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Long-term Effects of US Tariff Increases on CAPDR

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ABSTRACT: In a series of declarations throughout 2025 and into 2026, the United States announced higher tariffs on nearly all imports from most countries. The countries that make up the CAPDR region (Costa Rica, Dominican Republic, Guatemala, Honduras, Nicaragua, Panama and El Salvador) are affected through sizeable direct trade linkages with the United States, and through indirect trade linkages with third countries. This paper explores the potential long-term economic effects of these tariff increases on CAPDR using a multi-region multi-industry model of the global economy. The modelling exercises suggest that CAPDR member countries will experience falls in real GDP to varying degrees, with the severity of the effect closely linked to direct export exposure to the United States. The most vulnerable industries are heavily trade-exposed manufactures, although exemptions – most importantly for textiles & apparel – may provide some scope for trade diversion to offset some of the GDP losses. Although ongoing legal challenges have introduced additional uncertainty regarding the ultimate extent of tariff changes, the results in this paper will remain broadly valid providing the tariffs remain in place.

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WORKING PAPERS

Long-term Effects of US Tariff Increases on CAPDR

Prepared by Alexander Subramaniam Beames[1]

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I. Introduction

In recent decades global economic integration enabled many countries to pursue higher living standards through export-led growth strategies. This allowed many smaller low and middle-income countries to access larger global markets, acquire foreign technologies and take advantage of economies of scale. However, recent years have seen a reversal in these trends and rising trade barriers, putting export-led growth strategies at risk. For instance, in a series of declarations throughout 2025 and into 2026, the United States announced higher tariffs on nearly all imports. This paper explores the potential long-term economic effects of these tariff increases (and associated retaliatory measures) on the countries that make up the CAPDR region (Costa Rica, Dominican Republic, Guatemala, Honduras, Nicaragua, Panama and El Salvador) using a quantitative multi-region multi-industry model of international trade.

The most recent round of trade tensions has been characterized by successive rounds of escalation, negotiation and legal challenges, leading to heightened uncertainties regarding current and future tariff rates. The tensions began in February 2025 when the United States announced tariffs of 25 percent on most goods imported from Canada and Mexico. In a series of announcements throughout the remainder of 2025, the United States widened tariff coverage to include imports from most countries, with higher rates levied for varying periods on Brazil, China, the European Union and India, among others. By the end of 2025, the United States had imposed additional statutory tariff rates of 18 and 15 percent on Nicaragua and Costa Rica respectively, and 10 percent on the remaining members of CAPDR. Guatemala and El Salvador also managed to negotiate exemptions for most textiles & apparel (The White House, 2025a and 2025b).

In February 2026, the United States Supreme Court overturned many of the tariffs enacted throughout 2025. In response to the ruling, President Trump invoked alternative legal instruments to introduce a uniform 10 percent tariff (The White House, 2026), with exemptions for imports of textiles & apparel compliant with the Dominican Republic-Central America Free Trade Agreement (CAFTA-DR) and wide ranging exemptions for products compliant with the United States-Mexico-Canada free trade agreement (USMCA). On May 7, 2026, the United States Court of International Trade declared these tariffs unlawful as well, although left them in place while the appeals process is pending. President Trump has signaled his intention to continue using alternative legal instruments to restore tariffs to the levels prevailing before the Supreme Court ruling (Manak, 2026).

To explore the effects of these tariff increases and the associated spillover effects on CAPDR, a multi-region multi-industry model of the global economy is developed and simulated. The model is an Eaton and Kortum (2002) static Ricardian comparative advantage trade model, comparable to Caliendo and Parro (2015) and Shikher (2012). In the model, the global economy consists of 78 separate regions that each contain 13 industries. Importantly, each member of CAPDR is modelled as a separate region, and production is divided into agriculture, mining, utilities, construction, services and eight manufacturing industries. The model features detailed global input-output linkages, as well as international trade in intermediate and final goods. One important feature that differs from comparable trade models is the inclusion of capital and labor as variable primary factors of production. This allows for a production nesting that features a meaningful distinction between gross output and value added, allowing the model to analyze how alternative trade policies may affect real GDP.

The modelling exercises suggest that tariff increases act as an adverse foreign demand shock by lowering exports, domestic prices and the terms of trade for all CAPDR members. Furthermore, the exercises suggest that all CAPDR member countries will experience falls in real GDP to varying degrees, with the severity of the effect closely linked to direct export exposure to the United States. Under the scenario that is most representative of the current external environment facing CAPDR, estimated effects on real GDP range between a fall of around

1 percent in Costa Rica and the Dominican Republic, to a fall of around 0.1 percent in El Salvador. Manufacturing industries that are more integrated into Global Value Chains (GVCs) and heavily reliant on imported intermediate inputs for production are the most vulnerable. However, exemptions – most importantly for textiles & apparel – open additional channels for international relative price adjustments and may provide scope to offset real GDP losses to some degree.

The rest of this paper is organized as follows: Section 2 presents stylized facts on CAPDR's regional and international trade linkages; Section 3 describes the theoretical underpinnings of the multi-region multi-industry model; Section 4 explains how the model is calibrated and solved numerically; Section 5 discusses model limitations, results for the benchmark scenarios and presents the sensitivity analysis; while Section 6 concludes.

II. Stylized Facts[1]

All the countries in the CAPDR region are small open economies with varying degrees of trade exposure. Honduras is the most trade exposed with total trade[2] nearly 100 percent of GDP, while Guatemala is the least trade exposed, with total trade of around 40 percent of GDP. By comparison, total trade is closer to 25, 65 and 90 percent of GDP for the United States, Canada and Mexico respectively. In 2006, the CAFTA free trade agreement between the United States and El Salvador, Honduras, Nicaragua and Guatemala came into effect. After the Dominican Republic joined in 2007 and Costa Rica joined in 2009, the agreement became known as CAFTA-DR. Panama is not a member of CAFTA-DR but has a separate trade agreement with the United States that went into effect in 2012. Aside from the Dominican Republic, remaining CAPDR members also have free trade agreements with Mexico that came into effect between the late 1990s and early 2000s.

Gross Trade Linkages

Most trade by members of CAPDR takes place with the United States, or within the region (Figure 1 and Figure 2). The United States is the most important single trading partner for most members of CAPDR. On average, the United States accounts for around 40 percent of exports, and around 37 percent of imports. The size of inter-regional trade suggests a high degree of regional trade integration. The Dominican Republic is the exception, with very little trade with the rest of CAPDR because it does not share a land border with any other countries in the region due to its geographical location. For most countries in the region, a small share of exports is directed towards either Mexico or China, and both these countries are small but important sources of imports. Canada accounts for a negligible share of exports and imports for all countries in CAPDR.[3]

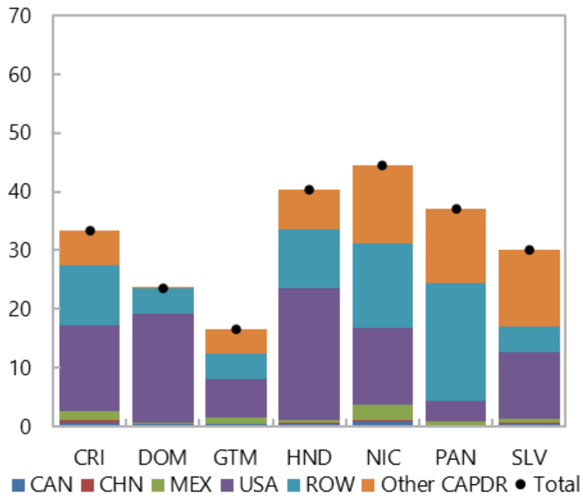
[1] Figures in the stylized facts section are calculated using EORA to be consistent with the data used to calibrate to model described in Section 3 below, and to enable the calculation of value-added exports. EORA and all other multi-region input-output databases will differ slightly from official national statistics because they make adjustments that balance trade asymmetries and harmonize data from diverse sources in a consistent manner.

[2] The sum of exports and imports.

[3] On average, less than 2 percent of exports and less than 1 percent on imports.

Figure 1: Exports by destination - 2023

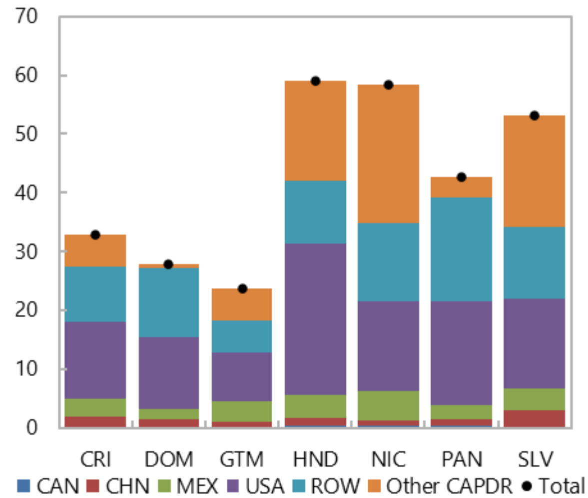
(Percent of own GDP)



Source: EORA database

Figure 2: Imports by source - 2023

(Percent of own GDP)

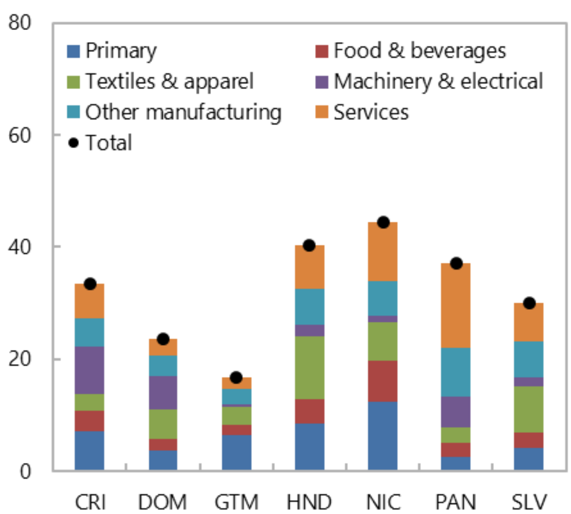


Source: EORA database

Most countries in CAPDR principally export manufactured goods and primary agricultural products (Figure 3), although services are becoming increasingly more important. The main manufacturing exports are textiles & apparel, machinery & equipment, and food & beverages. Exports of textiles & apparel are especially significant for Honduras and El Salvador, accounting for around 11 percent and 8 percent of GDP respectively. CAPDR also increasingly exports services and higher value-added manufactured goods such as electrical components, pharmaceuticals and medical devices. Primary products exported by the region mainly consist of coffee, sugar and tropical fruits such as bananas. CAPDR is not a major commodity exporter, and on average mining accounts for less than 1 percent of exports by all countries in the region.

Figure 3: Exports by industry - 2023

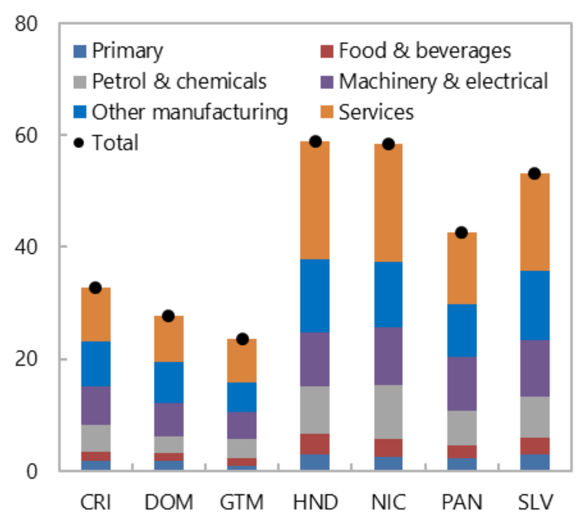
(Percent of own GDP)



Source: EORA database

Figure 4: Imports by industry - 2023

(Percent of own GDP)



Source: EORA database

The textiles & apparel industry is heavily dependent on exports, and for each country in CAPDR an average of around 90 percent of the gross output of this industry is exported, with around two thirds to the United States.[4] For most of the manufacturing industries, on average around one third of their gross output is exported, with the proportion exported to the United States varying by country. The mining, utilities, construction and services industries are the least export-exposed in CAPDR, with an average of around 95 percent of their gross output purchased domestically.

CAPDR primarily imports services, manufactured goods and fuel (Figure 4). Imported services include telecommunications, professional services, financial services, tourism, transportation and logistics. Imported manufactured goods include a variety of consumer products such as automobiles and electronics, as well as intermediate and capital goods used in industrial production processes. CAPDR is a net oil importer, and imports of petrol and chemical products (which contains oil and other fuels) range from around 3 percent of GDP in the Dominican Republic to nearly 10 percent of GDP in Nicaragua.

Global Value Chain Linkages

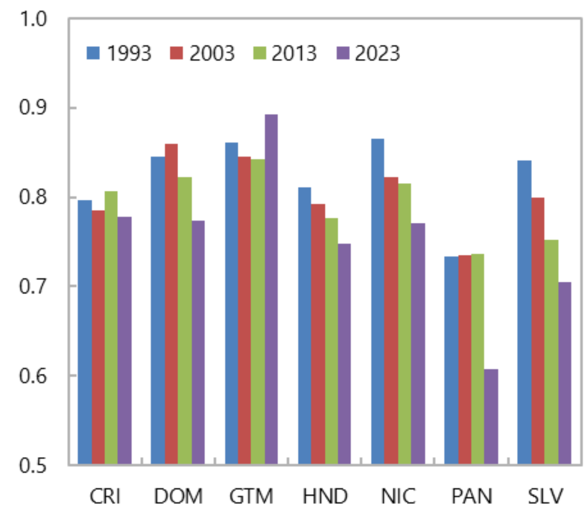
Most countries in CAPDR have become steadily more integrated into GVCs over time. One measure of GVC participation is the ratio of value-added exports (VAX) to gross exports (Aslam et. al, 2017; Johnson, 2018; and Koopman et. al, 2014), which shows the value of exports that can be attributed to domestic production or to production that originated overseas.[5] Figure 5 shows that the domestic value-added component of exports has become less important for most countries in the region as they have become more integrated into GVCs. For instance, most exports from Panama consist of re-exports of imports passing through the Colon Free Trade Zone and the export processing zones, and this explains the very low domestic value-added content in Panama's exports. Figure 6 shows the VAX/gross exports ratio by country and industry in 2023. Industries that are closer to non-traded such as mining, utilities, construction and services have a higher domestic value-added content in their exports, while manufacturing industries have a higher foreign content.

While increased GVC participation has benefited CAPDR by providing access to new markets and facilitating skills transfers, it has also meant that CAPDR is more exposed to overseas trade policies. Changes to tariff rates can have a variety of direct and indirect effects depending on the stage of production on which they are applied (Eugster et. al, 2022). The effect of tariffs applied to agriculture, mining and 'upstream' manufacturing industries that produce intermediate inputs accumulate as they flow 'downstream' and the output of these industries is used by other manufacturing and services industries that are closer to the final consumer. Manufacturing industries are more closely integrated into GVCs and are generally more exposed to overseas tariff changes.

[4] The exception is Panama, which sends just below 2 percent of textiles & apparel exports to the United States.

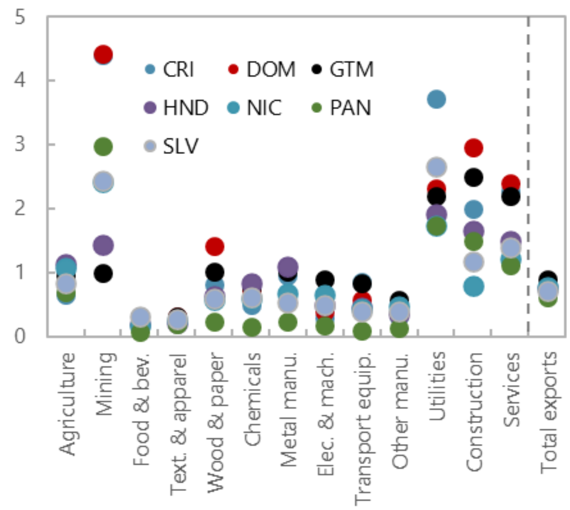
[5] Gross trade measures do not provide a full picture of GVC participation because they do not account for intermediate inputs that are imported to produce exports. For instance, El Salvador may build manufacturing equipment that is exported to the United States, but if this equipment was designed in the United States, then part of the 'value' of gross exports by El Salvador would be 'added' outside the country.

Figure 5: VAX/gross exports by country
(Ratio)



Source: EORA database and IMF staff calculations

Figure 6: VAX/gross exports by industry - 2023
(Ratio)



Source: EORA database and IMF staff calculations

III. Model Description

This section provides details of the quantitative trade model used for this analysis. The model is a static Ricardian trade model with multiple industries, input-output linkages and international trade in intermediate and final goods, along the lines of Eaton and Kortum (2002), Caliendo and Parro (2015), Mutreja et. al (2018) and Shikher (2012). The global economy consists of $s = \{1,2,\dots,\mathcal{S}\}$ 'source' regions and $d = \{1,2,\dots,\mathcal{D}\}$ 'destination' regions. Each source region is simultaneously a destination region so that $\mathcal{S} = \mathcal{D}$. In each of the regions, there is a representative household, $i = \{1,2,\dots,\mathcal{I}\}$ 'supply' industries and $j = \{1,2,\dots,\mathcal{J}\}$ 'demand' industries.[6] Again, each supply industry is simultaneously a demand industry, so that $\mathcal{I} = \mathcal{J}$.

Households

In each of the s regions, there is a representative household that chooses real consumption (C_s^R) and supplies labor (N_s) to maximize utility, subject to its budget constraint. Following Ignatenko et. al (2025), the representative household has preferences over consumption and labor given by:

$$u(C_s^R, N_s) = C_s^R - \frac{\upsilon}{1+\upsilon} N_s^{\frac{1+\upsilon}{\upsilon}}$$

The parameter υ is the labor supply elasticity and labor market clearing requires that labor supply equals labor demand aggregated across firms (N_{is}):

$$N_s = \sum_{i=1}^{\mathcal{J}} N_{is}$$

[6] The 'supply' industries represent the columns of a region-specific input-output matrix, while the 'demand' industries represent the rows.

Nominal consumption is given by $C_s = P_s^C C_s^R$. In keeping with the convention in the trade literature, expenditure aggregates are listed in nominal terms unless explicitly specified otherwise. Aggregate real consumption is assumed to be a Cobb-Douglas bundle of real goods and services produced by each industry (C_{js}^R) with $\sum_{j=1}^{\mathcal{J}} \alpha_{js}^C = 1$.

$$C_s^R = \prod_{j=1}^{\mathcal{J}} \left(\frac{C_{js}^R}{\alpha_{js}^C} \right)^{\alpha_{js}^C}$$

The representative household derives income from capital ($R_s^K K_{is}$), labor ($w_s N_{is}$), tariff revenues rebated by the government in the form of a lump-sum transfer (TR_s) and net overseas transfers, which are then used to purchase final goods and services. In this static modelling setup, net overseas transfers are equivalent to an exogenous trade balance (TB_{jd}). The household budget constraint is as follows:

$$\sum_{i=1}^{\mathcal{J}} R_s^K K_{is} + \sum_{i=1}^{\mathcal{J}} w_s N_{is} + TR_s = \sum_{j=1}^{\mathcal{J}} C_{jd} + \sum_{j=1}^{\mathcal{J}} I_{jd} + \sum_{j=1}^{\mathcal{J}} TB_{jd}$$

The solution to the household maximization problem implies that the aggregate consumption price index (P_s^C) and labor supply are determined in each region as follows:

$$P_s^C = \prod_{j=1}^{\mathcal{J}} \left(P_{js}^Q \right)^{\alpha_{js}^C} \qquad (1)$$

$$N_s = \left(\frac{w_s}{P_s^C} \right)^{\nu} \qquad (2)$$

Production

In each of the *s* source regions, there are *i* supply industries. Each of these industries consist of a continuum of firms ($\omega_{is} \in [0,1]$) that produce a unique variety. Real gross production by each industry (Y_{is}^R) is assembled from different varieties ($Y_{is}^R(\omega_{is})$) according to a CES production technology, where η is the elasticity of substitution across varieties:

$$Y_{is}^R = \left[\int_0^1 Y_{is}^R(\omega_{is})^{\frac{\eta-1}{\eta}} dy \right]^{\frac{\eta}{\eta-1}}$$

To produce a variety, each firm combines capital, labor and intermediate inputs produced by domestic and foreign industries according to a Cobb-Douglas production technology. Each of the ω_{is} firms within an industry are assumed to be identical except for their level of productivity ($z_{is}(\omega_{is})$). Product and factor markets are assumed to be perfectly competitive. The cost of producing a unit of output is $\frac{P_{is}^Y}{z(\omega_{is})}$, where P_{is}^Y is the unit cost of an input bundle that is the same for all firms within an industry. Together, these assumptions imply that P_{is}^Y is the following:

$$P_{is}^Y = \left((R_s^K)^{\alpha_{is}^K} (w_s)^{1-\alpha_{is}^K} \right)^{\alpha_{is}^V} \left(P_s^J \right)^{1-\alpha_{is}^V} \qquad (3)$$

Where R_s^K is the real capital rental rate, w_s is the real wage, P_s^J is the price of the composite intermediate input,[7] α_{is}^K is the capital share of value added and α_{is}^V is the value-added share in gross output. The composite intermediate input price is a Cobb-Douglas aggregate of the expenditure price of intermediate inputs produced by the *j* industries:

$$P_s^J = \prod_{j=1}^{\mathcal{J}} \left(P_{js}^Q\right)^{\alpha_{js}^J} \quad (4)$$

Where P_{js}^Q is the price of inputs produced by industry *j* and $\sum_{j=1}^{\mathcal{J}} \alpha_{js}^J = 1$. The first order conditions imply the following factor demands, where Y_{is} is the value of gross output from industry *s*:

$$R_s^K K_{is} = \alpha_{is}^K \alpha_{is}^V Y_{is} \quad (5)$$

$$w_s N_{is} = (1 - \alpha_{is}^K)\alpha_{is}^V Y_{is} \quad (6)$$

$$P_s^J J_{is} = (1 - \alpha_{is}^V) Y_{is} \quad (7)$$

Similar to Mutreja et. al (2018), the production side of the model is closed with the following conditions:[8]

$$R_s^K = (r + \delta) P_s^I \quad (8)$$

$$P_s^I = \prod_{j=1}^{\mathcal{J}} \left(P_{js}^Q\right)^{\alpha_{js}^I} \quad (9)$$

$$\Omega_{is} = \left(\frac{\delta}{r + \delta}\right) R_s^K K_{is} \quad (10)$$

That is, the capital rental rate is related to the world interest rate (r), the capital depreciation rate (δ), and the expenditure price of investment (P_s^I). In turn, P_s^I is a Cobb-Douglas aggregate of the price of investment produced by the *j* industries (P_{js}^Q), and $\sum_{j=1}^{I} \alpha_{js}^I = 1$. Nominal investment ($\Omega_{is}$) used by industry *i* is proportional to the value of income paid to the owners of capital. This last condition is derived by combining the steady state condition for real investment ($I_{is}^R = \delta K_{is}$) with equation (8) and noting that $\Omega_{is} = P_s^I I_{is}^R$.

Technology and Trade Flows

Following Eaton and Kortum (2002), the level of firm productivity for each industry in each country is assumed to be independently drawn from a Fréchet distribution with cumulative distribution function $F_{is}(z)$ and shape parameters $T_{is} > 0$ and $\theta_i > 1$:

$$F_{is}(z) = \exp\left(-T_{is} z^{-\theta_i}\right)$$

The parameter T_{is} governs the mean of the productivity distribution and differs by region and industry. A higher value of T_{is} implies higher average productivity for industry *i* in region *s*. The parameter θ_i governs dispersion,

[7] The *i* subscript has been excluded because the absence of frictions implies that factor prices are the same for all firms and all industries within a region but may differ across regions.

[8] These conditions mimic the steady state of the corresponding dynamic model.

with higher values implying smaller productivity dispersion across firms within an industry. Following standard derivations (i.e. Eaton and Kortum (2002)) it can be shown that θ_i is also the trade elasticity, or the degree to which trade flows change per unit change in trade costs.

International trade is subject to ad-valorum tariff rates (τ_{jsd}) and iceberg trade costs (κ_{jsd}). Because of iceberg trade costs, $\kappa_{jsd} > 1$ units of output from industry *j* must be shipped from source region *s* for one unit to arrive at destination region *d*. Domestic trade occurs when output is purchased or sold domestically. In this case $s = d$, and tariff rates are zero while iceberg trade costs are normalized to unity ($1 + \tau_{jdd} = \kappa_{jdd} = 1$). In general, iceberg trade costs are asymmetric and differ across industries and bilateral trading partners. Under perfect competition, the price of output from industry *j* shipped from source region *s* to destination region *d* is equal to the unit production cost adjusted for tariffs, iceberg trade costs and firm-specific productivity. Purchasers at the destination buy from the lowest cost supplier (whether domestic or foreign), so the price they pay is:

$$P_{jd}^{Q}(\omega) = \min\left\{\frac{(1+\tau_{j1d})\kappa_{j1d}P_{i1}^{Y}}{z_{i1}(\omega)}, \frac{(1+\tau_{j2d})\kappa_{j2d}P_{i2}^{Y}}{z_{i2}(\omega)}, \dots, \frac{(1+\tau_{j\mathcal{S}d})\kappa_{j\mathcal{S}d}P_{i\mathcal{S}}^{Y}}{z_{i\mathcal{S}}(\omega)}\right\}$$

Using the properties of the Fréchet distribution, Eaton and Kortum (2002) solve for the distribution of prices and show that the price (P_{jd}^{Q}) and the share of expenditure (π_{jsd}) on output from industry *j* in destination region *d* is:[9]

$$P_{jd}^{Q} = \gamma_i \left(\sum_{s=1}^{\mathcal{S}} T_{is}\left((1+\tau_{jsd})\kappa_{jsd}P_{js}^{Y}\right)^{-\theta_i}\right)^{-\frac{1}{\theta_i}} \tag{11}$$

$$\pi_{jsd} = \frac{Q_{jsd}}{Q_{jd}} = \frac{T_{is}\left((1+\tau_{jsd})\kappa_{jsd}P_{js}^{Y}\right)^{-\theta_i}}{\sum_{s=1}^{\mathcal{S}} T_{is}\left((1+\tau_{jsd})\kappa_{jsd}P_{js}^{Y}\right)^{-\theta_i}} = T_{is}\left(\frac{\gamma_i(1+\tau_{jsd})\kappa_{jsd}P_{js}^{Y}}{P_{jd}^{Q}}\right)^{-\theta_i} \tag{12}$$

Where $\gamma_i = \Gamma\left(\frac{\theta_i+1-\eta}{\theta_i}\right)^{\frac{1}{1-\eta}}$, and $\Gamma(.)$ is the Gamma function. Q_{jd} is the total value of expenditure on *j* in region *d*, while Q_{jsd} is the value of expenditure on *j* in region *d* that is sourced from *s*. For each industry *j* and each destination region *d*, tariff-exclusive imports (M_{jsd}), spending on domestic production (D_{jsd}) and exports (X_{jsd}) are as follows:

$$M_{jsd} = Q_{jsd} = \frac{\pi_{jsd}Q_{jd}}{1+\tau_{jsd}} \quad \text{for each} \quad s \neq d \tag{13}$$

$$D_{jd} = Q_{jdd} = \frac{\pi_{jdd}Q_{jd}}{1+\tau_{jdd}} \quad \text{for each} \quad s = d \tag{14}$$

$$X_{jsd} = M_{jds} \tag{15}$$

Market Clearing

The existence of an equilibrium implies several budget constraints that equate supply and demand, as well as expenditure, production and income. In each region, the sum of investment used by each industry equals the sum of final investment goods purchased from each industry:

[9] Caliendo and Parro (2015) and Shikher (2012) derive this same result in models with multiple industries.

$$\sum_{j=1}^{\mathcal{J}} \Omega_{is} = \sum_{j=1}^{\mathcal{J}} I_{jd} \quad \text{for } s = d \tag{16}$$

Total expenditure (demand) is the sum of expenditure on intermediate inputs, consumption and investment. Alternatively, total expenditure is the sum of expenditure on output produced domestically and overseas:

$$Q_{jd} = J_{jd} + C_{jd} + I_{jd} = D_{jd} + \sum_{d=1}^{\mathcal{S}} M_{jsd} \tag{17}$$

Gross output (supply) is equal to the sum of domestic and foreign demand:

$$Y_{is} = D_{jd} + \sum_{d=1}^{\mathcal{D}} X_{jsd} = Q_{jd} + TB_{jd} \tag{18}$$

Gross domestic product (value added) is equal to the value of gross output less intermediate input usage, the value of income paid to owners of the primary factors of production, and the value of expenditure on final goods:

$$VA_s = \sum_{i=1}^{\mathcal{J}} (Y_{is} - J_{is}) = \sum_{i=1}^{\mathcal{J}} R_s^K K_{is} + \sum_{i=1}^{\mathcal{J}} w_s N_{is} + TR_s = \sum_{j=1}^{\mathcal{J}} C_{jd} + \sum_{j=1}^{\mathcal{J}} I_{jd} + \sum_{j=1}^{\mathcal{J}} TB_{jd} \tag{19}$$

Where tariff revenue is given by $TR_s = \sum_{s=1}^{S} \frac{\tau_{jsd}\pi_{jsd}Q_{jd}}{1+\tau_{jsd}}$.

System in 'Exact Hat' Form

To simplify parameter calibration and the computation of the solution, the system of equations is specified in 'exact hat' form (Dekle et. al, 2008). That is, the model is rewritten in terms of relative changes between the initial and final steady states. The model in exact hat form is as follows, where $\hat{X} = \frac{X'}{X}$ and X, X' denote variables before and after a policy change respectively:

$$\hat{P}_s^J = \prod_{j=1}^{\mathcal{J}} \left(\hat{P}_{js}^Q\right)^{\alpha_{js}^J} \tag{20}$$

$$\hat{P}_s^C = \prod_{j=1}^{\mathcal{J}} \left(\hat{P}_{js}^Q\right)^{\alpha_{js}^C} \tag{21}$$

$$\hat{P}_s^I = \prod_{j=1}^{\mathcal{J}} \left(\hat{P}_{js}^Q\right)^{\alpha_{js}^I} \tag{22}$$

$$\hat{N}_{is} = \left(\frac{\hat{w}_s}{\hat{P}_s^C}\right)^{\nu} \tag{23}$$

$$\hat{Y}_{is} = \hat{w}_s \hat{N}_{is} \tag{24}$$

$$\hat{R}_s^K = \hat{P}_s^I \tag{25}$$

$$\widehat{K}_{is} = \frac{\widehat{Y}_{is}}{\widehat{R}_s^K} \quad (26)$$

$$\widehat{P}_{is}^Y = \left(\left(\widehat{R}_s^K\right)^{\alpha_{is}^K} (\widehat{w}_s)^{1-\alpha_{is}^K}\right)^{\alpha_{is}^V} \left(\widehat{P}_s^J\right)^{1-\alpha_{is}^V} \quad (27)$$

$$\widehat{P}_{jd}^Q = \left(\sum_{s=1}^{S} \pi_{jsd}\left(\left(\widehat{1+\tau_{jsd}}\right)\hat{\kappa}_{jsd}\widehat{P}_{js}^Y\right)^{-\theta_i}\right)^{-\frac{1}{\theta_i}} \quad (28)$$

$$\hat{\pi}_{jsd} = \left(\frac{\left(\widehat{1+\tau_{jsd}}\right)\hat{\kappa}_{jsd}\widehat{P}_{js}^Y}{\widehat{P}_{jd}^Q}\right)^{-\theta_i} \quad (29)$$

$$\widehat{\Omega}_{is} = \widehat{P}_s^I \widehat{K}_{is} \quad (30)$$

$$\hat{J}_{jd} = \widehat{Y}_{is} \quad \text{for each } s = d \quad (31)$$

$$\widehat{C}_{jd} = \widehat{Y}_{is} \quad \text{for each } s = d \quad (32)$$

$$\hat{I}_{jd} = \widehat{Y}_{is} \quad \text{for each } s = d \quad (33)$$

$$\widehat{Q}_{jd} = \widehat{Y}_{is} \quad \text{for each } s = d \quad (34)$$

$$\widehat{M}_{jsd} = \frac{\hat{\pi}_{jsd}\widehat{Q}_{jd}}{\widehat{1+\tau_{jsd}}} \quad \text{for each } s \neq d \quad (35)$$

$$\widehat{D}_{jd} = \frac{\hat{\pi}_{jdd}\widehat{Q}_{jd}}{\widehat{1+\tau_{jdd}}} \quad \text{for each } s = d \quad (36)$$

$$\widehat{X}_{jsd} = \widehat{M}_{jds} \quad (37)$$

Specifying the system in exact hat form has several advantages. First, computation times are much faster as the resulting system of equations is simpler and only needs to be solved numerically once.[10] Second, it is easier to replicate the data exactly in a given reference year. Third, the number of parameters to be calibrated is reduced to several trade, expenditure, production and income shares (π_{jsd} and the α's), trade elasticicities (θ_i), iceberg trade costs (κ_{jsd}), and changes in gross tariff rates ($\widehat{1+\tau_{jdd}}$).[11]

At this point, it is also convenient to define several variables that will be reported with the results. Aggregate variables are calculated as the share weighted sum of their sub-components, while the remaining price indices are calculated as the nominal value divided by the respective real value. For example, aggregate real value added (real GDP) for each region is calculated as follows:

$$\widehat{VA}_s^R = \sum_{i=1}^{J} \frac{\alpha_{is}^{VA}}{\alpha_{is}^V}\left(\frac{\widehat{Y}_{is}}{\widehat{P}_{is}^Y} - (1-\alpha_{is}^V)\frac{\hat{J}_{is}}{\widehat{P}_s^J}\right)$$

Where α_{is}^{VA} is the industry *i* share of total nominal value added in region *s*, and $\sum_{i=1}^{J}\alpha_{is}^{VA} = 1$. For a region *s*, the real exchange rate (RER_s) is defined as the aggregate consumption price index relative to the aggregate

[10] Instead of once for the initial steady state and a second time for the final steady state.

[11] Importantly, the parameter that governs the relative level of industry productivity (T_{is}) is substituted out and does not require calibration. This parameter is difficult to calibrate as it is unobserved, although Levchenko and Zhang (2016) and Shikher (2012) show how to calibrate it using detailed price data that are difficult to obtain at the industry and country disaggregation used in this paper.

consumption price index in the United States, and the terms of trade (TOT_s) is the aggregate export price index relative to the aggregate import price index:

$$\widehat{RER}_s = \frac{\hat{P}_s^C}{\hat{P}_{USA}^C}$$

$$\widehat{TOT}_s = \frac{\hat{P}_s^X}{\hat{P}_d^M} = \frac{\left(\sum_{d=1}^{\mathcal{D}} \alpha_{jds}^X \hat{X}_{isd}\right) \Big/ \left(\sum_{d=1}^{\mathcal{D}} \alpha_{jds}^X \frac{\hat{X}_{isd}}{\hat{P}_{isd}^Y}\right)}{\left(\sum_{s=1}^{\mathcal{S}} \alpha_{jds}^M \hat{M}_{isd}\right) \Big/ \left(\sum_{s=1}^{\mathcal{S}} \alpha_{jds}^M \frac{\hat{M}_{isd}}{\hat{P}_{jsd}^Y}\right)}$$

IV. Model Parameterization and Solution

This section presents the calibrated parameters, describes the estimation of the remaining parameters, and outlines the numerical solution method. The main source of data used to calibrate the model is the EORA multi-region input-output database (Lenzen et. al, 2012, Lenzen et. al, 2013), which describes supply and demand linkages across 189 countries and 26 industries. To calibrate the model, EORA is aggregated into 78 regions (77 countries and a 'Rest of World' aggregate) and 13 industries. The main countries of interest are the United States and the individual members of CAPDR, and all are modelled as separate regions. The 13 industries consist of agriculture, mining, utilities, construction, services and eight manufacturing industries.[12] Appendix A reports a comprehensive list of the regions and industries in the model, and their mapping from EORA. The year 2023 is selected as the base period for the calibrations, as it is the most recent year for which data was available.[13]

Calibrated Parameters

The production, expenditure and trade shares are all calibrated using EORA. The capital income share of value added (α_{is}^K) is calculated as the sum of net operating surplus and consumption of fixed capital divided by the sum of net operating surplus, consumption of fixed capital, compensation of employees and gross mixed income for each industry in each country. The share of value added in gross output (α_{is}^V) is calculated as one minus the ratio of total intermediate input usage (summed across source industries) to gross output for each industry in each country.

The parameter α_{is}^J is calculated as the share of total expenditure on intermediate inputs (summing across destination industries) allocated to each industry. The parameters α_{is}^C and α_{is}^I are calculated similarly, where total consumption is defined as the sum of consumption by households, the government and non-profit institutions serving households, and total investment is defined as the sum of gross fixed capital formation and acquisitions less disposals.[14] Expenditure on exports, imports and domestic sales are calculated from EORA using equations (15), (17) and (18). The elements of the resulting 78×78 matrices for each of the 13 industries represent Q_{jsd}. Domestic sales are the elements along the diagonal, imports are the off-diagonal elements down

[12] Manufacturing industries include food & beverages, textiles & apparel, wood & paper, petrol & chemicals, metal products, electrical & machinery, transport equipment and other manufacturing.

[13] The model is calibrated to exactly replicate EORA in 2023 – the most recent year for which data is available. The model was also calibrated to 2019 as the most recent year for which data will be generally unaffected by COVID. This choice did not have a noticeable effect on the results.

[14] Change in inventories is excluded because its inclusion does not guarantee positive investment for all industries at the level of industry aggregation in this model.

the columns, and exports are the off-diagonal elements across the rows ($\mathbf{X} = \mathbf{M}'$). π_{jsd} is then calculated as a matrix of imports from all sources (including domestic) as a share of total expenditure in the destination region for each industry.

The labor supply elasticity (υ) determines the response of labor to a unit change in the real wage expressed in terms of consumer prices. Following Ignatenko et. al (2025), this parameter is assumed to be the same for all regions and is calibrated to the Chetty et. al (2011) preferred estimate of $\upsilon = 0.5$.

Estimated Parameters

Trade elasticities (θ_i) are a key determinant of the economic effects of trade policies in quantitative trade models. Estimating this parameter is difficult, and the literature provides a wide range of estimates that vary depending on the level of aggregation, the time horizon over which they are estimated, and the method of estimation. A common approach is to use structural gravity regressions and variation in bilateral tariff rates to simultaneously estimate the trade elasticity and recover estimates of the iceberg trade costs (i.e. Anderson et. al, 2018; Fontagne et. al, 2022; Shikher, 2012; and Simonovska and Waugh 2014), and a similar approach is adopted here. First, start with equation (12) and divide each import expenditure share by the corresponding domestic expenditure share:

$$\frac{\pi_{jsd}}{\pi_{jdd}} = \frac{T_{is}}{T_{id}} \left(\frac{(1+\tau_{jsd})\kappa_{jsd} P_{js}^{Y}}{P_{jd}^{Y}} \right)^{-\theta_i}$$

Taking logs and defining the exporter fixed effect as $FE_{js} = log\left(T_{is} P_{js}^{Y\,-\theta_i}\right)$ and the importer fixed effect as $FE_{jd} = -log\left(T_{id} P_{jd}^{Y\,-\theta_i}\right)$ yields the following:

$$log\left(\frac{\pi_{jsd}}{\pi_{jdd}}\right) = FE_{js} + FE_{jd} - \theta_i log(1+\tau_{jsd}) - \theta_i log(\kappa_{jsd})$$

Similar to Anderson et. al (2018), Borchert et. al (2022), Head and Mayer (2014) and others, iceberg trade costs are proxied by *k* gravity variables including the logarithm of the distance between the source and destination regions, and dummy variables that take a value of one if the source and destination region are the same (domestic trade), have a common legal origin, common land border, common language, or are members of the same free trade agreement, and zero otherwise. With some more rearranging, the equation to be econometrically estimated by Poisson Pseudo Maximum Likelihood (Santos Silva and Tenreyo, 2006)[15] using data for gravity variables (Gurevich and Herman, 2018) and tariff rates (Teti, 2024)[16] is:

$$\frac{\pi_{jsd}}{\pi_{jdd}} = exp\left[\widetilde{FE}_{js} + \widetilde{FE}_{jd} - \tilde{\theta}_i log(1+\tau_{jsd}) + \sum_{k=1}^{K} (\tilde{\beta}_{jk} \times gravity_k)\right] \times \varepsilon_{jsd}$$

[15] The data is pooled by region, while separate equations are estimated for each industry.

[16] Data on tariff rates was mapped to the EORA industries using concordance tables. In the regressions for the industries that are not normally tariffed or tariff data is unreliable (mining, utilities, construction and services), τ_{jsd} was set to 0 and $\tilde{\theta}_i$ was calibrated to 8 (approximately the median of the estimates for the remaining 9 industries, see Table 1).

Where the fixed effects are normalized according to $\widetilde{FE}_{USA,s} = \widetilde{FE}_{USA,d} = 0$, $\tilde{\theta}_i$ is the estimated trade elasticity for industry i and ε_{jsd} is the multiplicative error term that differs by industry and bilateral trading pair. The $78 \times 78 \times 13$ 'estibrated' iceberg trade costs (Anderson et .al, 2018) can then be recovered using the estimated fixed effects, trade elasticities and error terms. Table 1 reports the estimated trade elasticities by industry and Appendix B reports results for the structural gravity regressions.

Table 1: Trade Elasticities

Industry	**θ_i**
Agriculture	7.8
*Mining**	*8.0*
Food & beverages	5.6
Textiles & apparel	5.7
Wood & paper	10.0
Petrol & chemicals	7.4
Metal products	9.1
Electrical & machinery	15.1
Transport equipment	13.4
Other manufacturing	5.9
*Utilities**	*8.0*
*Construction**	*8.0*
*Services**	*8.0*
Median	**7.8**

* Calibrated elasticity
Source: IMF staff calculations.

Solution Method

The model is solved numerically in MATLAB using a variant of the Alvarez and Lucas (2007) algorithm. Alvarez (2017) and Ravikumar et. al (2019, 2024) use a similar algorithm to solve their respective trade models, also with capital as an input to production. The idea is to use updated guesses for expenditure prices and real wages to balance supply and demand (scaled by GDP) across industries and regions, holding the aggregate trade balance for each region fixed at the initial level (i.e. $\widehat{TB}_d = \frac{TB'_d}{TB_d} = 1$). The steps in the algorithm are as follows:

1. Guess a 13×78 matrix of expenditure prices ($\hat{P}^Q_{jd}$) and a 1×78 vector of real wages ($\hat{w}_s$).
2. Use these guesses to solve equations (20) to (37).
3. Update the guesses according to the following rule:

$$\mathcal{G}_{new} = \mathcal{G} \times \left[1 + 0.01\left(\frac{\sum_{j=1}^{\mathcal{J}}\left(\alpha^X_{jd}\hat{X}_{jd} - \alpha^M_{jd}\widehat{M}_{id} - \alpha^{TB}_{jd}\widehat{TB}_{id}\right)}{\sum_{i=1}^{\mathcal{J}}\alpha^{VA}_{is}\widehat{VA}_{is}}\right)\right]$$

Where $\mathcal{G} = \hat{P}^Q_{jd}$ or $\hat{w}_s$, $\sum_{j=1}^{\mathcal{J}}\alpha^{TB}_{jd}\widehat{TB}_{id} = \alpha^{TB}_d$ and the α^k_{jd}'s denote the share of k in world value added.

4. Compute the error (ε) as follows:

$$\varepsilon = max\left(max\left|\frac{\hat{P}^{Q}_{jd,new}}{\hat{P}^{Q}_{jd}} - 1\right|\right) + max\left|\frac{\hat{w}_{s,new}}{\hat{w}_{s}} - 1\right|$$

5. Use the updated guesses to repeat steps 1 to 4. Iterate until ε is within a given tolerance level.

V. Discussion

This section describes relevant limitations of the model, outlines how the scenarios were constructed, and presents the main results alongside an analysis of their sensitivity to variations in key parameter values.

Model Limitations

Before discussing the results, it is useful to point out several caveats relevant for the modelling exercises. The model used for this analysis is a static model that numerically computes the change in steady states following a policy change. That is, the model computes long-term effects when holding region-specific trade balances fixed at their level in the initial steady state and does not trace out how prices and quantities adjust during the transition period between the short and long term. Using a static model to analyze the long-term effects of tariff changes is appropriate as theoretical and empirical studies generally conclude that permanent tariffs have little to no effect on external imbalances over the long term (i.e. Furceri et. al, 2022 and Gourinchas et. al, 2026), even if they may cause temporary shifts in the short-term. This is because external balances are determined by intertemporal choices that affect savings and investment, and permanent tariffs generally do not affect these choices. Instead, they lead to an offsetting real exchange rate appreciation that leaves the external balance in the tariffing region largely unchanged.[17]

Incorporating dynamics into the model by adding intertemporal optimization would enable trade balances to be determined endogenously and offer additional insights into transitional effects during the adjustment period following a tariff change. For example, Ravikumar et. al (2024) and Hoang and Mix (2026) demonstrate that dynamics substantially amplify the welfare effects of trade policy changes compared to estimates derived using static models, while Ravikumar et. al (2019) demonstrate that adjustment following a trade liberalization can take several decades and the time taken is negatively correlated with the size and sign of the initial trade deficit.

The model features perfect competition and does not account for the effect of trade policy on market size or new exporter entry arising from monopolistic competition and firm-level productivity differences (Melitz, 2003) or adjustment frictions that may prevent factors of production moving freely across industries (Ahn and Tan, 2025). Relatedly, without detailed treatment of the labor market the model is not suited for examining the potential for labor market dislocations, especially given the pervasive informal employment across CAPDR. For example, Arias et. al (2018) find that entry costs into informal employment are significantly lower than for formal employment, and that informal employment increases following trade liberalization primarily due to labor market entry rather than a reduction in formal sector employment. The model also abstracts from the effects of trade policy on uncertainty, which may lead households and businesses to delay major decisions, especially if downside risks are large. For example, Caldara et. al (2020) find that increased trade policy uncertainty reduces

[17] See Gourinchas et. al (2026) for an extended discussion of how tariffs may or may not affect the external balance.

investment with the effects concentrated on exporting firms, while Jakubik and Wei (2026) find that trade policy uncertainty imposes costs on households and firms without yielding permanent improvements in the current account balance. While all these effects have the potential to be quantitively important, they are beyond the scope of this analysis.

Trade elasticities are a crucial parameter in trade models as they govern the responsiveness of trade flows to changes in trade costs and the associated welfare gains or losses. The trade literature generally concludes that this elasticity differs by industry, level of aggregation[18] and time horizon. Over the short term, there may be various frictions that reduce substitution possibilities, so short-term trade elasticities are generally thought to be smaller than over the long term.[19] A widely used estimate of the aggregate long term trade elasticity (the average across industries or products) is a value of around 4 (Simonovska and Waugh, 2014). The cross-industry median of the estimated trade elasticities presented in Table 1 is significantly higher at around 8, although consistent with other estimates (Caliendo and Parro, 2015 and Teti, 2024). Similarly, the labor supply elasticity determines how the labor market responds to trade policy shocks. Again, there is a wide variety of values for this parameter depending on the estimation strategy used (Chetty et. al, 2011). Given the uncertainty surrounding these parameters, a series of sensitivity analyses are conducted to investigate the robustness of the results to alternative values for the trade and labor supply elasticities.

Scenario Construction

The recent tariff increases have been characterized by successive rounds of escalation, negotiation and legal challenges. The tariffs were originally enacted under the *International Emergency Economic Powers Act* (IEEPA) and were generally applied uniformly across industries, although higher tariff rates and exemptions targeted at automotive parts, steel, aluminum, clothing, energy, and other industries of strategic importance were also enacted or announced. The recent tensions began in February 2025 when the United States announced tariffs of 25 percent on most goods imported from Canada and Mexico. In April 2025, trade tensions escalated when the United States announced a minimum 10 percent tariff rate on imports from most countries, with higher rates levied on those with bilateral trade surpluses with the United States, notably China and the European Union. The United States then imposed additional tariffs ranging from 5 percent to 40 percent on imports from many source countries including Brazil, Canada, the European Union, India and Mexico, taking effect in August 2025. Trade negotiations are ongoing and, so far, most countries have elected to forego retaliatory measures, with the notable exceptions of China and Canada.

At the end of 2025, the United States had imposed statutory tariff rates of 18 and 15 percent on Nicaragua and Costa Rica respectively, and 10 percent on the Dominican Republic, Guatemala, Honduras, Panama and El Salvador. On November 13, 2025, the United States announced ‘framework agreements’ with Guatemala and El Salvador (The White House, 2025a and 2025b), to take effect upon ratification in 2026. Under the agreements, Guatemala and El Salvador committed to address a variety of non-tariff barriers while the United States committed to remove tariffs on selected imports of textiles & apparel, and some agricultural and mining products not produced domestically. On December 10, 2025, it was announced that additional incremental tariffs would be levied on Nicaragua, to be phased in between 2027 and 2028. These tariffs were imposed following the determination by the Office of the United States Trade Representative (USTR, 2025) that Nicaragua’s trade practices posed an unreasonable burden on United States commerce.

[18] There is general consensus that in models with more industries or products, the trade elasticity is higher as there are more substitution possibilities available.

[19] Boehm et. al (2023) find that short-term trade elasticities are around one third their long-term counterparts, and that it takes roughly 7 to 10 years for them to converge.

On February 20, 2026, the Supreme Court of the United States overturned many of the tariffs enacted under the IEEPA since the beginning of 2025. The court ruled that these tariffs were an unconstitutional encroachment on congressional taxation authority. In response, President Trump immediately issued a proclamation under the *Trade Act* to introduce a 10 percent ad-valorem tariff on all imports into the United States (The White House, 2026). These tariffs can be imposed for a maximum period of 150 days before they need to be made permanent by Congress. The proclamation also provides for various exemptions, including for imports of textiles & apparel from Costa Rica, Dominican Republic, Guatemala, Honduras, Nicaragua and El Salvador that are compliant with CAFTA-DR, as well as products compliant with the USMCA. On May 7, 2026, the United States Court of International Trade declared the tariffs imposed under the *Trade Act* unlawful as well, although left them in place while legal appeals are ongoing. President Trump has signaled his intention to continue using alternative legal instruments to restore tariffs back to the levels that prevailed before the supreme court ruling (Manak, 2026).

Considering the evolution of tariff rates since the beginning of 2025, results are reported for the following three scenarios:

- ***Scenario 10pc***: The change in tariff rates levied by the United States on imports of all 'traded goods'[20] from all trading partners is set at 10 percentage points.
- ***Scenario PreSC***: The change in tariff rates levied by the United States up to February 6, 2025.
- ***Scenario PostSC***: The change in tariff rates levied by the United States up to February 24, 2025.[21]

Scenario 10pc is an indicative scenario that is designed as a benchmark that abstracts from the effects of the various exemptions. *Scenario PreSC* and *Scenario PostSC* are designed to mimic the tariff rates that prevailed immediately before and after the supreme court ruling while highlighting the effects of the various differential tariff rates and exemptions. *Scenario PostSC* is the scenario that is most representative of the current trade environment facing CAPDR. Product-level tariff rates prevailing at specific dates are obtained from the WTO-IMF Tariff Tracker (2026)[22] and aggregated into the industries in the model. All results are reported relative to the baseline tariff rates prevailing on January 1, 2025, and all scenarios include the retaliatory tariffs enacted by Canada and China on the United States and exclude tariffs that have been announced but not yet implemented. Consequently, *Scenario PreSC* does not include the exemptions for Guatemala and El Salvador granted under the 'framework agreements', and *Scenario PostSC* does not include the planned additional incremental tariffs on Nicaragua.

Figure 7 reports the change in aggregate effective tariffs on imports to the United States from CAPDR members and selected other countries for each of the scenarios. In *Scenario PreSC*, Guatemala, Honduras and El Salvador face aggregate effective tariff rates that are broadly in-line with the *Scenario 10pc* benchmark, while Costa Rica, the Dominican Republic and Nicaragua face higher tariff rates more in line with those faced by the rest of the world, but lower than those faced by China. In *Scenario PostSC*, exemptions for textiles & apparel reduce the aggregate effective tariff rates faced by Guatemala, Honduras, El Salvador and Nicaragua below the *Scenario 10pc* benchmark, while Costa Rica and the Dominican Republic export fewer products subject to the exemptions and therefore face effective tariff rates are closer to the benchmark. Panama does not receive

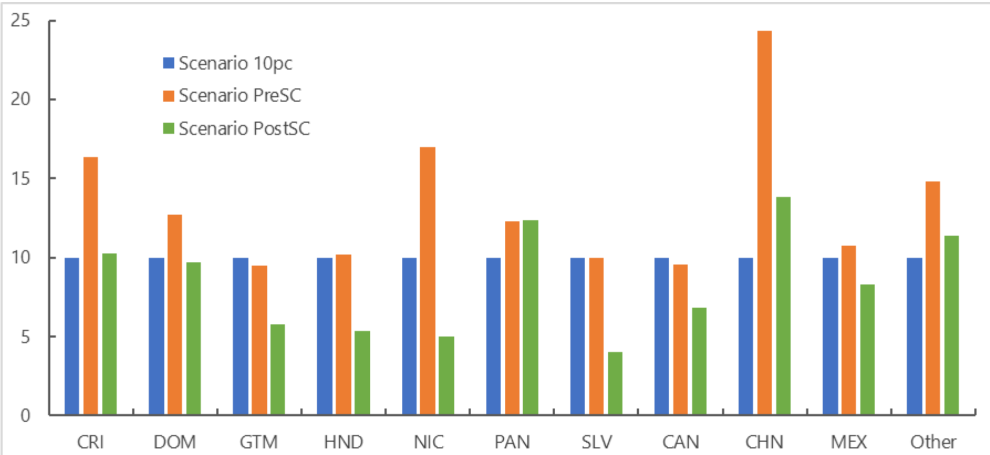
[20] 'Traded goods' are defined as agriculture, mining, food & beverages, textiles & apparel, wood & paper, petrol & chemicals, metal products, electrical & machinery, transport equipment and other manufacturing industries, and excludes utilities, construction and services.

[21] This scenario implicitly assumes that Congress makes tariffs imposed under the *Trade Act* permanent.

[22] See Brotto et. al (2026) for a description of the methodology underpinning the WTO-IMF Tariff Tracker.

exemptions for textiles & apparel and therefore faces an aggregate effective tariff rate that is broadly the same in both *Scenario PreSC* and *Scenario PostSC*.

Figure 7: Change in aggregate effective tariff rates – CAPDR and selected countries
(Percentage points)



Note: Effective tariff rates calculated using imports of 'traded goods' in the model base year as weights. CRI, DOM, GTM, HND, NIC, PAN and SLV are CAPDR members, CAN = Canada, CHN = China, MEX = Mexico and Other = mean of remaining countries, excluding USA.
Source: EORA database, WTO-IMF Tariff Tracker and IMF staff calculations.

Main Results

This section presents the main results for the three scenarios described in the previous section. In *Scenario 10pc*, the uniform tariffs affect all source countries and industries symmetrically, while the exemptions in *Scenario preSC* and *Scenario postSC* alter effective tariff rates across source countries and industries and provide additional scope for international relative price adjustments and trade diversion. This is one key motivation for the general equilibrium modeling approach adopted in this paper.

When the United States raises tariffs on imported goods it widens the 'wedge' between the producer price at the source and the price paid by importers in the United States. In response to higher import prices, in the United States import volumes fall and expenditure switches toward domestic sales. The increase in tariffs also raises the price of imported intermediate inputs, which flows through input-output linkages into higher prices for exports. Even in the case of the uniform tariff in *Scenario 10pc*, there is still a change in the composition of imports by the United States. Imports from industries that are more sensitive to changes in tariffs (governed by the trade elasticities in Table 1) fall by more, while imports from industries that are not subject to tariffs (utilities, construction and services) either rise or fall by less.

In terms of the effect on the countries that make up the rest of the world excluding CAPDR, the fall in imports by the United States corresponds to lower demand for their exports. This could be offset by a combination of lower prices, increased domestic production or increased exports to countries other than the United States. All of these occur to an extent, but not enough to offset the fall in exports. Most countries in the rest of the world experience a fall in real GDP[23] and a real exchange rate depreciation.

[23] See Figure 10 below.

Thus far, most countries have elected to forego retaliatory trade measures with the important exceptions of Canada and China. Canada has mostly confined its retaliatory measures to steel, aluminum and some automotive imports from the United States, while China has retaliated broadly symmetrically.[24] When Canada and China retaliate with higher tariffs, they switch expenditure towards imports from countries other than the United States. This acts as a negative demand shock to the United States and a positive demand shock to third countries. Given their limited extent so far, retaliatory measures do not have a major bearing on the results for CAPDR in any of the scenarios considered here.

Table 2: Summary of Main Results

(Percent deviation from baseline)

	Scenario	CRI	DOM	GTM	HND	NIC	PAN	SLV
Real GDP	*10pc*	-0.9	-1.1	-0.4	-0.8	-0.7	-0.5	-0.5
	PreSC	-1.3	-1.2	-0.4	-0.8	-1.1	-0.6	-0.5
	PostSC	-1.0	-1.0	-0.2	-0.4	-0.3	-0.5	-0.1
Consumption	*10pc*	-1.4	-1.7	-0.6	-1.5	-1.0	-0.9	-0.9
	PreSC	-2.0	-1.9	-0.6	-1.4	-1.6	-1.1	-0.8
	PostSC	-1.4	-1.5	-0.4	-0.7	-0.5	-0.9	-0.2
Domestic sales	*10pc*	0.8	1.1	0.7	1.2	0.4	0.6	0.7
	PreSC	1.1	1.3	0.7	1.2	0.5	0.7	0.7
	PostSC	0.8	1.0	0.5	0.6	0.2	0.6	0.3
Employment	*10pc*	-0.5	-0.6	-0.2	-0.5	-0.3	-0.3	-0.3
	PreSC	-0.7	-0.6	-0.2	-0.5	-0.5	-0.4	-0.3
	PostSC	-0.5	-0.5	-0.1	-0.2	-0.2	-0.3	-0.1
Real wage*	*10pc*	-0.9	-1.2	-0.4	-1.0	-0.7	-0.6	-0.6
	PreSC	-1.3	-1.3	-0.4	-1.0	-1.1	-0.7	-0.5
	PostSC	-1.0	-1.0	-0.2	-0.5	-0.3	-0.6	-0.1
Terms of trade**	*10pc*	-1.7	-2.3	-1.1	-1.4	-0.8	-1.0	-0.8
	PreSC	-2.5	-2.8	-1.2	-1.5	-1.3	-1.4	-0.9
	PostSC	-1.7	-2.1	-0.7	-0.8	-0.5	-1.1	-0.3
Real exchange rate***	*10pc*	-3.9	-4.3	-3.5	-3.3	-3.5	-3.2	-3.3
	PreSC	-5.5	-5.6	-4.4	-4.1	-4.9	-4.4	-4.3
	PostSC	-4.0	-4.2	-3.2	-2.7	-3.2	-3.4	-2.9

* Real wage expressed in terms of consumer prices

** Terms trade is defined as export price index relative to import price index

*** Real exchange rate is defined as country consumption price index relative to US consumption price index

Source: IMF staff calculations.

Table 2 summarizes the main effects on CAPDR for each of the three scenarios. In *Scenario 10pc*, higher domestic sales fill some of the gaps created by the falls in exports, but not enough to prevent falls in output, labor productivity, and demand for capital, labor and intermediate production inputs. Lower productivity leads to lower real wages, and households respond by reducing labor supply. This reinforces the effect of reduced labor demand on employment but also dampens the effect on the real wage. The tariffs put upwards pressure on prices in the United States, and this leads to higher import prices in CAPDR, contributing towards increased domestic sales. Higher import prices raise domestic production costs through higher prices for imported intermediate inputs.[25] This is not enough to prevent a fall in the terms of trade, which results in a negative income

[24] At the level of industry aggregation in this model.

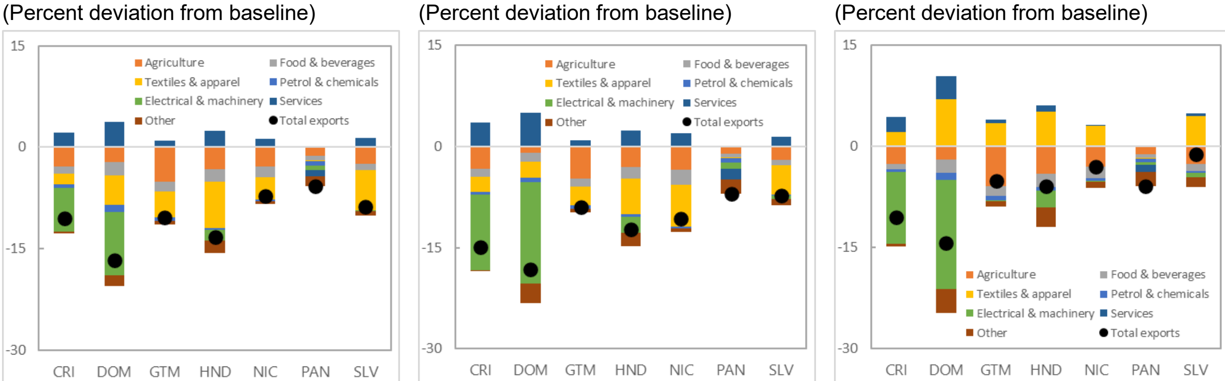
[25] This effect is partly offset by falls in the real wage.

effect that reduces expenditure on consumption, investment and intermediate inputs. Like the effects on the rest of the world, the tariff increases affect each country in CAPDR as an adverse foreign demand shock that results in lower real GDP and domestic prices.

Figure 8 and Figure 9 report the changes in exports for each of the countries in CAPDR for all scenarios, disaggregated by industry and region. In *Scenario 10pc*, uniformly higher tariffs in the United States result in reduced demand for exports from CAPDR by the United States. Manufacturing industries generally detract from exports the most, followed by agriculture. This is because these industries are more closely integrated into GVCs, tend to export more of their output instead of selling domestically, and are more reliant on imported intermediate inputs for production. Part of the output of services is exported to be used by foreigners as an intermediate input. For most members of CAPDR, exports of services increase as this industry is not subject to tariffs and its output is now relatively cheaper from the point of view of foreigners. The reduction in exports in each country in CAPDR is largely driven by reduced exports to the United States.

Figure 8: Contributions to changes in real exports by industry

Panel A: Scenario 10pc (Percent deviation from baseline) — *Panel B: Scenario PreSC* (Percent deviation from baseline) — *Panel C: Scenario PostSC* (Percent deviation from baseline)

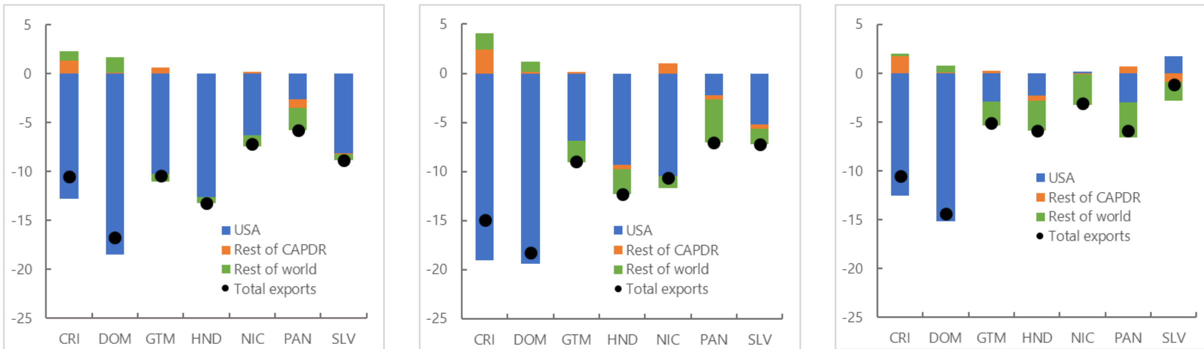


Source: IMF staff calculations

Tariff exemptions (most importantly, for textiles & apparel in *Scenario PostSC*) provide additional scope for relative price adjustments and trade diversion compared to *Scenario 10pc.* This is because the exemptions promote additional substitution across industries, in addition to substitution across countries. Reducing tariffs on textiles & apparel mitigates the decline in exports for all CAPDR countries that are exempt, and this industry now makes a positive contribution to total exports (Figure 8). The extent of this effect varies across CAPDR countries and is strongly linked to how significant textile & apparel exports to the United States are for each country. Given the importance of textiles & apparel exports for El Salvador, the exemptions go a long way towards offsetting the effect of the tariffs on the remaining industries. This leaves real GDP, real expenditure, employment, and the real wage nearly unchanged relative to the baseline (Table 2). The exemptions in *Scenario PostSC* have a minimal effect on Panama because it is neither exempt nor a major exporter of textiles & apparel.

Figure 9: Contributions to changes in real exports by destination region

Panel A: Scenario 10pc (Percent deviation from baseline) | *Panel B: Scenario PreSC* (Percent deviation from baseline) | *Panel C: Scenario PostSC* (Percent deviation from baseline)

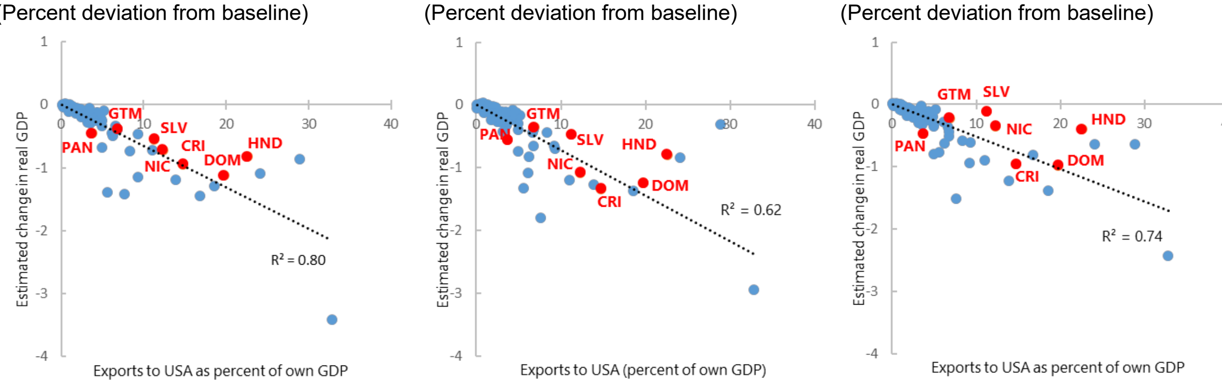


Source: IMF staff calculations

In the model, global intersectoral production linkages serve to disperse the effects of tariff changes across a wider range of countries and industries and dampen the effect of trade diversion on CAPDR. Additionally, the higher tariffs levied by the United States at similar rates across countries and industries strengthen the negative income effects relative to the potentially offsetting positive substitution effects. While cross-country and cross-industry differentiation in tariff rates in *Scenario PreSC* and *Scenario PostSC* allow for bigger international relative price adjustments and more scope for trade diversion that may benefit CAPDR, these effects are still outweighed by the global reduction in demand and income due to the tariffs that also apply to the rest of the world.

Figure 10: Estimated change in real GDP vs. export exposure to the United States

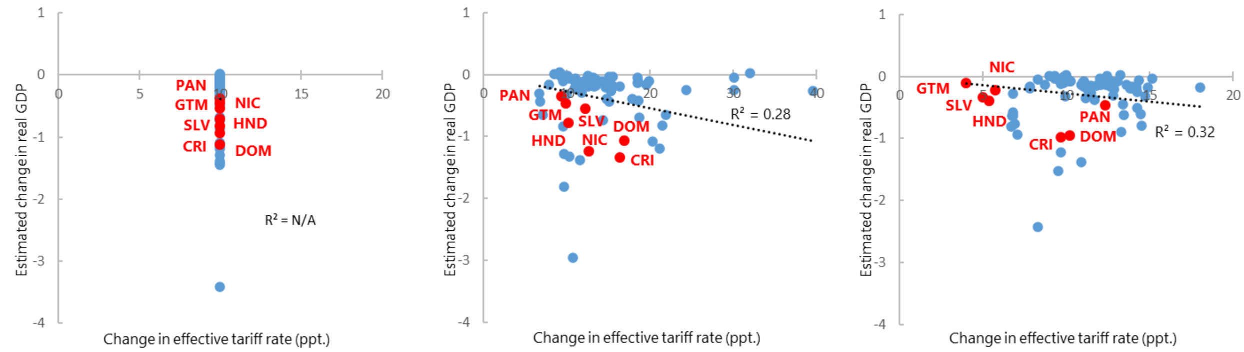
Panel A: Scenario 10pc (Percent deviation from baseline) | *Panel B: Scenario PreSC* (Percent deviation from baseline) | *Panel C: Scenario PostSC* (Percent deviation from baseline)



Source: EORA database and IMF staff calculations

Figure 11: Estimated change in real GDP vs. aggregate effective tariff rates

Panel A: Scenario 10pc (Percent deviation from baseline) | *Panel B: Scenario PreSC* (Percent deviation from baseline) | *Panel C: Scenario PostSC* (Percent deviation from baseline)



Source: EORA database, WTO-IMF Tariff Tracker and IMF staff calculations

The differences in the responses across countries in CAPDR are governed by complex interactions between the composition of output and expenditure, global input-output linkages, trade elasticities and changes in tariff rates. For instance, trade elasticities govern the sensitivity of trade to changes in tariffs, and industries with higher elasticities (Table 1) generally experience larger changes in exports following a given change in tariffs. Countries with exports that are more intensive in these industries will be more adversely affected. As a general rule, countries that are more directly exposed to trade with the United States are more adversely affected. Figure 10 shows this strong negative association holds for most countries in the model, including the members of CAPDR. Simple linear regressions suggest that around 60 percent to 80 percent of the cross-country variation in the estimated change in real GDP can be explained by cross-country variation in exports to the United States as a share of GDP before the change in tariffs, depending on the scenario. Figure 11 shows that the relationship between estimated changes in real GDP and changes in aggregate effective tariff rates is less clear.

Sensitivity Analysis

This section presents the results of the sensitivity analyses. As described earlier, these analyses are conducted to investigate the sensitivity of the results to alternative values for the labor supply and trade elasticities. In the interests of space and to better facilitate comparisons, results are reported for *Scenario PostSC* only.

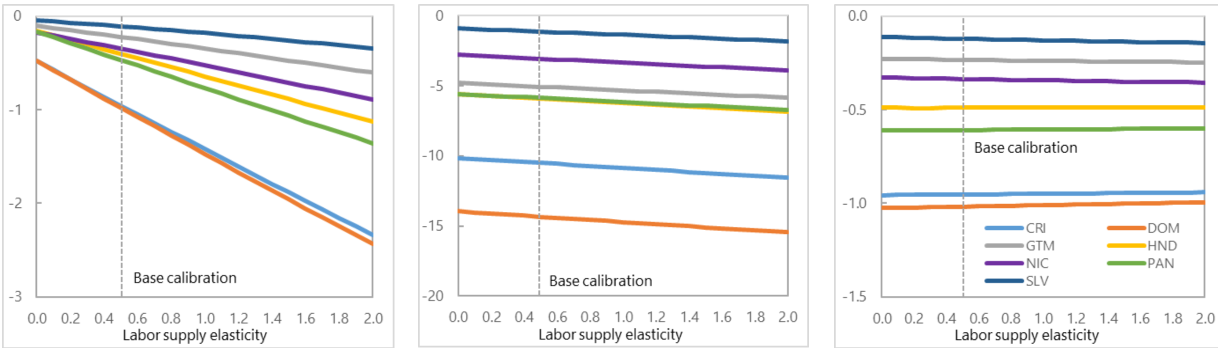
Figure 12 reports results when the model is repeatedly simulated with alternative values for the labor supply elasticity such that $\upsilon \in [0,2]$. When $\upsilon = 0.5$ the model is as described in the calibration section, while $\upsilon = 0$ corresponds to inelastic labor supply.[26] The labor supply elasticity determines how responsive employment is to a given change in the real wage. As the figures show, higher elasticities result in larger employment responses, which is then reflected in output through the production structure of the model. The size of the cross-country differences in employment and real GDP responses is determined by the size of the shifts in the real wage, which in turn reflects the shifts in demand (foreign plus domestic) following the imposition of the tariffs and exemptions. The results suggest that labor demand curves in each country are relatively elastic, as real wages remain stable while the labor supply curves flatten with the increasing labor supply elasticity. The lack of a strong real wage response implies limited changes to the terms of trade and real exchange rates. In turn, domestic sales must

[26] Comparable static trade models such as Caliendo and Parro (2015) and Shikher (2012) feature inelastic labor supply.

respond by more to match the changes in output, given that limited changes in international relative prices dampen cross-country substitutions and therefore also dampen changes in export and import volumes.

Figure 12: Sensitivity to labor supply elasticity – *Scenario PostSC*

Panel A: Real GDP (Percent deviation from baseline) | *Panel B: Real exports* (Percent deviation from baseline) | *Panel C: Real wage* (Percent deviation from baseline)

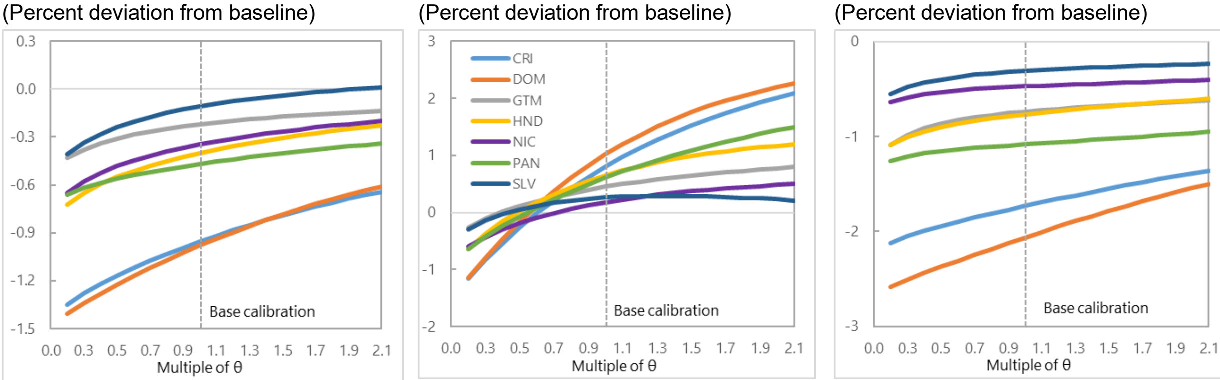


Source: IMF staff calculations

Figure 13 reports results when the model is repeatedly simulated after multiplying the base calibration trade elasticities in Table 1 by a scalar, $\omega \in (0{,}2.1]$. When $\omega = 1$, the trade elasticities match those described in the base calibration, while $\omega = 2$ corresponds to trade elasticities twice the size of those in the base calibration. Higher trade elasticities make domestic sales and imports more responsive changes in tariffs. That is, when tariffs applied to imports from an industry or source country increase, domestic sales increase and imports fall by more as the trade elasticity increases. Given lower imports by a destination country, this implies lower exports by the corresponding source country and allows more production to be directed towards domestic sales in both countries. The potential increase in domestic sales is limited by supply capacity, and once a country-specific threshold trade elasticity is reached, higher domestic sales volumes give way to higher domestic prices and real wages.

Figure 13: Sensitivity to trade elasticities – *Scenario PostSC*

Panel A: Real GDP (Percent deviation from baseline) | *Panel B: Real domestic sales* (Percent deviation from baseline) | *Panel C: Terms of trade* (Percent deviation from baseline)



Source: IMF staff calculations

VI. Conclusion

This paper uses a quantitative multi-region multi-industry model of the global economy to explore potential long-term economic effects on CAPDR member countries of recent tariff increases imposed by the United States. The modelling exercises suggest that tariff increases act as an adverse foreign demand shock that adversly affects the countries in the region. Over the long term and under the scenario that is most representative of the current external environment facing CAPDR, estimated effects on real GDP range between a fall of around 1 percent in Costa Rica and the Dominican Republic, to a fall of around 0.1 percent in El Salvador. The severity of the effect on real GDP is strongly correlated with direct export exposure to the United States, and exemptions – especially for textiles and apparel – provide scope to offset real GDP losses to an extent that varies across CAPDR members. Although ongoing legal challenges have introduced additional uncertainty regarding the ultimate extent of tariff changes, the results in this paper will remain broadly valid providing the tariffs remain in place.

The model used for this analysis includes features that are important for understanding the long-term effects of tariff changes, although extensions along several dimensions could provide additional insights and avenues for further research. For instance, incorporating dynamics through intertemporal saving decisions would enable trade imbalances to be determined endogenously and provide a framework for analyzing the transitional effects as the global economy adjusts to tariff changes. An important consideration that is beyond the scope of this paper is to investigate policy levers that could be used to offset the adverse effects of tariff increases, especially given the varying exchange rate regimes found within CAPDR.[27] One useful exercise could be to explore interactions between the degree of exchange rate flexibility and the extent to which adjustment occurs through domestic activity and prices rather than external competitiveness. Another useful exercise could be to explore the extent to which closer regional economic integration and further reductions in non-tariff barriers could mitigate the effects of higher tariffs, as highlighted by Rotunno and Ruta (2026).

[27] The IMF (2024) reports that CAPDR member countries employ a diverse array of *de jure* exchange rate regimes. Costa Rica, Dominican Republic, Guatemala, and Nicaragua maintain crawl-like or crawling pegs, Honduras maintains a stabilized regime, while El Salvador and Panama have adopted full dollarization.

References

Ahn, J. and Tan, B., 2025, *Supply Chain Diversification and Resilience*, IMF Working Paper No. WP/25/102.

Alvarez, F., and Lucas, R., 2007, 'General Equilibrium Analysis of the Eaton-Kortum Model of International Trade', *Journal of Monetary Economics*, vol. 54: 1726-1768.

Alvarez, F., 2017, 'Capital Accumulation and International Trade', *Journal of Monetary Economics*, vol. 91: 1-18.

Anderson, J., Larch, M., and Yotov, Y., 2018, 'GEPPML: General Equilibrium Analysis with PPML', *The World Economy*, vol. 41: 2750–2782.

Arias, J., Artuc, E., Lederman, D., and Rojas, D., 2018, 'Trade, Informal Employment and Labor Adjustment Costs', *Journal of Development Economics*, vol. 133: 396-414.

Aslam, A., Novta, N., and Rodrigues-Bastos, F., 2017, *Calculating Trade in Value Added*, IMF Working Paper No. WP/17/178.

Boehm, C., Levchenko, A., and Pandalai-Nayar, N., 2023, 'The Long and Short (Run) of Trade Elasticities', *American Economic Review*, vol. 113: 861–905.

Borchert, I., Larch, M., Shikher, S., and Yotov, Y., 2022, 'Disaggregated Gravity: Benchmark Estimates and Stylized Facts from a New Database', *Review of International Economics*, vol. 30: 113-136.

Brotto, A., Exton, O., Gonclarz, T., Jakubik, A., Ruta, M., and Verbeet, T., 2026, *Methodology Note for the WTO-IMF Tariff Tracker*, updated 13 May 2026, available at: https://ttd.wto.org/en/reports/tariff-actions.

Caldara, D., Iacoviello, M., Molligo, P., Prestipino, A., and Raffo, A., 2020, 'The Economic Effects of Trade Policy Uncertainty', *Journal of Monetary Economics*, vol. 109: 38-59.

Caliendo, L., and Parro, F., 2015, 'Estimates of the Trade and Welfare Effects of NAFTA', *Review of Economic Studies*, vol. 82: 1-44.

Chetty, R., Guren, A., Manoli, D., and Weber, A., 2011, 'Are Micro and Macro Labor Supply Elasticities Consistent? A Review of the Evidence on the Intensive and Extensive Margins', *American Economic Review: Papers and Proceedings*, vol. 101: 471-475.

Dekle, R., Eaton, J., and Kortum, S., 2008, 'Global Rebalancing with Gravity: Measuring the Burden of Adjustment', *IMF Staff Papers*, vol. 55: 511-540.

Eaton, J., and Kortum, S., 2002, 'Technology, Geography, and Trade', *Econometrica*, vol. 70: 1741-1779.

Eugster, J., Jaumotte, F., MacDonald, M., and Piazza, R., 2022, *The Effect of Tariffs on Global Value Chains*, IMF Working Paper No. WP/22/40.

Fontagne, L., Guimbard, H., and Orefice, G., 2022, 'Tariff-based Product-level Trade Elasticities', *Journal of International Economics*, vol. 137: 103593.

Furceri, D., Hannan, S., Ostry, J., and Rose, A., 2022, The Macroeconomy After Tariffs, *The World Bank Economic Review*, vol. 36: 361–381.

Gourinchas, P-O., Kindberg-Hanlon, G., Patnam, M., Rotunno, L., and Ruta, M., 2026, *Global Imbalances, Industrial Policy and Tariffs*, IMF Working Paper No. WP/26/67.

Gurevich, T., and Herman, P., 2018, *The Dynamic Gravity Dataset: 1948-2016*. USITC Working Paper 2018-02-A.

Head, K., and Mayer, T., in Gopinath, G., and Rogoff, K. (eds.), 2014, 'Gravity Equations: Workhorse, Toolkit and Cookbook', in *Handbook of International Economics*, vol. 4: 131-194.

Hoang, T., and Mix, C., 2026, 'Trade Wars and Rumors of Trade Wars: The Dynamic Effects of US-China Tariff Hikes', *Journal of International Economics*, vol. 160: 104229.

Ignatenko, A., Lashkaripour, A., Macedoni, L., and Simonovska, I., 2025, 'Making America Great Again? The Economic Impacts of Liberation Day Tariffs', *Journal of International Economics*, vol. 157: 104138.

International Monetary Fund, 2024, *Annual Report on Exchange Arrangements and Exchange Restrictions 2023: Overview*, available at: https://www.imf.org/en/publications/annual-report-on-exchange-arrangements-and-exchange-restrictions/issues/2024/12/19/annual-report-on-exchange-arrangements-and-exchange-restrictions-2023-541890.

Jakubik, A. and Wei, Y., 2026, *US Trade Policy Uncertainty and the Current Account: Unpacking Trade and Financial Channels*, IMF Working Paper No. WP/26/17.

Johnson, R., 2018, 'Measuring Global Value Chains', *Annual Review of Economics*, vol. 10: 207–236.

Koopman, R., Wang, Z., and Wei, S., 2014, 'Tracing Value Added and Double Counting in Gross Exports', *American Economic Review*, vol. 104: 459–494.

Lenzen, M., Kanemoto, K., Moran, D., and Geschke, A., 2012, 'Mapping the Structure of the World Economy'. *Environmental Science & Technology*, vol. 46: 8374–8381.

Lenzen, M., Kanemoto, K., Moran, D., and Geschke, A., 2013, 'Building EORA: A Global Multi-Regional Input-Output Database at High Country and Sector Resolution'. *Economic Systems Research*, vol. 25: 20-49.

Levchenko, A., and Zhang, J., 2016, 'The Evolution of Comparative Advantage: Measurement and Welfare Implications', *Journal of Monetary Economics*, vol. 78: 96-111.

Manak, I., 2026, *How Trump's Tariffs Could Survive a Supreme Court Ruling*, Council on Foreign Relations, updated 20 February 2026, available at: https://www.cfr.org/articles/how-trumps-tariffs-could-survive-the-supreme-court-ruling

Melitz, M., 2003, 'The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity', *Econometrica*, vol. 71: 1695-1725.

Mutreja, P., Ravikumar, R., and Sposi, M., 2018, 'Capital Goods Trade, Relative Prices and Economic Development', *Review of Economic Dynamics*, vol. 27: 101-122.

Office of the United States Trade Representative, 2025, *USTR Section 301 Action on Nicaragua's Acts, Policies, and Practices Relating to Labor Rights, Human Rights and Fundamental Freedoms, and the Rule of Law*, updated 10 December 2025, available at: https://ustr.gov/about/policy-offices/press-office/press-releases/2025/december/ustr-section-301-action-nicaraguas-acts-policies-and-practices-relating-labor-rights-human-rights

Ravikumar, R., Santacreu, A.M., and Sposi, M., 2019, 'Capital Accumulation and the Dynamic Gains from Trade', *Journal of International Economics*, vol. 119: 93-110.

Ravikumar, R., Santacreu, A.M., and Sposi, M., 2024, 'Trade Liberalization versus Protectionism: Dynamic Welfare Asymmetries', *European Economic Review*, vol. 163: 104692.

Rotunno, L., and Ruta, M., 2026, 'Trade Partners' Response to US Tariffs', *IMF Economic Review*.

Santos Silva, J., and Tenreyo, S., 2006, 'The Log of Gravity', *Review of Economics and Statistics*, vol. 88: 641-658.

Shikher, S., 2012, 'Putting Industries in the Eaton-Kortum Model', *Journal of International Trade and Economic Development*, vol. 21: 807-837.

Simonovska, I., and Waugh, M., 2014, 'The Elasticity of Trade: Estimates and Evidence', *Journal of International Economics*, vol. 92: 34-50.

Teti, F., 2024, *Missing Tariffs*, CESifo Working Paper No. 11590.

The White House, 2025a, *Joint Statement on Framework for United States – Guatemala Agreement on Reciprocal Trade*, updated 13 November 2025, available at: https://www.whitehouse.gov/briefings-statements/2025/11/joint-statement-on-framework-for-united-states-guatemala-agreement-on-reciprocal-trade/

The White House, 2025b, *Joint Statement on Framework for United States – El Salvador Agreement on Reciprocal Trade*, updated 13 November 2025, available at: https://www.whitehouse.gov/briefings-statements/2025/11/joint-statement-on-framework-for-united-states-el-salvador-agreement-on-reciprocal-trade/

The White House, 2026, *Fact Sheet: President Donald J. Trump Imposes a Temporary Import Duty to Address Fundamental International Payment Problems*, updated 20 February 2026, available at: https://www.whitehouse.gov/fact-sheets/2026/02/fact-sheet-president-donald-j-trump-imposes-a-temporary-import-duty-to-address-fundamental-international-payment-problems/

World Trade Organization, 2026, *WTO-IMF Tariff Tracker*, updated 5 May 2026, available at: https://ttd.wto.org/en/analysis/tariff-actions

Appendix A: Model Aggregation

Region Aggregation

Country name	ISO3 code	Country name	ISO3 code	Country name	ISO3 code
United Arab Emirates	ARE	Finland	FIN	Nicaragua	NIC
Argentina	ARG	France	FRA	Netherlands	NLD
Australia	AUS	Gabon	GAB	Norway	NOR
Austria	AUT	United Kingdom	GBR	New Zealand	NZL
Belgium	BEL	Georgia	GEO	Pakistan	PAK
Bangladesh	BGD	Guatemala	GTM	Panama	PAN
Bulgaria	BGR	Honduras	HND	Peru	PER
Bahamas, The	BHS	Croatia	HRV	Philippines	PHL
Bosnia and Herzegovina	BIH	Hungary	HUN	Poland	POL
Bolivia	BOL	Indonesia	IDN	Portugal	PRT
Brazil	BRA	India	IND	Paraguay	PRY
Canada	CAN	Ireland	IRL	Romania	ROU
Chile	CHL	Iran	IRN	Rest of World*	ROW
China	CHN	Iraq	IRQ	Russia	RUS
Cote d'Ivoire	CIV	Israel	ISR	Saudi Arabia	SAU
Cameroon	CMR	Italy	ITA	El Salvador	SLV
Colombia	COL	Jamaica	JAM	Serbia	SRB
Costa Rica	CRI	Jordan	JOR	Slovenia	SVN
Czech Republic	CZE	Japan	JPN	Sweden	SWE
Germany	DEU	Korea, South	KOR	Thailand	THA
Denmark	DNK	Kuwait	KWT	Turkey	TUR
Dominican Republic	DOM	Sri Lanka	LKA	Tanzania	TZA
Algeria	DZA	Mexico	MEX	Uruguay	URY
Ecuador	ECU	Malaysia	MYS	Vietnam	VNM
Egypt, Arab Rep.	EGY	Niger	NER	South Africa	ZAF
Spain	ESP	Nigeria	NGA	United States	USA

* Rest of World is calculated as the sum of the remaining 112 countries in EORA.
Source: EORA database

Industry Aggregation

EORA	Model
1 Agriculture 2 Fishing	1 Agriculture
3 Mining and Quarrying	2 Mining
4 Food & Beverages	3 Food & beverages
5 Textiles and Wearing Apparel	4 Textiles & apparel
6 Wood and Paper	5 Wood & paper
7 Petroleum, Chemical and Non-Metallic Mineral Products	6 Petrol & chemicals
8 Metal Products	7 Metal products
9 Electrical and Machinery	8 Electrical & machinery
10 Transport Equipment	9 Transport equipment
11 Other Manufacturing	10 Other manufacturing
12 Recycling 13 Electricity, Gas and Water	11 Utilities
14 Construction	12 Construction
15 Maintenance and Repair 16 Wholesale Trade 17 Retail Trade 18 Hotels and Restraurants 19 Transport 20 Post and Telecommunications 21 Finacial Intermediation and Business Activities 22 Public Administration 23 Education, Health and Other Services 24 Private Households 25 Others 26 Re-export & Re-import	13 Services

Source: EORA database

Appendix B: Structural Gravity Estimates

Structural Gravity Estimates (p-values in parentheses)

	Agriculture	Mining	Food & beverages	Textiles & apparel	Wood & paper	Petrol & chemicals	Metal products	Electrical & machinery	Transport equipment	Other manufacturing	Utilities	Construction	Services
log(DIST)	-0.328 ***	-0.618 **	-0.385 ***	-0.633752 ***	-0.368 ***	-0.442 ***	-0.403 ***	-0.400 ***	-0.629 ***	-0.392 ***	-0.298 ***	-0.360 ***	-0.305 ***
	(0.000)	(0.010)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)	(0.000)	(0.000)	(0.000)	(0.000)
BRDR	-4.841 ***	-1.916 ***	-4.390 ***	-1.924744 ***	-3.946 ***	-3.405 ***	-3.604 ***	-2.638 ***	-3.126 ***	-3.337 ***	-6.899 ***	-7.618 ***	-5.828 ***
	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CLEG	0.967 ***	1.190 ***	0.860 ***	0.951 ***	0.911 ***	0.937 ***	0.962 ***	1.067 ***	1.072 ***	0.908 ***	0.693 ***	1.814 ***	1.102 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CNTG	0.956 ***	0.705 *	1.017 ***	0.373	0.858 ***	0.904 ***	0.843 ***	0.591 ***	0.623 **	0.763 ***	1.682 ***	0.226	0.385 **
	(0.000)	(0.094)	(0.000)	(0.168)	(0.000)	(0.000)	(0.000)	(0.001)	(0.038)	(0.000)	(0.000)	(0.442)	(0.011)
CLNG	0.806 ***	0.643 **	1.164 ***	0.786 ***	0.928 ***	0.610 ***	0.740 ***	0.428 ***	0.193 *	0.898 ***	1.458 ***	0.812 ***	0.820 ***
	(0.000)	(0.017)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.085)	(0.000)	(0.000)	(0.000)	(0.000)
FTA	0.512 ***	-0.804 ***	0.547 ***	0.376 **	0.556 ***	0.464 ***	0.336 ***	0.186	0.722 ***	0.119	0.114	0.217	0.671 ***
	(0.000)	(0.001)	(0.000)	(0.018)	(0.000)	(0.000)	(0.001)	(0.117)	(0.000)	(0.454)	(0.498)	(0.162)	(0.000)
log(1+TARIFF)	-7.769 **	-	-5.626 ***	-5.676 ***	-10.036 ***	-7.352 **	-9.138 ***	-15.147 ***	-13.378 ***	-5.913 ***	-	-	-
	(0.012)		(0.000)	(0.000)	(0.000)	(0.021)	(0.003)	(0.000)	(0.000)	(0.000)			
Exporter FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Importer FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R-sqr	0.9463	0.5555	0.8926	0.7718	0.9576	0.8565	0.9113	0.9295	0.9230	0.8310	0.9989	0.9997	0.9934
N. obs	6084	6084	6084	6084	6084	6084	6084	6084	6084	6084	6084	6084	6084

Note: DIST is the geographic distance between the source and destination regions, while BRDR, CLEG, CNTG, CLNG and FTA are dummy variables that equal one if the source and destination regions are the same (domestic trade), share a common legal origin, share a common land border, share a common official language, or are members of the same free trade agreement respectively, and zero otherwise.

* indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at the 1% level.

PUBLICATIONS

Long-term Effects of US Tariff Increases on CAPDR

Working Paper No. WP/26/125