4%	-0.8%	0.2%	-0.1%	-0.1%	-0.3%	-0.2%
Laos	0.2%	0.7%	-0.1%	2.4%	0.3%	-0.3%	0.3%	0.5%	0.4%
Myanmar	-0.1%	0.3%	0.0%	-0.1%	-1.4%	-0.6%	0.0%	0.6%	-0.3%
Vietnam	0.3%	-1.0%	-1.3%	0.2%	-3.4%	-3.2%	-0.8%	-0.1%	-1.3%
Australia	0.1%	0.8%	0.5%	0.3%	-0.2%	0.7%	0.4%	0.5%	0.4%
India	-0.8%	-0.7%	0.4%	4.1%	0.2%	1.2%	0.2%	0.1%	0.4%
EU	0.3%	-0.3%	0.2%	1.0%	0.1%	0.9%	0.2%	0.8%	0.3%
United Kingdom	0.4%	0.9%	0.2%	0.5%	0.2%	1.8%	0.4%	1.4%	0.4%
Russia	0.6%	-0.1%	-0.7%	-0.5%	0.6%	0.9%	0.0%	0.1%	0.2%
Brazil	0.2%	1.9%	0.2%	-0.1%	0.2%	0.3%	0.3%	1.7%	0.5%
South Africa	0.1%	0.9%	0.0%	0.0%	-0.3%	0.2%	0.3%	0.8%	0.4%
World	-0.2%	-1.1%	-0.5%	0.5%	-0.7%	-0.5%	-1.8%	0.1%	-1.3%

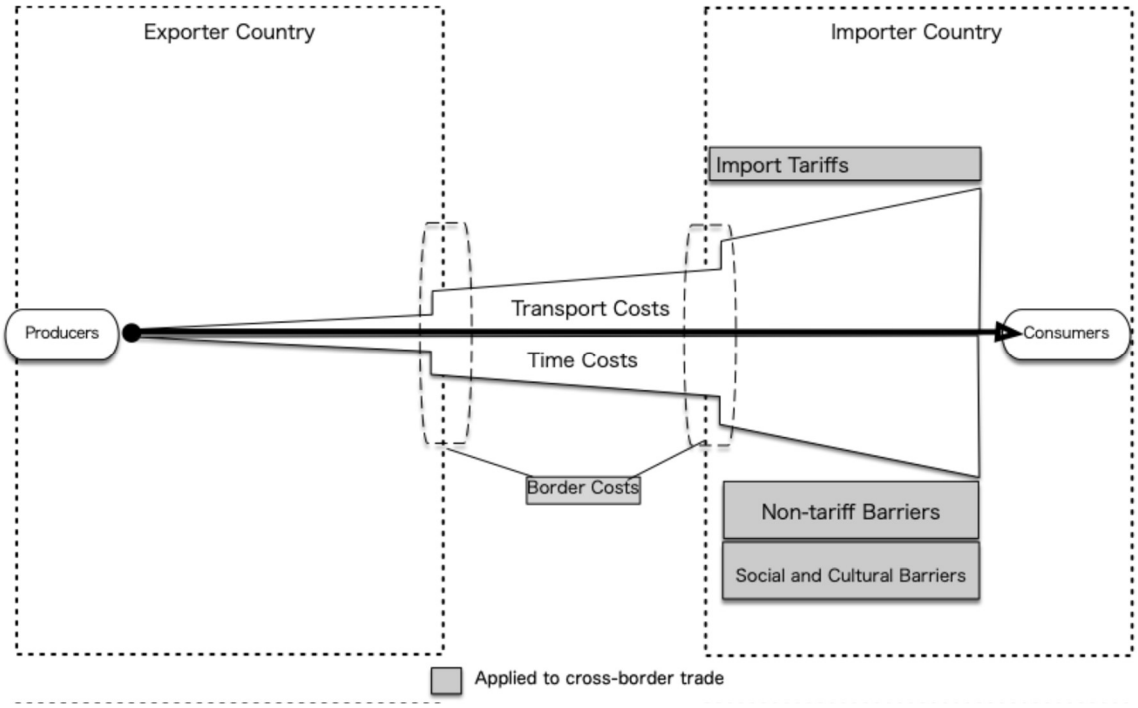
Source: Calculated by IDE-GSM.

Table 4. Economic Impacts of Reciprocal Tariff Scenarios, Selected Countries (% of GDP, 2027).

	April 2, 2025 (China 54%)	July 31, 2025 (China 54%)	July 31, 2025 (China 30%)
United States	-5.2%	-4.9%	-3.5%
Mexico	4.0%	3.7%	2.5%
Canada	2.9%	2.7%	1.7%
China	-1.9%	-2.0%	-1.1%
Japan	0.2%	0.3%	0.1%
Korea	0.1%	0.7%	0.1%
Taiwan	-0.2%	0.4%	-0.2%
Indonesia	0.0%	0.2%	0.0%
Malaysia	0.0%	0.2%	-0.2%
Singapore	2.6%	2.2%	1.0%
Thailand	-0.5%	0.4%	-0.2%
Cambodia	-0.2%	0.7%	0.1%
Laos	0.4%	0.4%	0.2%
Myanmar	-0.3%	-0.2%	-0.5%
Vietnam	-1.3%	0.3%	-0.4%
Australia	0.4%	0.4%	0.2%
India	0.4%	0.3%	0.0%
EU	0.3%	0.3%	0.2%
United Kingdom	0.4%	0.4%	0.2%
Russia	0.2%	0.2%	0.1%
Brazil	0.5%	0.4%	0.3%
South Africa	0.4%	0.4%	0.2%
World	-1.3%	-1.2%	-0.9%

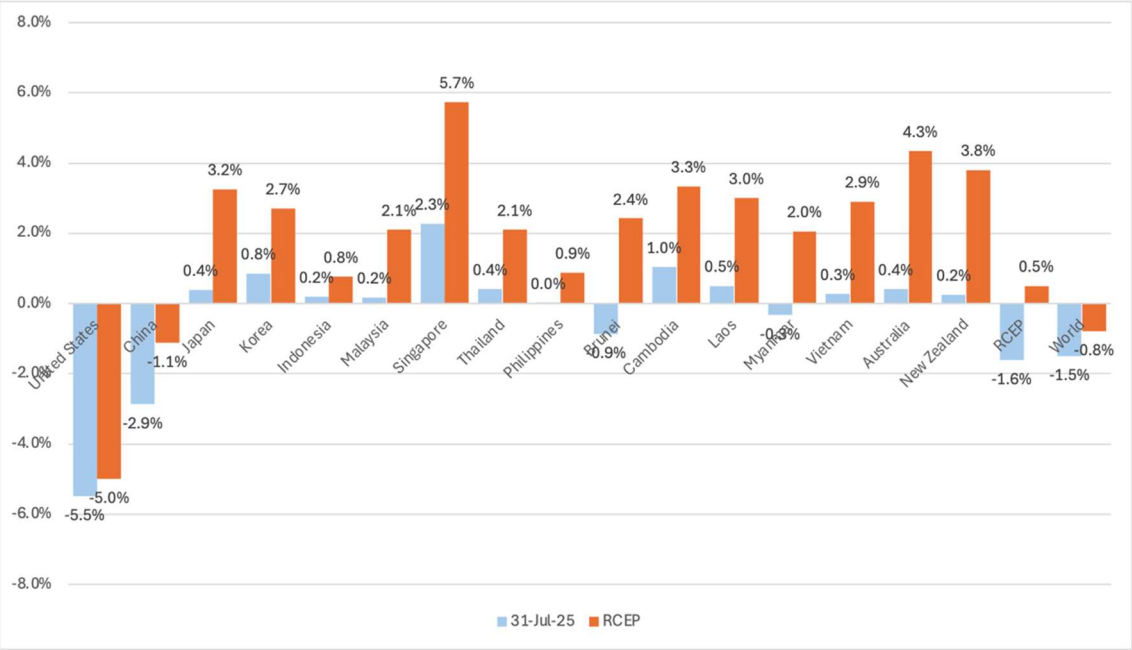
Source: Calculated by IDE-GSM.

Figure 1. Trade Costs in IDE-GSM



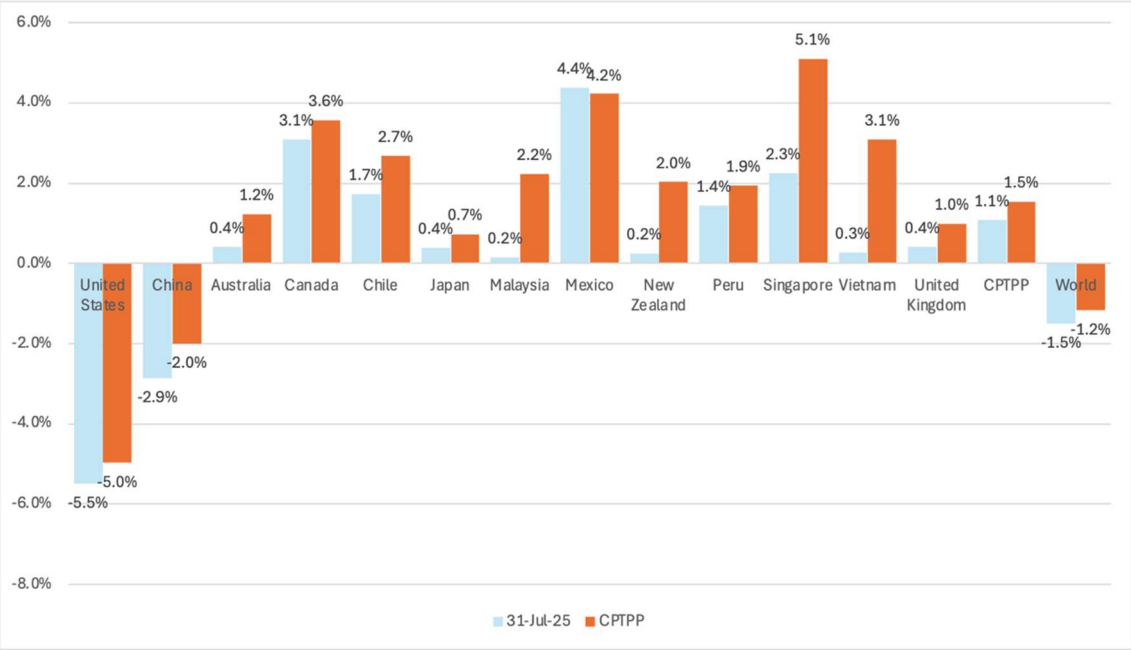
Source: Author.

Figure 2. Economic Impacts of RCEP, Selected Countries (% of GDP, 2027).



Source: Calculated by IDE-GSM.

Figure 3. Economic Impacts of CPTPP, Selected Countries (% of GDP, 2027).



Source: Calculated by IDE-GSM.