Working Paper 25-1

Trump's Global Tariff War: Faulty Premises, Costly Consequences

William R. Cline[1]
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ABSTRACT

The Trump Global Tariff War (TGTW) has discarded US commitments to the postwar international trading order established under the GATT and WTO. It replaces the Most Favored Nation principle with an "Every Nation Different" principle under the false premise that any economy with a trade surplus against the United States must be cheating on its trade obligations, and imposes a "reciprocal" tariff increase based on the ratio of bilateral US imports to exports. It fails to recognize the role of US fiscal deficits in boosting demand for imports, and of the attractiveness of the US capital market to inflows of foreign capital in strengthening the dollar and contributing to a persistent trade deficit. The TGTW promises revival of US manufacturing jobs under the false premise that trade deficits rather than technological change and Engels Curve shifts in demand toward services have driven the decline in the share of manufacturing in employment and GDP. It shows no recognition that higher tariffs are a self-inflicted wound to the economy because of large static welfare triangle costs and loss in dynamic efficiency growth. This study estimates that the 18 percent rise in tariffs so far in the TGTW imposes an ongoing future static welfare cost of 0.28 percent of GDP. The medium-term dynamic efficiency loss brings the total welfare loss reaching a range of 1.1 to 2.3 percent of baseline GDP by 2035. CBO budget estimates of increased tariff revenue of 1 percent of GDP over the next decade (including interest savings) may be understated on an implied premise of sharp import reductions but overstated because President Trump has suggested giving them away in "tariff dividend" checks to all but high-income households. Moreover, a possible Supreme Court ruling against application of the "emergency" legislation on which the main tariff increases are based further reduces the reliability of revenue estimates. The TGTW has usefully revealed a vulnerability of the US economy to a future cutoff in the supply of rare earth minerals, metals, and magnets imported from China that requires urgent action.

Keyword: tariffs, trade war; JEL F02

[1] President, Economics International Inc., and Senior Fellow Emeritus, Peterson Institute for International Economics. For comments on a previous draft, I thank without implicating Chad P. Bown, Joseph E. Gagnon, Gary Clyde Hufbauer, Warwick J. McKibbin, and Maurice Obstfeld.

Introduction

This study begins with a recognition that the TGTW has *upended the postwar international trading system*, replacing Most Favored Nation (MFN) tariffs with Every Nation Different (END) tariffs in a regime implying imposition of partner-specific tariffs by a hegemon. It has done so based on spurious attribution of all US bilateral deficits to cheating by the partner in question, ignoring comparative advantage and contribution of excess US fiscal deficits and misaligned exchange rates to trade deficits. The TGTW also ignores the self-inflicted economic wounds of sacrificing static and dynamic welfare gains from trade by increasing US tariffs. Hegemonic END protection seems unlikely to provide a lasting framework for the international trading system.

The discussion then reminds that an eventual outbreak of protection by advanced economies was long considered a risk of expanding much more broadly the successful East Asian model of economic development based on exports of manufactures (Cline, 1982). China has proven to be the elephant that broke the back of that development vehicle. The discussion then notes the increase in US protection against "unfair trade" by advanced-economy partners as well in the 1970s and 1980s, especially against Japan.

The study then turns to an analysis of the *central premise* of the TGTW: that high tariffs and/or sharp reductions in foreign protection forced by initially high tariffs in bilateral negotiations can Make America Great Again by *creating a large number of* "good" *manufacturing jobs*. US manufacturing employment declined from its peak of 19.4 million workers in 1979 to a plateau of about 13 million by 2009. However, this decline primarily reflected automation and technological change rather than a collapse of manufacturing output caused by higher imports. From 1998 to 2024, real value added in US manufacturing rose by 1.79 percent annually, but output per worker rose faster at 3 percent annually, reducing the number of employees needed. In addition, the share of manufacturing in total personal consumption demand eased from about 31 percent to about 27 percent, reflecting "Engel's Law" yielding a humped-shape curve in which the share of manufactures initially rises against agriculture but eventually declines against a rising share of services in total demand.

The analysis shows a declining share of manufacturing in GDP from 1998 to 2024 in other major advanced economies as well (euro area, United Kingdom, Japan, Canada). It calculates that complete elimination of the US external deficit in merchandise trade would create only about 2 million manufacturing jobs.

The discussion then turns to the issue of *why tariff protection* has been chosen as the instrument for reducing US external deficits, *rather than exchange rate adjustment*. It considers the "exorbitant privilege" issue whereby capital inflows attracted by the uniquely large and safe US bond and equity markets keep the dollar strong despite a sizable trade deficit. It also considers the "Lerner Symmetry" theorem, which holds that any attempt to curb the trade deficit by imposing a tariff will cause an equal and offsetting "tax on exports" in the form of an appreciation of the exchange rate. It reminds that the "Plaza Accord" of 1985 involved a commitment by the United States to narrow its fiscal deficit as a counterpart to pledges by

Germany and Japan to intervene in exchange markets in a coordinated depreciation of the dollar. The discussion points out that the IMF forecasts a baseline narrowing of the US external current account deficit from 4 percent of GDP in 2025 to 3 percent by 2025, and reminds that the deficit is substantially smaller than its peak of 6 percent of GDP in 2006. It observes that in my model of Fundamental Equilibrium Exchange Rates (Cline, 2017b, 2024), a reduction of the current account deficit by 2 percent of GDP would require a real depreciation of the dollar by 12 percent.

The analysis then questions the TGTW's *premise of high US market power.* World Bank data show that in 2022 only two countries were so dependent on exports to the United States that it likely had monopsony power over them in trade: Canada and Mexico (about 78 percent of exports for each). But the USMCA agreement exempts most of this trade from tariffs. The US market accounted for only 19 percent of exports for the EU, 19 percent for Japan, 16 percent for China, 16 percent for Korea, and 12 percent for the United Kingdom. These shares would appear too small to confer monopsonist power for the US, suggesting that the lopsided deals concluded with the EU, Japan, and Korea had more to do with geo-political and military dependence than market dependence.

The study turns next to the *reciprocal tariffs* announced on *Liberation Day*, April 2, 2025. First, it examines the *premise* that most US *trading partners have higher protection* than the United States. Using World Bank and WTO data, primarily reflecting MFN tariffs, the average reported tariff for the United States in 2022-24 was 2.4 percent. This level places pre-TGTW US tariffs in the group of five lowest-tariff economies (Singapore, Australia, New Zealand, UK, US) among 30 major economies. Seven major economies, including the EU, Japan, Canada, and Switzerland, have tariffs of about 3 percent. Another 10 have tariffs of 5 to 7 percent. Five large emerging market economies have average tariffs of 9 to 11 percent (Figure 5). So higher tariffs than those of the US cannot account for corrective additional "reciprocal" tariffs of 25-35 percent announced on Liberation Day for most major economies with bilateral surpluses against the US.

Second, the premise of the need for reciprocal tariffs because of other countries' unfair actions is examined by considering whether US *fiscal* problems are instead a major cause of its external deficits. I present estimates indicating that an extra 1 percent of GDP deficit for the US boosts its trade deficit by about 0.25 percent of GDP. For the current account including capital income, the IMF places its corresponding multi-country estimate of the impact of an additional 1 percent of GDP fiscal deficit at 0.3 percent of GDP increased external deficit. Other leading research places this current account impact as high as 0.6 percent of GDP for economies (such as the US) without capital flow restrictions.

The analysis then applies the Trump administration's algebraic formula (Appendix B) to replicate the Liberation Day "reciprocal" tariffs announced for 16 major economies explicitly named in the April 2 executive Presidential Action. Table 3 reports these estimates, as well as tariffs agreed with half of these economies after negotiations through mid-August. The table also reports the tariff formula results for another 13 major economies not named in the April 2 announcement, mainly because of US bilateral surpluses, limiting their reciprocal tariff to the minimum 10 percent applicable to all countries. Appendix D shows the discrepancies created by excluding services trade from the reciprocal formula, especially for Switzerland.

The discussion then reports estimates for the other major source of US protection: sectoral tariffs under sections 301 (unfair trade0 and 232 (national security). These include an increase of the existing tariff on steel and aluminum from 25 to 50 percent in imposed in February, and a new tariff of 25 percent on automobiles and parts imposed in March.

The text then summarizes the main features of the *agreements concluded* by mid-August with the *UK*, *Japan*, *European Union*, and *Korea*. The agreement with Japan set the lopsided pattern followed in the EU and Korean agreements as well: nearly free-entry for US goods, a reciprocal tariff of "only" 15 percent applied by the US, and relatively vague commitments by the government in question to several hundred billion dollars in private direct investment inflows to the United States over the next few years. The EU trade commissioner articulated the motive for agreeing to higher US tariffs while further reducing its own protection in saying "It's not only about the trade: It's about security …" The same dynamic also drove the one-sided outcomes in the Japanese and Korean agreements. There was no apparent recognition that if investment inflows did rise, they could strengthen the dollar and widen rather than narrow US trade deficits.

The text then turns to the status of major negotiations still not concluded with *Canada, Mexico, China, Brazil, and India.* The case of Canada reflects a mild version of the US-China sequence of retaliation and counter-retaliation, constrained by dominant USMCA exemptions. The cases of Brazil and India involve special political surcharges (for convicting former president Bolsonaro of attempting a coup-de-etat, and for buying oil from Russia, respectively). The case of China suggests hegemonic parity with the US, with China's stranglehold on rare earth minerals and magnets forcing the US to roll back its series of counter-retaliatory tariffs that reached 145 percent in April, and to extend its reciprocal tariff pause for another year in October. China's unique position reflects the remarkable increase in its share of world manufacturing output from 9 percent in 2004 to 30 percent by 2021. The discussion points out, however, that US imports from China have fallen from about 2.5 percent of US GDP in 2012-18 to 1.5 percent by 2024, reflecting Trump-45 protection against China.

Table 4 reports this study's estimates of average US tariffs as of the first week of August, 2025. Weighting by shares of US imports in 2024, the overall average has risen from 4.4 percent before the TGTW to 20.6 percent. The highest protection was against China (57 percent, later cut to 47 percent), Brazil (52 percent), and India (52 percent). Protection is placed at 15 percent against Japan, the European Union, and Korea.

The study then turns to estimates of the economic cost to the United States from the new protection. For this purpose, it uses the September estimate by the Congressional Budget Office that average tariffs have risen by 18 percent above 2024 levels, implying current protection at 22.4 percent including special sectoral tariffs. The classic "little welfare triangles" of consumer loss not compensated by increased revenue (Harberger triangles) can become large for such large tariff increases (shown in Appendix A). I place this "static" welfare loss from the TGTW at 0.28 percent of GDP, sacrificed annually into the future.

Potentially the largest welfare loss is from dynamic efficiency loss, as protected domestic firms face less pressure to invest in technological change and have more potential for monopoly behavior. I use estimates of dynamic efficiency loss from a 2003 OECD analysis comparing

growth performance of 20 advanced-economy members from the 1980s to the 1990s. After taking account of inflation, research and development, and growth costs of increased tax burdens, the OECD report found that an increase of trade exposure by 10 percent of GDP raised output per working age population by 4 percent. I calculate that US trade exposure (using the OECD metric) will fall from 17 percent of GDP to 15 percent as a consequence of the TGTW tariffs, causing a dynamic efficiency loss of 0.86 percent after 10 years. The loss of static and dynamic efficiency reaches 1.14 percent of GDP by year 10.

After considering recent estimates of dynamic efficiency gains from "gravity" models of trade using geographic location of countries and relating the growth impact of trade higher than would be expected from location, I suggest that the total welfare cost of the TGTW could reach 1 to 2 percent of GDP by 2035, or $2,200 to $4,400 per average household (at today's prices) on an ongoing annual basis. In contrast, the Trump administration has not recognized any potential welfare cost of higher protection.

The text then cites recent studies showing the inequality bias of tariffs, costing households in the lowest decile as much as 4 percent of disposable income, but those in the top decile only about 1 percent.

Regarding prospective tariff revenue from a US fiscal standpoint, I find that whereas the One Big Beautiful Act boosted the Congressional Budget Office's projected average federal deficit over the coming decade from 5.8 percent of GDP to 6.5 percent of GDP, the TGTW tariffs prospectively reduce the average deficit back to 5.6 percent of GDP if maintained, However, President Trump has mooted a tariff "dividend" of $2,000 per person (excluding high income persons), which would cost much more than the tariffs would raise if maintained over 10 years, in estimates by a leading budget research think tank. But I also note that the CBO's revenue estimates seem premised on a sharp decline of imports, which may stem from the tendency in recent Computable General Equilibrium models to use higher import price elasticities than the long-standing dominant estimate of unity (as examined in Appendix E).

Finally, the study observes that there seem to be about even chances that the Supreme Court will declare the main TGTW tariffs illegal, because they are based on the 1977 International Emergency Economic Powers Act, which does not mention tariffs, and because they effectively transfer taxation authority from the legislative to the executive branch. Administration officials have emphasized that other, albeit more cumbersome, legal authorizations could replace IEEPA. By implication these alternatives are primarily sections 301 (unfair trade) and 232 (national security).

The final section concludes, and briefly considers policy alternatives going forward.

Rejection of Internationally Agreed Trade Rules

The Trump administration has discarded the commitments to open international trade that the United States pledged in successive postwar negotiations within the GATT (General Agreement on Tariffs and Trade), agreed in 1947, and its successor, the WTO (World Trade Organization), agreed in 1995. Those agreements reflected the widely shared view that escalating protection in the 1930s had contributed to global depression and conditions that helped precipitate World War II. The central framework of the GATT and WTO was the concept of "Most Favored Nation" (MFN) tariffs. Countries submitted proposed reductions in tariffs to levels applicable to all GATT-WTO trading partners. Separately agreed free-trade areas went further, most prominently the European Union and the North American Free Trade Agreement, (NAFTA), renegotiated and re-christened as the USMCA by the Trump-45 administration. The differentiation of a country's tariffs was among differing products, not among differing trading partners.

Trump-47 has turned the MFN principle upside down, adopting a principle of Every Nation is Different (call it END) for tariffs. Each trading partner is to face a tariff that is calibrated by adding a "reciprocal" tariff tranche for the country in question to the previous US MFN tariff for the product in question. This reciprocal tranche starts at 10 percent for all countries that do not have trade surpluses against the US, and rises to far higher levels as the country's exports to the United States rise to higher multiples of US exports to the country. The END principle presumes that any country running a trade surplus against another country must be cheating by providing subsidies to exports and discriminating against imports by regulatory or other penalties.

US Trade Representative Jamieson Greer has articulated "Why We Remade the Global Order" as follows.[2]

> Our current … global order … dominated by the World Trade Organization and … notionally designed to pursue economic efficiency and regulate the trade policies of its 166 member countries, is untenable and unsustainable. The United States has paid for the system with the loss of industrial jobs and economic security, other countries have been unable to make needed reforms, and the biggest winner has been China, with its state-owned enterprises and five-year plans.… The previous system rejected tariffs as a legitimate tool of public policy, meaning that the United States sacrificed tariff protection for critical manufacturing and other sectors. …[O]ther countries kept their markets closed to our goods and deployed a suite of policies – such as subsidies, wage suppression, lax labor and environmental standards, regulatory distortions and currency manipulation – to artificially boost exports to the United States. … What began at Bretton Woods as a necessary effort to rebuild a global trade system shattered by war evolved, over nine rounds of trade negotiations, into something unrecognizable. The measured guidelines for commerce developed in the Kennedy and Tokyo Rounds gave way to our recent

[2] Jamieson Greer, "Trump's Trade Representative: Why We Remade the Global Order," *New York Times*, August 7, 2025.

experiment in global hyper-integration, embodied in the Uruguay Round, which concluded in 1994 and established the WTO.

It was the United States that pushed the introduction of Compulsory Third-Party Adjudication for dispute settlement in the Uruguay Round negotiations establishing the WTO. Yet the Trump-45 administration decided to stop renewing the WTO Appellate Body members, leaving nothing but unenforceable "Appeal[s] into the void" (Mavroidis, 2025, p. 2).

So far the United States is the only major economy to have shifted from the MFN principle to the END principle for tariffs. There are at least two fundamental problems with such a shift as the foundation for the international trading system. The first is that it implies mandates from a systemic hegemon as the organizing principle for setting tariffs. Only three economies are plausible hegemons: the United States, the European Union, and China. None of the three commands such a large fraction of the world trade market that it is in a position to dictate appropriate tariffs applicable to all other countries. And China has only very recently given up its claim to favorable "special and differential treatment" in WTO negotiations on grounds of being a developing country, a stance that had been far from the status of a hegemon.[3]

The second problem with the END principle is that it implies imposition of high tariffs against countries considered by the hegemon to be unduly protective. But high tariffs come at a cost to the country (and follower countries) imposing them, in the form of static and dynamic efficiency losses. Such losses are more likely when the foreign country in question has a surplus in trade with the hegemon that reflects true comparative advantage or underlying fiscal imbalances of the hegemon itself.

In short, Trump's Liberation Day reciprocal tariffs imposed unilaterally in the TGTW as the starting point for bilateral negotiations does not constitute a plausible basis for a new international trading order. An important question is where it leaves the remains of the old one. At present, the system for all other countries appears to remain the MFN basis built up over decades of international trade negotiations, with WTO commitments still honored to all trading partners except for special deals negotiated with the United States. As Mavroidis (2025, p. 13) points out, countries that reach agreements with the United States in this fashion are in violation of existing WTO rules because they do not extend the reductions in protection to other trading partners.

Other nations now facing higher US tariffs may begin to seek alternative export markets through increased cooperation with or accession to WTO-sanctioned Free Trade Agreements. As an important example, Malmström and Han-koo (2025) have recommended that the European Union and South Korea join the transpacific trade pact.[4]

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[3] Olivia Le Poidin, "WTO Hails Chinese Decision to Forgo Developing Country Benefits," *Reuters*, September 24, 2025.

[4] Cecilia Malmström is a former EU commissioner for trade. Yeo Han-koo was Korea's trade minister in 2021-22 and returned to that position in June 2025. Negotiated during the Obama administration but exited by the United States in the first Trump administration, the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP) incudes Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United Kingdom, and Vietnam.

Developing Country Growth Strategy

To a considerable degree, the outbreak of the TGTW reflects the culmination of a long-feared protectionist response of industrial countries to increased import penetration from developing countries adopting export-led industrialization policies. In Cline (1982, p. 81), I concluded:

> Export-led growth has become increasingly popular among analysts (and some governments) as a development strategy. Besides contrasting its virtues to the distortions of the import substitution model popular through the 1960s, advocates of the model frequently illustrate its merits by pointing to the remarkable success of its most prominent practitioners, the East Asian 'Gang of Four' (Hong Kong, Korea, Singapore and Taiwan). This study explores a possible limitation of the model, known as the fallacy of composition: while the model may work well if pursued by a limited number of countries, it may break down if a large majority of developing countries seeks to pursue it at the same time, because the resulting outpouring of manufactured exports might be more than Western markets could absorb. Protectionist response might be the result of attempts to generalize the East Asian export model of growth.

In 2006, I revisited this issue in a paper prepared for the World Bank Commission on Growth and Development (Cline, 2008). The abstract read as follows.

> My 1982 article on the fallacy of composition questioned the feasibility of generalizing the "G4" (Hong Kong (China), the Republic of Korea, Singapore, and Taiwan (China)) growth model based on rapid growth of exports, on grounds that if all developing economies pursued it, their combined manufactured exports would eventually trigger protection in industrial countries. My 1984 book[5] identified a safe speed limit of about 10–15 percent annually for growth of developing country exports of manufactures, well below the 25–35 percent rate of Korea and Taiwan, China in the 1960s and 1970s. This study revisits this question in the light of a quarter-century of experience. It finds that developing countries' aggregate manufactured exports grew at about 10 percent annually, a robust pace but within the speed limits I had envisioned. Even so, in key sectors such as apparel, import penetration levels have exceeded thresholds that my earlier estimates would have suggested would provoke protection, suggesting the importance of increased WTO discipline. The base of manufactured exports from poor countries remains small relative to that of China and the original G4, so there should be considerable room for export growth from these newcomers. However, a new macroeconomic version of the fallacy of composition problem could arise: the growing tendency of China and some other major emerging market economies to pursue rapidly rising trade surpluses that have their counterpart in an increasingly unsustainable U.S. current account deficit.

Particularly in view of the centrality of China (as illustrated by the quotation from Jamieson Greer above), but also in light of the extraordinarily high reciprocal tariffs at least initially imposed in the Trump Global Tariff War for several developing countries, the TGTW

[5] Cline (1984)

can be seen as the outbreak of a protectionist conflict that had long been seen as a risk by development economists.[6]

Unfair Trade

There is also a history of pressures for US protection against advanced economy trading partners perceived to be imposing unfair trade barriers. Title III of the Trade Act of 1974 ("Relief from Unfair Trade Practices"), or "Section 301," provides for the US Trade Representative to investigate and respond to violations of benefits to the United States under a trade agreement, or any "unjustifiable" measure that "burdens or restricts" US commerce (Trachtenberg, 2025). Bown (2017, p. 3) observes that "Overall, Japan – and its bilateral trade surplus – was a frequent Section 301 target during the Reagan era."

After the Uruguay Round established the WTO in 1995, with its provisions for dispute settlement, the United States used section 301 "primarily to build cases and pursue dispute settlement at the WTO" (Trachtenberg, p. 2). However, the first Trump administration used Section 301 investigations to impose tariffs ranging from 7.5% to 25% on approximately $370 billion in imports from China, and those tariffs remain in force.[7]

Nostalgia and Trump's Favorite Word[8]

Figure 1 strongly suggests that it would be misguided nostalgia to think that protection could catapult the number of manufacturing jobs back to their share in total employment in, say, the 1950s and 1960s. Manufacturing accounted for 35.5 percent of employment in 1939, surging to a wartime peak of 44 percent in 1944. Thereafter, the manufacturing share of employment declined at a relatively steady pace to a plateau of only about 10 percent by 2008 and after. The absolute number of manufacturing jobs peaked at 19.4 million jobs in 1979, falling to a plateau of about 13 million by 2009 and after.

Two factors are generally seen to largely account for the declining path of manufacturing employment since 1979. First, it has been inherently much easier to achieve gains in productivity in manufacturing than in services.[9] Second, the composition of demand has shifted from manufactured goods to services over time as incomes have risen. The "Engels curve" of consumer demand has a higher income elasticity for manufactured goods than agricultural goods, and a higher income elasticity for services than for manufactured goods.[10]

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[6] As shown in Table 3 below (column 5), the initial reciprocal tariffs reached 45 percent for Vietnam, and were 30-36 percent for South Africa, Indonesia, and Thailand.

[7] The Trump-45 administration also imposed section 301 tariffs in a WTO dispute settlement regarding EU subsidies to civil aircraft, but those tariffs were suspended by the Biden administration in 2021 (Trachtenberg, p. 2).

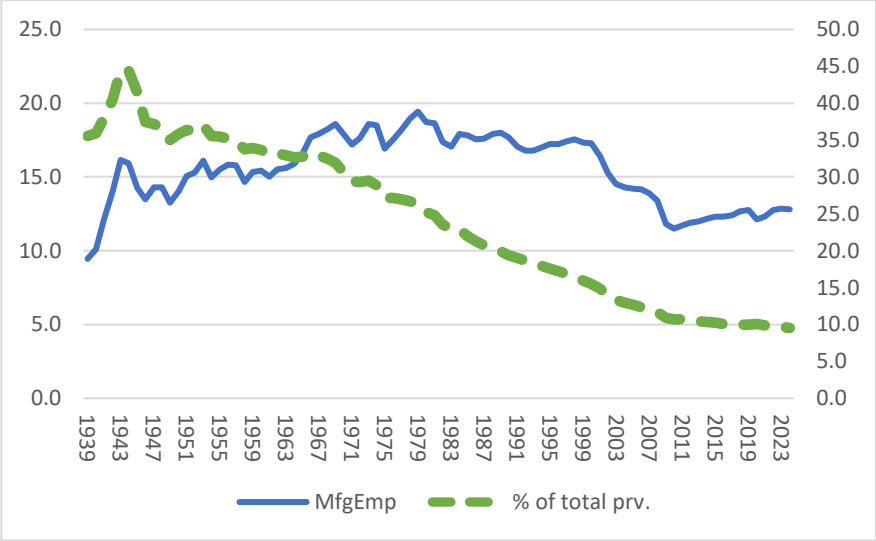
[8] Rachel Treisman, "Word of the Week: Trump Calls Tariffs 'The Most Beautiful Word.' Here's Its History," NPR, April 9, 2025

[9] William Baumol (1967) memorably illustrated the difference by reminding that centuries after invention of the instruments, it still takes 4 musicians to play a string quartet.

[10] Comin, Lashkari, and Mestieri (2021) provide a recent confirmation of the role of the Engels curves as drivers of "the decline in agriculture, the hump-shaped evolution of manufacturing, and the rise of services over time" (p.

Figure 1

US Employment in Manufacturing, 1939-2025
(millions, left, and percent of total private employment, right)



Source: FRED (2025f)

Evidence on the rapid growth of labor productivity in manufacturing is striking. As shown in Figure 2, from 1998 to 2024 real value added of US manufacturing rose from $1.48 trillion to $2.36 trillion at 2017 constant prices, a rise of 59.4 percent over 26 years, or at an average annual rate of 1.79 percent. Over this period, real value added per employee in manufacturing rose from $84,300 to $184,200 at constant 2017 prices, an increase of 118 percent, or at an average annual rate of 3.0 percent. As a consequence, the number of employees needed fell from 17.6 million to 12.8 million, a decline of 27.3 percent.

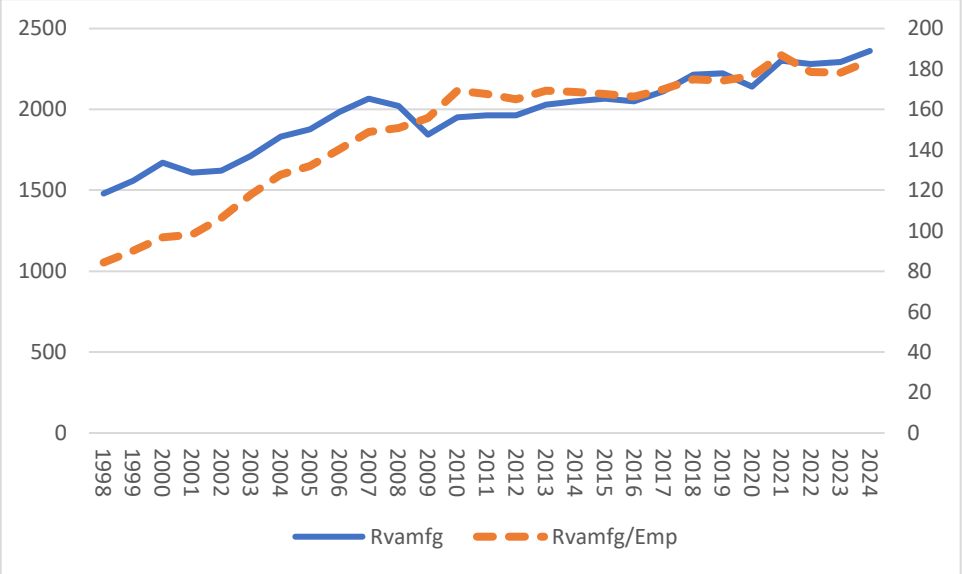
There has also been a moderate shift away from the share of manufactured goods in consumption relative to that of services. Manufactured products accounted for 30.9 percent of total personal consumption expenditures in 1998, and fell to 26.9 percent by 2025 (BEA, 2025c). The decline would have been greater if prices for manufactures had not risen more slowly than those of services.[11]

311). Their tests for OECD countries over the period 1970-2005 confirm falling expenditures on agriculture relative to manufacturing, and rising expenditures on services relative to manufacturing, "after partialling-out sectoral price and country fixed effects" (p. 312).

[11] From 1998 to 2024, average annual inflation was 2.2 percent for the GDP deflator; 2.1 percent for personal consumption expenditures; and within personal consumption, 2.8 percent for services, but only 0.8 percent for goods. (Calculated from BEA 2025d.)

Figure 2

US Real Manufacturing Value Added ($ billion at 2017 prices, left)
and Real Value Added per Employee ($ thousand at 2017 prices, right)



Source: Figure 1 and FRED (2025g)

Even the most enthusiastic supporters of the TGTW are unlikely to believe that US manufacturing employment could be pushed back up to its halcyon range of 35 percent of the private labor force in the mid-1950s, or even to the 26 percent level at its absolute peak in 1979 (19.4 million workers then) from its current 10 percent level (Figure 1), through import protection or any other means. However, it is useful to ask how much additional manufacturing employment would be implied by elimination of the US deficit in goods trade. In 2024, this deficit amounted to $1.21 trillion (Census, 2025a). Gross output in manufacturing (value added plus intermediate inputs) stood at $7.11 trillion (BEA, 2025c). With manufacturing employment at 12.8 million (Figure 1), gross output per worker was $556,000 annually. Complete replacement of the supply from the excess of imports over exports by higher domestic production in manufacturing would imply an additional 2.1 million jobs in manufacturing,[12] boosting the level to 14.9 million workers. As argued below, however, higher protection is unlikely to reduce the trade deficit by much in the absence of real depreciation of the dollar combined with fiscal adjustment.

US manufacturing employment is not sharply below what might be expected given the international pattern of manufacturing output relative to GDP for other major economies. As shown in Figure 3, manufacturing value added fell relatively steadily from 16 percent of US

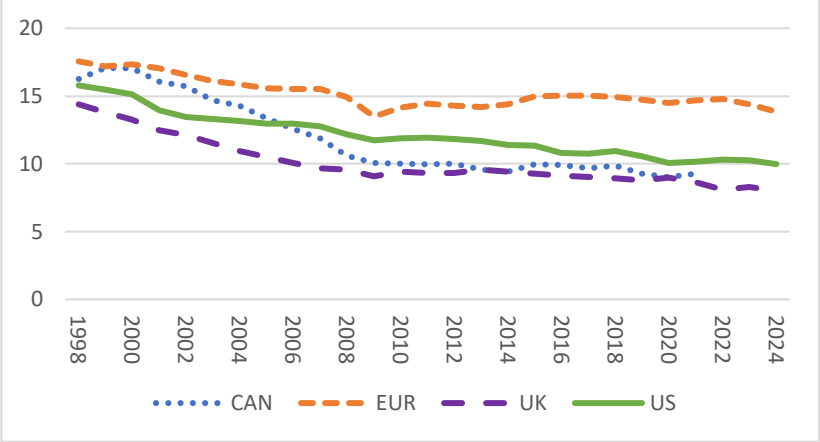
[12] Or: 12.8 million x $1.21 trillion/ $7.11 trillion. Robert Lawrence (2025) arrives at a similar estimate: 2.76 million jobs. He uses input-output data for 2015-2019 and an approach focusing on value added rather than direct application of the 2024 gross output data. He emphasizes that only about half of jobs reported as "manufacturing" are in "production worker" activities, and concludes that "the changes in employment with balanced trade would be far too small to produce a labor market that significantly increases the opportunities for men without college degrees or the many places that have not shared in US economic growth over the past five decades" (p. 2).

GDP in 1998 to 10 percent by 2020, but has remained at about 10 percent since then (panel A). Manufacturing followed a steeper declining path in Canada and the UK, and was at is lower than in the US at 9 percent of GDP in Canada in 2021 (most recent data) and 8 percent in the United Kingdom in 2024. Euro area manufacturing output fell from almost 18 percent of GDP in 1998 to a plateau of about 14-15 percent by 2009 and after. The share of manufacturing in GDP began this period at higher levels and declined less over this period in the three economies shown in panel B. Both Japan and Mexico had manufacturing shares at about 22 percent of GDP in 1998 and about 20 percent by 2023-24. Only Korea stood out at a high and sustained manufacturing share of GDP at about 25 percent throughout the period.

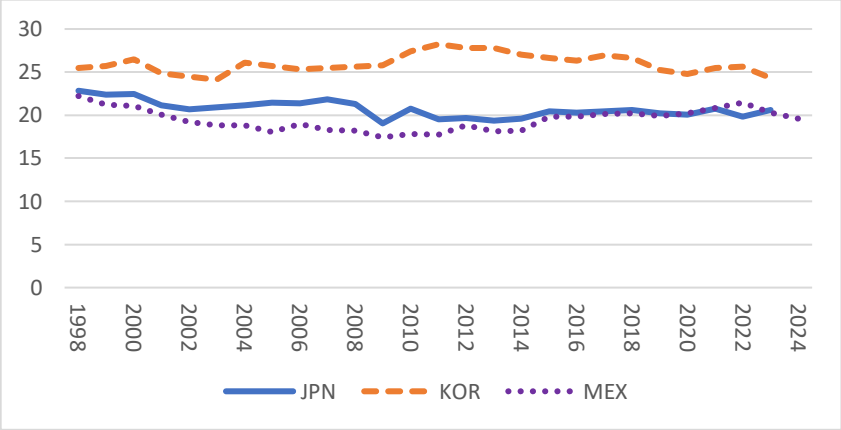
Figure 3

Manufacturing Value Added as Percent of GDP for Seven Major Economies, 1998-2024

A. Canada, Euro Area, UK, US



B. Japan, Korea, Mexico



Source: World Bank (2025d)

Exchange Rates versus Tariffs

President Trump's Executive Order launching the April 2 Liberation Day tariffs stated:

> … underlying conditions, including a lack of reciprocity in our bilateral trading relationships, disparate tariff rates and non-tariff barriers, and US trading partners' economic policies that suppress domestic sages and consumption, as indicated by *large and persistent annual US goods trade deficits*, constitute an unusual and extraordinary threat to the national security and economy of the United States. … I hereby declare a national emergency with respect to this threat (White House, 2025d, p. 1; emphasis added).[13]

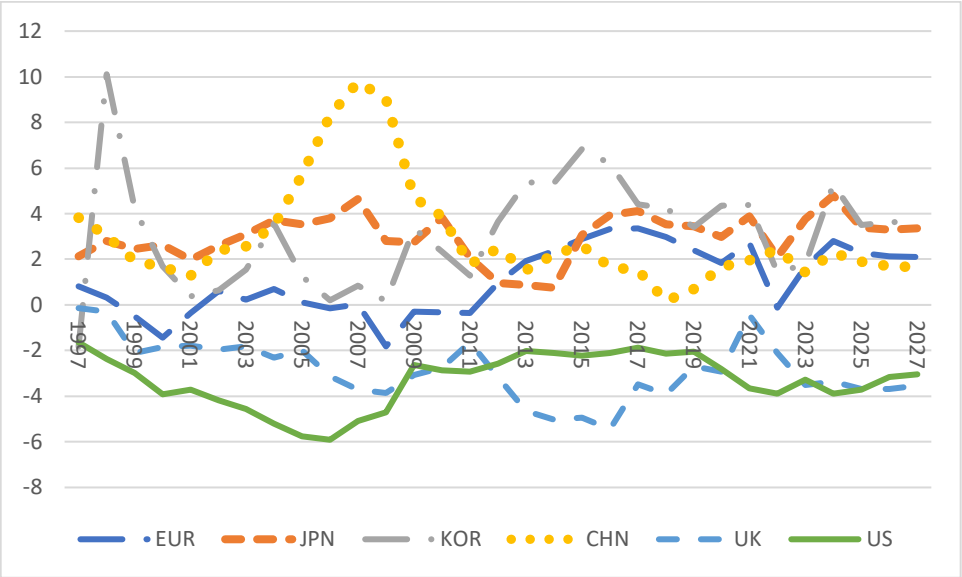
Concern about the US external deficit is not new. But at least since the Plaza Accord of 1985, which orchestrated a coordinated depreciation of the US dollar against the Japanese yen and West German deutschemark, macroeconomic imbalances and exchange rate misalignments have predominantly been seen as the causes of US external deficits, rather than unfair trade by trading partners – albeit with the important exception of trade with China after the United States granted it permanent most-favored-nation status in 2000. The peak of the US external deficit occurred almost two decades ago, when the current account deficit (including services trade and earnings on foreign investment) reached 5.9 percent of GDP in 2006.

As shown in Figure 4, in April 2025 the International Monetary Fund projected that the US external deficit would reach about 4 percent of GDP in 2025, but would narrow to 3 percent by 2027. Although Korea and China had extremely high surpluses in a few years early in the period shown (reaching 10 percent of GDP in Korea in 1998 and 9 percent in China in 2008), since 2017 their surpluses have been in a range comparable to those of the euro area and Japan, around 2 to 4 percent of GDP. In contrast, like the US, the UK has followed a path of persistent deficits, typically in the range of 2 to 4 percent of GDP. Two major trading partners not shown in the figure have had relatively small deficits, averaging 1.6 percent of GDP for Canada and 0.85 percent of GDP for Mexico over the period 1997-2025 (IMF, 2025).

[13] Emphasis added. The Executive Order affirmed that: "Large and persistent annual US goods trade deficits have led to the hollowing out of our manufacturing base; inhibited our ability to scale advanced domestic manufacturing capacity; undermined critical supply chains; and rendered our defense-industrial base dependent on foreign adversaries. *Large and persistent annual US goods trade deficits are caused in substantial part by a lack of reciprocity in our bilateral trade relationships.* [Emphasis added] (p. 2).

Figure 4

Current Account Balance as Percent of GDP:
Euro Area, Japan, Korea, China, UK, and US, 1997-2027



Source: IMF (2025)

One well-known reason for persistent US external deficits is the "exorbitant privilege" of the dollar. Originally coined in the 1960s as a French critique of the dollar's unique advantage from its convertibility into gold, the term has come to signify persistent capital inflows from the rest of the world seeking safe assets (US Treasury bonds) and participation in the largest equity market.[14]

For two reasons, the Trump tariff war should be expected to strengthen the dollar, curbing exports and partially offsetting the effect of higher tariffs in reducing imports. The first reason is the "Lerner Symmetry Theorem" (Lerner, 1936). Because the import tariff will reduce demand for foreign goods, there will be less domestic currency entering markets to purchase foreign currency. The change will bid up the international price of the now more-scarce home currency and bid down the price of the foreign currency, resulting in appreciation. By implication, maintaining exports would require an export subsidy equal to the tariff rate.

The second reason the dollar would be expected to rise following higher import tariffs concerns macroeconomic policy feedback. A rise in the price of imports from new tariffs causes a rise in the price level that confronts the Federal Reserve with higher observed inflation. If the

[14] In 2024, the market capitalization of listed domestic companies reached $62.2 trillion in the United States, more than half of the world total of $114.5 trillion. The next largest equity markets were: China ($11.8 trillion), Japan ($6.3 trillion), India ($5.1 trillion, Hong Kong $(4.6 trillion), the United Kingdom ($3.1 trillion), Saudi Arabia ($2.7 trillion), Germany ($2.0 trillion), France ($2.4 trillion), and Switzerland ($2.0 trillion). World Bank (2025e).

the Fed responds by raising interest rates to curb prospective inflation, the higher interest rate attracts more foreign capital, bidding up the dollar.

The Federal Reserve's index of the real effective exchange rate of the dollar did indeed rise by 5.4 percent from September 2024 before the election to February 2025, but it then fell back by 5.7 percent by September 2025. In October it edged up slightly to the same level as in September 2024 (Federal Reserve, 2025). The downswing in the dollar has been widely interpreted as the market's reaction to uncertainty from the shock of the Liberation Day tariffs and the initial retaliatory surge of US and Chinese mutual tariffs to more than 100 percent.

Bayoumi and Gagnon (2025) argue that the US goods and services deficit needs to be reduced by 2 percent of GDP in order to keep high net external liabilities from rising further.[15] They estimate that a real depreciation of the dollar by 15 to 20 percent would be required for this outcome. (My own estimate for a 2 percent of GDP correction of the US current account would be a 12 percent real depreciation.[16]) Bayoumi and Gagnon observe that if the exorbitant privilege represented by lower required return on liabilities than on assets were to disappear, the needed current account correction would reach 3.5 percent of GDP, and real depreciation, 25 to 30 percent. Gagnon (2025) estimates that the effect of a 15 percent tariff increase would be to reduce US imports by about $500 billion annually, reduce exports by $100 billion to $200 billion, and reduce the trade deficit by $300 to $400 billion, or a bit over 1 percent of GDP.[17]

The Trump economic team has recognized what Chairman of the Council of Economic Advisors Stephen Marin has called the "exorbitant burden". In a late 2024 analysis he included a "Mar-a-Lago Accord" realigning exchange rates as one policy option the new administration might consider (Miran, 2024, p. 28). But it is crucial to recall that US commitment to fiscal adjustment was central to the Plaza Accord (Cline, 2025).

Premise of US Market Power

The global nature of Trump's tariff war implies that his administration regards the US market as being so important to other countries that the United States has a large amount of "monopsony power" that it has left unexploited and which it should now exert.[18] At market exchange rates, the US economy is indeed the world's largest, accounting for 26.4 percent of world GDP in 2024.[19] The Chairman of Trump's Council of Economic Advisers has cited estimates that the degree of US monopsony power over imports means that the optimal US tariff

[15] The reported net liability position at the end of 2024 was 90 percent. They argue that measurement distortions exaggerate this level, but that even correcting for these, US net external liabilities were 67 percent of GDP.
[16] In my Symmetric Matrix Inversion Method (SMIM) model, the parameter relating the change in the US current account (including capital income) as a percent of GDP for a 1 percent change in the real exchange rate is -0.165 (Cline, 2017b, Appendix C).
[17] His estimate is conditioned on the dollar remaining unchanged from its 3-year average. Appreciation from some degree of the Lerner symmetry effect would shrink the potential reduction in the external deficit.
[18] Monopoly refers to a market controlled by a single producer; monopsony refers to a market controlled by a single consuming entity.
[19] World GDP in 2024 was $110.5 trillion. US GDP was $29.2 trillion. The European Union was second, at $19.4 trillion, and China third, at $18.7 trillion (IMF, 2025).

would be "around 20%", because the resulting reduction of US demand would cause import prices to decline (Miran, 2024, p. 25).

It is instructive to consider just how important the US market is to other major economies, as a gauge of whether the degree of monopsony power is actually high. As shown in Table 1, the US share of imports from its major partners is considerably below its 26 percent share of world GDP for all except three of its trading partners. US monopsony power is especially high against Canada and Mexico, for which the US market constitutes 77 percent and 78 percent of goods exports respectively. The US also imports about 30 percent Vietnam's exports, and about 26 percent of Israel's exports. In contrast, the US market comprises only 19 percent of goods exports for the European Union, Japan, and Taiwan; 18 percent for India; 17 percent for Thailand; and 16 percent for China, Korea, Switzerland, and the Philippines.

Table 1 arrays the partner economies by the size of their merchandise exports. For the top 23 economies, these total exports amounted to $14.1 trillion in 2022, the most recent year available in the World Bank's WITs trade data (World Bank, 2025b). Of this total, $2.97 trillion went to the United States, representing an average US market share of 21.2 percent. These partners comprised 95.1 percent of total US merchandise imports in 2022.[20]

A central question is: What threshold of market share is sufficient to give the US effective monopsony power that can extract additional US welfare from an optimal tariff? In the tariff war begun on April 2, 2025 ("Liberation Day"), China responded with retaliation that quickly escalated on both sides. The US share of 16 percent in China's exports was insufficient to secure a passive response.[21] The European Union, with a US market share of 19 percent in its exports, also announced retaliatory measures but put them on hold after the April 9 announcement of a 90-day suspension of the US "reciprocal" tariffs. But Vietnam with a 30 percent US share in its exports reached an agreement by early July.

The early evidence in the Trump tariff war could be read to suggest that the threshold for the US to exert import monopsony power was a market share in partner exports above, say, 20 to 25 percent. Nonetheless, as discussed below, by the end of August 2025 Japan, the European Union, and Korea had all reached agreements that featured lopsided acceptance of substantial new US protection. The strong implication was that geo-political considerations associated with Russia for Europe and China for Japan and Korea took precedence over economic considerations.

In the important cases of Canada and Mexico, the Trump administration indicated that goods covered by the USMCA free-trade area negotiated in the Trump-45 administration will not be subject either to the uniform 10 percent tariff or to a 25 percent emergency tariff imposed earlier on grounds of the fentanyl crisis (White House, 2025b). As much as 87 percent of

[20] These 23 economies accounted for 61.9 percent of world GDP in 2024. The United States produced 26.4 percent of world GDP, and all other countries, 11.7 percent. (Calculated from IMF, 2025.)

[21] As discussed below, China's stranglehold on rare earths gave it leverage that may have contributed to retaliation even if the US 16 percent market share of China's exports were considered too valuable to put at risk.

Mexico's exports to the United States is reportedly USMCA-compliant.[22] Although only about 40 percent of Canadian exports were compliant in 2024, a majority is expected to become so in response to the new tariffs.[23] On this basis, the two countries exceptionally vulnerable to US monopsony power are largely poised to escape new protection.

If imports from China are excluded on grounds of prospective retaliation and, say, 83 percent of imports from Canada and Mexico are excluded, then approximately $1.3 trillion of the total $3.1 trillion US imports (2022) would escape the potential base for effective mobilization of US monopsony power in the tariff war.[24] If in addition all imports from countries in which the US accounts for less than 16 percent of their exports is excluded on grounds of being below a meaningful monopsony threshold, another $440 billion would be excluded, placing the relevant excluded base at $1.6 trillion, or 55 percent of the 2022 US import base in Table 1.

[22] Emiliano Rodriguez Mega, "Caught Between Tariffs and China, Mexico Adapts to an Unpredictable U.S.", *New York Times*, July 6, 2025,

[23] Many products have faced little or no tariffs under the most-favored-nation rates, but producers would complete the necessary paperwork with a higher incentive. However, firms not meeting requirements for North American inputs in manufacturing would be unable to do so without changing supply chains. Nojoud al Mallees and Mariya Postelnyak, "Not all goods can easily become USMCA-compliant, leaving some businesses vulnerable," *The Globe and Mail*, April 3, 2025.

[24] Applying 87 percent for Mexico and 80 percent for Canada in prospective USMCA-compliance.

Table 1
Major Trading Partner Merchandise Exports, Total and Share Exported to the United States, 2022 (Billions of US Dollars and Percent)

			total	to US	US share %	
1	China	CHN	3,594.0	582.8	16.2	
2	European Union	EUN	2,707.4	526.2	19.4	
3	Japan	JPN	746.7	139.8	18.7	
4	Korea	KOR	683.6	110.2	16.1	
5	Canada	CAN	596.8	458.8	76.9	
6	Mexico	MEX	577.7	452.3	78.3	
7	United Kingdom	GBR	535.1	64.6	12.1	
8	Singapore	SGP	515.0	45.3	8.8	
9	Taiwan	TWN	479.4	91.7	19.1	a
10	India	IND	452.7	80.2	17.7	
11	Australia	AUS	410.3	16.1	3.9	b
12	Switzerland	CHE	400.1	65.1	16.3	
13	Vietnam	VNM	370.9	109.5	29.5	
14	Malaysia	MYS	352.2	38.0	10.8	
15	Brazil	BRA	334.5	38.1	11.4	
16	Indonesia	IDN	292.0	28.2	9.7	
17	Thailand	THA	287.4	47.6	16.6	
18	Turkey	TUR	254.2	16.9	6.6	
19	South Africa	ZAF	121.6	10.7	8.8	
20	Chile	CHL	98.6	13.6	13.8	
21	Argentina	ARG	88.4	6.7	7.6	
22	Philippines	PHL	78.9	12.5	15.8	
23	Israel	ISR	72.6	18.6	25.6	
	subtotal		14,050.1	2,973.5	21.2	
	Rest of World		5,618.7	152.6	2.7	
	Total		19,668.8	3,126.1	15.9	c

Source: World Bank (2025b)
a. Statista (2025); USTR (2023) b. Census (2025a) c. Excluding EUN intra-trade

Trump's "Reciprocal" Tariffs

Are Other Major Economies Really More Protective than the US?

The Trump Global Tariff War is premised on the proposition that most US trading partners have protection that is higher than that of the United States and therefore unfairly imposes damage on US export production and associated jobs. The most direct information on protection levels is the level of applied tariffs in each economy. By this metric, protection has

been relatively low in almost all major economies, at percentage tariff rates in the low single digits.

Table 2 shows average tariffs for 30 major economies, as estimated by the World Bank and the WTO. The World Bank's WDI (World Development Indicators) estimates are for import-weighted, applied tariffs in 2022.[25] The WTO estimates are simple averages of MFN tariffs, for 2024. The weighted-applied tariffs tend to be lower than the simple-average MFN tariffs, but both sets of estimates are relatively low. For the 28 countries with available data from both sources, the average tariff was 3.12 percent in the WDI estimates and 7.28 percent in the WTO estimates.

There is no compelling argument that the WTO estimate of tariff protection is more relevant to policy than the WDI estimate, or vice versa. The WTO estimates could be overstated because important products have actually applied rates that are lower than MFN rates. The WDI estimates could be understated because products with higher rates wind up with lower import volumes and weights. It is useful to consider the simple average between the two estimates, shown in the third column.

On this basis (column 3), and rounding to single digits, 5 of the 9 advanced economies shown in Table 2 had tariffs averaging 3 percent (including the EU and Japan), and the other 4 had average tariffs of 2 percent (including the US). Figure 5 shows the distribution of the 30 economies in Table 2 across single digit tariff averages ranging from the minimum 0 to the maximum 13 percent shown in the third column of the table.

The most striking pattern is that tariff protection is generally low. Twenty of the 30 economies had tariffs rounding to 5 percent or below. Only two (Turkiye and Venezuela) had tariff levels rounding to more than 10 percent. Yet the Trump administration has embarked on leading the world into a new phase in which a respectable minimum uniform tariff rate is 10 percent, and a well-behaved country can be expected to apply tariffs on the order of 20 to 50 percent against any other country with which it has a bilateral deficit. In this new paradigm, the "Most Favored Nation" principle governing postwar international trade is simply jettisoned.

[25] For Russia, the estimate is for 2021.

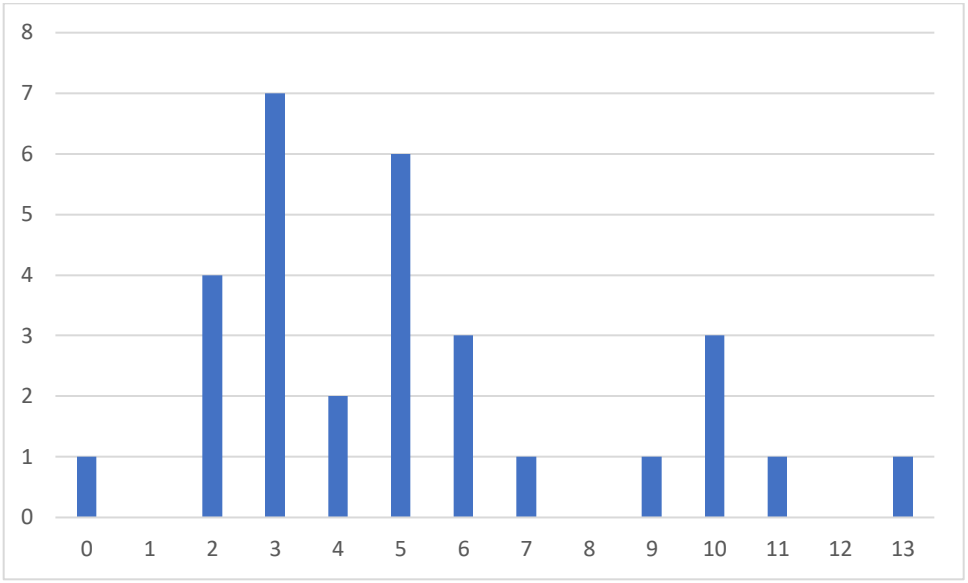
Table 2

World Bank and WTO Estimates of Average Tariffs in 30 Major Economies
(percent, 2022 and 2024)

	World Bank (a)	WTO (b)	average
Argentina	6.45	12.5	9.48
Australia	0.99	2.4	1.70
Brazil	7.26	12.0	9.63
Canada	1.37	3.8	2.59
Chile	0.46	6.0	3.23
China	2.18	7.5	4.84
Colombia	2.83	6.7	4.77
European Union	1.33	5.0	3.17
India	4.59	16.2	10.40
Indonesia	1.83	8.0	4.92
Israel	2.62	na	2.62
Japan	1.64	3.7	2.67
Korea, Rep.	5.66	13.4	9.53
Malaysia	3.42	5.5	4.46
Mexico	1.62	7.4	4.51
New Zealand	1.70	1.9	1.80
Norway	2.31	4.4	3.36
Philippines	1.76	6.0	3.88
Russian Federation	4.17	6.6	5.39
Saudi Arabia	5.40	5.9	5.65
Singapore	0	0.0	0
South Africa	4.66	7.5	6.08
Switzerland	1.30	3.9	2.60
Taiwan	na	6.3	6.30
Thailand	3.67	9.9	6.79
Turkiye	4.31	17.3	10.81
United Kingdom	1.00	3.7	2.35
United States	1.49	3.3	2.40
Venezuela, RB	12.84	13.8	13.32
Viet Nam	1.07	9.5	5.29
average (c)	3.12	7.28	5.2

a. Weighted average, applied tariff, 2022
b. Simple average, MFN tariff, 2024
c. Excluding Israel and Taiwan
Source: World Bank (2025c); WTO (2025)

Figure 5
Number of Major Economies (vertical) by Average Tariff Level (percent, horizontal)[a]



a. 30 economies. Average tariffs rounded to nearest integer
Source: Table 2

Large US Fiscal Deficits Are a Major Reason for Its High Trade Deficits

Attributing US trade deficits primarily to unfair trade by the rest of the world ignores the role played by excessive US fiscal deficits in widening the external deficit. Basic national accounts identities hold that a country's imports exceed its exports when its domestic saving is less than its domestic investment. When the federal government runs a larger fiscal deficit, it is increasing the amount of government "dis-saving", with the consequence of widening the gap between imports and exports. US federal deficits reached enormous magnitudes in the first two years of the covid-19 pandemic (14.7 percent of GDP in 2020 and 12.1 percent in 2021), and have remained excessively high since then (at 5.4% of GDP in 2022, 6.2% in 2023, and 6.4% in 2024; CBO, 2025a).

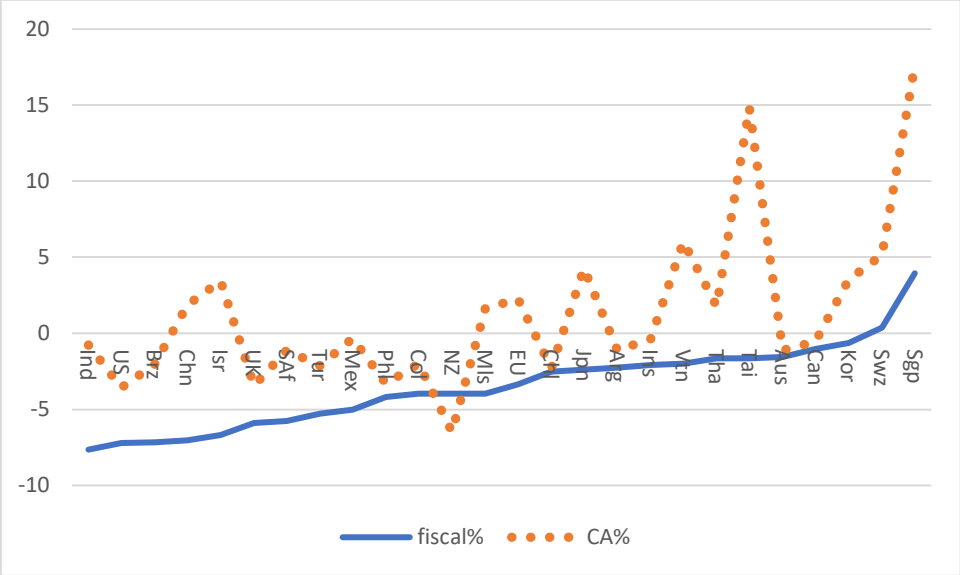
Figure 6 provides some cross-country evidence indicating the impact of the fiscal balance on the trade balance, using average outcomes for 2023-2024. The external balance shown is for the current account, including trade in services and income payments, but for most economies it is a reasonable proxy for the balance on trade in goods.[26] The economies are arrayed in order of fiscal balance, broadly rising from a balance of about -7½ percent of GDP for India and the United States (including state and local), to a surplus of 0.35 percent of GDP for Switzerland and 3.9 percent for Singapore.[27] As shown in Appendix C, a statistically significant relationship

[26] For the United States, the average current account balance in 2023-24 was -3.6 percent of GDP (IMF, 2025). The average balance on trade in goods was -4.0 percent of GDP (Census, 2025a).
[27] The US fiscal deficit including state and local governments was an average of 7.2 percent of GDP in 2023-24.

exists whereby an additional 1 percent of GDP reduction in the fiscal deficit (or increase in the fiscal surplus) reduces reduces the current account deficit (or increases the current account surplus) by 1.2 percent of GDP in a simple regression. The estimate is reduced to 0.52 percent if a dummy variable is included for the two high outliers: Taiwan and Singapore.

Figure 6

External Current Account Balances and Fiscal Balances:
Major Economies, 2023-24 Averages (%GDP)



Source: IMF (2025)

For the United States, in a 2017 study examining the trade and fiscal effects of a proposed border adjustment tax, I estimated a general equilibrium model that found that a 1 percent of GDP change in the fiscal balance causes a 0.25 percent of GDP change in the trade balance in goods and services.[28] A statistical regression in Appendix C below for the period 1992-2024 finds almost the same impact (0.22 percent of GDP for merchandise trade). This test relates the non-oil trade balance to the fiscal deficit and the deviation of the private investment rate from the full period average. Figure 7 shows the actual path of the non-oil trade balance and the path predicted by that model. Although these estimates suggest that the fiscal and trade deficits are not identical "twins", they support the proposition that a major part of the persistent US trade deficit is home grown from inadequate fiscal policy rather than being caused by unfair practices by major trading partners.

An estimate of 0.25 for the coefficient relating the change in the fiscal deficit (percent GDP) to the resulting change in the trade deficit (percent of GDP) is probably understated rather than overstated. The IMF's most recent calibration in its External Balance Assessment

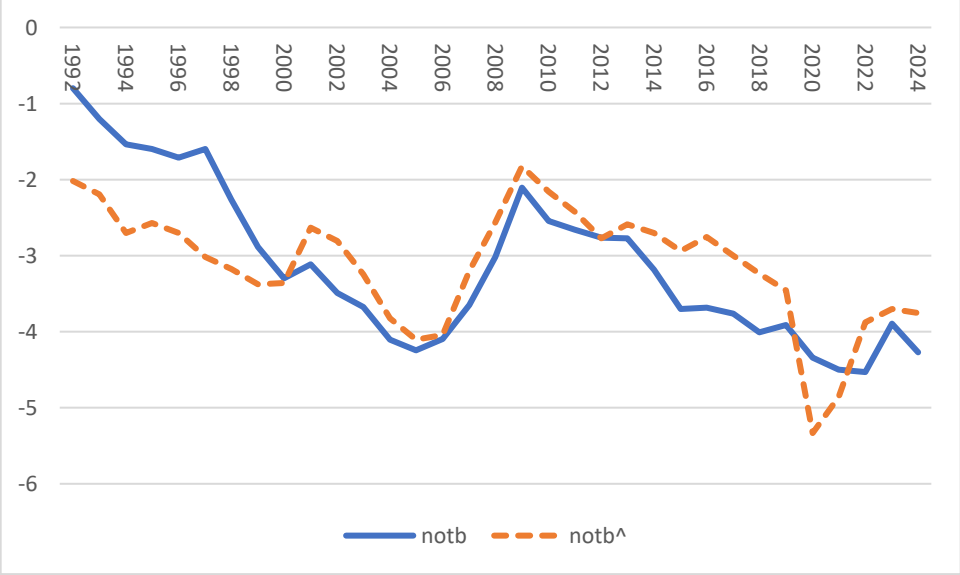
[28] Calculated from comparison of the model base and a simulation of the effect of a tax cut of 2 percent of GDP (Cline, 2017b, p. 23).

methodology places this coefficient at 0.3 for the current account including capital income, as estimated across 52 countries (IMF, 2023, p. 12). Using data for 138 countries over 33 years, Gagnon and Sarsenbayev (2021, p. 18) estimate that a 1 percent of GDP increase in the fiscal deficit causes a 0.2 percent of GDP increase in the current account deficit of countries with restrictive capital controls. In contrast, this coefficient reaches 0.6 percent of GDP for countries such as the United States that have minimal controls on capital flows (high capital mobility).

A retort to the argument that the US should simply get its fiscal house in order might be: the Trump administration agrees, and plans to do so by levying substantial tariffs to collect more fiscal revenue. However, that response would ignore two fundamental problems. First, successful conclusion of the trade negotiation could imply removal of the reciprocal tariff, and therefore disappearance of the tariff revenue and its help restoring fiscal balance. Second, the trading partner may respond with retaliation rather than liberalizing its imports. Retaliation would reduce US exports and fiscal revenue associated with them. Moreover, adopting the principle that fiscal problems should be resolved by raising tariffs would imply that the European Union in particular would be justified in raising its tariffs, including against the United States, to address what have become serious fiscal imbalances.[29]

Figure 7

US Non-oil Trade Balance: Actual and Predicted by
Fiscal Deficits and Deviation of Investment from Average
(Percent of GDP, 1992-2024)



Source: Author's calculations (Appendix C)

[29] See for example Kammer (2025).

Calculations Behind the Announced Reciprocal Tariffs

Appendix B sets forth the method used by the Trump administration to calculate which countries should be subject to special "reciprocal" tariffs to offset the unfairness of their non-tariff barriers. The evidence used for unfairness is the extent to which US exports to the country fall short of US imports from it. The approach makes the normal assumption that import volume declines when the price consumers pay for the import increases as a consequence of the new reciprocal tariff.[30] The volume change depends on the "price elasticity" of demand, and the "pass-through" proportion of the tariff not offset by foreign producers. In the model used by the Trump administration, the combined elasticity of these two influences is set at unity, such that the percent decline in imports equals the additional new tariff in percentage terms. For example, a 10 percent additional tariff reduces imports by 10 percent.

But the "adjusted reciprocal tariff" then adjusts the raw calculation, cutting it by one-half. In President Trump's "Liberation Day" press conference announcing the reciprocal tariffs, he stated: "because we are being very kind … we will charge them approximately half of what they [the calculated reciprocal tariffs] are and what they have been charging us …"[31] So the reduction by half is not an acknowledgement that anything other than unfair tariffs or cheating could cause a country to have a goods-trade surplus with the United States. Moreover, the new reciprocal tariff is set at a minimum of 10 percent. Although this level is one half of the level that would be calculated by the raw formula for a country with which the ratio of US exports to imports is only 0.8, all other countries with which the US has a higher export/import ratio will also be charged 10 percent, including those with which the US has a goods trade surplus.[32]

Table 3 reports US bilateral goods trade in 2024 with 29 major economies (first two columns). It then shows the elements of the reciprocal tariff calculation in the columns 3-5, followed by the "Reciprocal Tariffs, Adjusted" published in the Executive Order of April 2 (White House, 2025a). Part A of the table shows estimates for 16 major economies specifically named in the April 2 Presidential Action. Part B shows the results for an additional 13 major economies not specifically named, and typically subject only to the 10 percent minimum reciprocal tariff.

In Part A, the announced levels in column 6 are extremely close to the levels derived in the calculations shown in column 5. Column 7 reports revised levels reached during negotiations through July. As discussed below, for China a series of retaliations and counter-retaliations

[30] Note however that the Trump administration emphasizes that it expects most of the burden of the tariff to be borne by foreign producers who will reduce their prices to keep more market share than otherwise.

[31] The President's comments included: "Starting tomorrow the United States will implement reciprocal tariffs on other nations. For nations that treat us badly we will calculate the combined rate of all their tariffs, non-monetary barriers and other forms of cheating … The tariffs will not be a full reciprocal; I could have done that, but it would have been tough for a lot of countries … If you look at [the chart], China, first row, at 67 percent, that's tariffs charged to the USA including currency manipulation and trade barriers … we're going to be charging a discounted reciprocal tariff of 34 percent; or in other words, they charge us, we charge them less, so how could anybody be upset?" YouTube (2025), minutes 18-20.

[32] The summary formula for the tariff to be charged to the country is: $\Delta t = Max\left(10;\ 0.5 \times (1 - \frac{x}{m}) \times 100\right)$, where *x* is US goods exports to the country and *m* is US goods imports from it.

boosted the US reciprocal tariff to 145 percent and China's tariff on US goods to 125 percent by April 11. A 90-day suspension agreed on May 12 and extended for another 90 days on August 11 cut the US tariff on China to 30 percent and China's tariff on the US to 10 percent. For the European Union, the threatened reciprocal rate escalated in mid-July from 20 percent to 30 percent, to be imposed by August 1.[33]

The final column reports tariffs agreed in negotiations concluded with 9 major economies by July 31, 2025 (the tenth, Cambodia, is not shown in the table). For the three large economies that pledged large investments in the US (Japan, EU, Korea), the rates agreed were to be new base tariffs replacing MFN tariffs. For the others, the agreed rates remained additive to MFN tariffs.

[33] Erin Doherty, Kevin Breuniger, and Sophie Kiderlin, "Trump Announces 30% tariffs on EU and Mexico, Starting Aug. 1." CNBC, July 12, 2025.

Table 3
The Trump Reciprocal Tariffs (percent)

	Goods Trade 2024 ($bn)			Formula:	Adjusted	Announced		Agreed	
	US Exports	US Imports	X/M	(1-X/M)*100	(a)	April 2	Jul-Aug		
A. Named	1	2	3	4	5	6	7	8	
China	143.5	438.9	0.33	67.30	33.7	34	145; 30b		
European Union	370.2	605.8	0.61	38.89	19.4	20	30	15	c
India	41.8	87.4	0.48	52.17	26.1	26	50g		
Indonesia	10.2	28.1	0.36	63.70	31.9	32		19	d
Israel	14.8	22.2	0.67	33.33	16.7	17			
Japan	79.7	148.2	0.54	46.22	23.1	24	25	15	d
Malaysia	27.7	52.5	0.53	47.24	23.6	24	25	19	j
Norway	4.6	6.6	0.70	30.30	15.2	15			
Philippines	9.3	14.2	0.65	34.51	17.3	17	20	19	j
South Africa	5.8	14.7	0.39	60.54	30.3	30	30		
South Korea	65.5	131.5	0.50	50.19	25.1	25	25	15	e
Switzerland	25.0	63.4	0.39	60.57	30.3	31			
Taiwan	42.3	116.3	0.36	63.63	31.8	32			
Thailand	17.7	63.3	0.28	72.04	36.0	36	36	19	j
Venezuela	4.2	6.0	0.70	30.00	15.0	15			
Vietnam	13.1	136.6	0.10	90.41	45.2	46		20	f

Table 3, continued

B. Excluded	1	2	3	4	5	6	7	8	
Argentina	9.2	7.1	1.30	-29.58	0.0	10			
Australia	34.6	16.7	2.07	-107.19	0.0	10			
Brazil	49.7	42.3	1.17	-17.49	0.0	10	50g		
Canada	349.4	412.7	0.85	15.34	7.7	10	0; 35h		
Chile	18.2	16.5	1.10	-10.30	0.0	10			
Colombia	19.0	17.7	1.07	-7.34	0.0	10			
Mexico	334	505.9	0.66	33.98	17.0	10	0; 25h		
New Zealand	4.5	5.6	0.80	19.64	9.8	10			
Russia	0.526	3	0.18	82.47	41.2	10			
Saudi Arabia	13.2	12.7	1.04	-3.94	0.0	10			
Singapore	46.0	43.2	1.06	-6.48	0.0	10			
Turkey	15.3	16.7	0.92	8.38	4.2	10			
UK	79.9	68.1	1.17	-17.33	0.0	10		10	i
Total, 29 economies	1,849.9	3,105.9	0.60						
Rest of World	233.9	189.7	1.23						
Total	2,083.8	3,295.6	0.63						

a. One-half of formula; minimum 10 percent. b. Apr 9; Jun 10; c. Jul 27 d. Jul 22 e. Jul 30 f. Jul 2 g. See text
h. Zero for USMCA-compliant goods; 25% fentanyl emergency February, increased to 35% Jul 31 for Canada.
i. Jun 16 preferential agreement. j. Jul 31, White House (2025l, Annex I)
Source: White House (2025d,f,h-n); USTR (2025a, b); Census (2025a)

Why Are Services Excluded?

The Trump administration has not made it clear why its reciprocal tariff calculation leaves out services exports and imports. The United States has a surplus in trade in services, with exports of $1.15 trillion in 2024 and imports about 25 percent lower at $841 billion (Census, 2025a). Appendix D examines the calculated reciprocal tariff using goods and services rather than goods alone. As shown in figure D.1, the most striking difference is for Switzerland, in which the calculation yields an adjusted reciprocal tariff of only 4.2 percent (before imposing a minimum of 10 percent), in contrast to the 30.3 percent calculated in Table 3 using goods only, and especially the 39 percent imposed on August 7 (Table 4 below).[34] The differences are also especially large for the EU (9.1 percent instead of 19.4 percent), Korea (18.4 percent instead of 25.1 percent), and India (17.7 percent instead of 26.1 percent).

Sectoral Tariffs

In addition to the reciprocal tariffs, President Trump has issued a series of Proclamations imposing tariffs on selected products on grounds of national security, invoking section 232 of the Trade Expansion Act of 1962. In his first term, he had already imposed tariffs of 25 percent on imports of *steel* and *aluminum* on most countries. In February 2025 he extended the 25 percent tariff on the two metals to all countries; and in June, he raised the tariff on both to 50 percent (White House, 2025g).

In March 2025, invoking both national-security section 232 and the subsequent unfair-trade section 301, Trade Act of 1974, Trump imposed a tariff of 25 percent on imports of *automobiles and automobile parts* (White House, 2025c). The proclamation cited heightened national security risks from supply chains revealed by the Covid-19 pandemic, as well as unfair foreign subsidies, and emphasized that "only about half of the vehicles sold in the United States are manufactured domestically". The proclamation specified that for imports from Canada and Mexico, only the automobile components originating in the United States would be exempt from the 25 percent tariff by the USMCA free trade agreement.

In 2024, US imports of steel amounted to $33 billion (SteelRadar, 2025). US imports of aluminum were $28.3 billion (Trading Economics, 2025). Imports of automotive vehicles, vehicles, and parts were much larger, at $475.4 billion (FRED, 2025e). These imports represented 1.0 percent, 0.86 percent, and 14.4 percent of total US imports of goods, respectively (Census, 2025a).[35] Canada accounted for 23.3 percent of US steel imports in 2024; Brazil, 13.6 percent; and Mexico, 10 percent (SteelRadar, 2025). For aluminum, Canada alone provided nearly two-thirds of US imports[36]. In 2023, imports accounted for 26 percent of US steel consumption, and 44 percent of US aluminum consumption. Neither Canada nor Mexico was to

[34] However, in mid-November the US and Switzerland reached an agreement in which the US cut the tariff to 15 percent, the same level as applicable to the Switzerland's EU competitors, and Swiss companies committed to $200 billion in new investment in the US by 2028. John Revitt, "Switzerland Wins US Tariff Cut to 15%, Pledges $200 billion in US Investments," *Reuters,* November 14, 2025.

[35] In 2024, total US trade in goods was $2,079.8 billion for exports and $3,295.2 billion for imports. Trade in services was $1,152.7 billion for exports and $840.9 billion for imports (Census, 2025a).

[36] *Reuters*, "The Top Sources of US Steel and Aluminum Imports, June 4, 2025.

be exempt from the 50 percent tariff on steel and aluminum, despite the USMCA (O'Neil and Huesa, 2025).[37]

The sectoral protection boosts average applied US protection above the new reciprocal rates. With steel and aluminum imports at $61 billion in 2024, and assuming moderate cutbacks induced by the sharp price increase (price-inelastic demand), the 50 percent tariff would represent perhaps $23 billion in tariff cost increases, amounting to 0.7 percent of total import value.[38]

For automobiles, if there were no exceptions to the 25 percent tariff, and if price elasticity of demand were unity, imports would fall by 25 percent, from $475 billion to $356 billion. The 25 percent tariff would impose a cost of $89 billion, equivalent to 2.7 percent of 2024 US imports of goods. However, the deals negotiated with Japan, Korea, and the European Union by the end of July provided for access for automobiles at 15 percent. Agreements are not yet completed with Canada and Mexico, but it seems highly unlikely that automotive tariffs applied to them will exceed those applied to Japan, Korea, and the EU. On this basis, one might expect the auto sectoral protection to average 15 percent, corresponding to tariff costs of $60.6 billion or 1.8 percent of 2024 goods imports.[39]

These estimates suggest that sectoral protection for steel, aluminum, and automotive products is on track to contribute 2.5 percentage points to US de-facto tariff protection. The Trump administration has also floated the possibility of imposing a tariff of 100 percent on imports of semiconductors, albeit with potential exemption for companies that make investments in US production.[40] In 2024, US imports of semiconductors amounted to $81.9 billion (Census 2025a), or 2.5 percent of total import value. In view of likely inelasticity of demand, such a tariff could come close to imposing a de facto increase in protection comparable to that of steel, aluminum, and automotive goods combined.

Negotiation Results by August 2025

By the end of July, US negotiators had concluded 10 new trade agreements: with the United Kingdom (June 16); Vietnam (July 2); Indonesia, the Philippines, and Japan (July 22); the European Union (July 27); Korea (July 30); and Cambodia, Malaysia, and Thailand (July 31). These economies represented 36.6 percent of US imports of goods in 2024.[41] Three of the largest US trading partners remained without agreements: Mexico, China, and Canada, accounting for 15.4, 13.3, and 12.5 percent of US goods imports respectively in 2024 (table 3).

[37] Only the United Kingdom was to remain at the 25 percent tariff on the two metals.

[38] A price elasticity of -0.5 would mean that a 50 percent increase in price from the tariff would cut volume by 25 percent, reducing steel and aluminum imports from $61 billion to $46 billion; the tariff revenue cost would be half, $23 billion, or 0.7 percent of total goods imports of $3.3 trillion.

[39] With a price elasticity of demand of -1, the 15 percent tariff would cut imports from $475 billion to $404 billion. The 15 rate on that amount would impose tariff costs of $60.6 billion.

[40] James Darley, "Why Trump is Targeting Asian Semiconductors with 100% Tariff," *Technology Magazine*, August 11, 2025.

[41] Calculated from Census (2025a).

The agreement with the ***United Kingdom*** was atypical because it was with a partner that had not been subjected to a special reciprocal tariff, only the uniform 10 percent. The UK committed to increased access for US beef, ethanol, and some other agricultural goods. The US committed to preferential treatment in prospective pharmaceutical protection. It also committed to a 10 percent tariff on the first 100,000 vehicles imported annually from the UK, before applicability of the 25 percent standard tariff on automobiles. The US also agreed to establish tariff-rate quotas for imports of UK steel and aluminum products (White House, 2025h).

The turning point towards achieving the most important agreements appears to have been the deal with ***Japan*** concluded on July 22. This deal set a benchmark US tariff of 15 percent, involved large commitments of investment in the United States, and removed some long-standing barriers. The White House (2025i) announcement of the agreement included the following passages:

> Japan will *invest $550 billion directed by the United States* to rebuild and expand core American industries. …*At President Trump's direction*, these funds will be targeted toward the revitalization of America's strategic industrial base, including: Energy … Semiconductor manufacturing … Critical minerals … Pharmaceutical … shipbuilding … *The United States will retain 90% of the profits* from this investment …imports from Japan will be subject to a *baseline 15% tariff rate …* Japan will … increase imports of US rice by 75% … purchase $8 billion in [agricultural goods] … *buy 100 Boeing aircraft* … Longstanding restrictions on US cars and trucks will be lifted … US Automotive standards will be approved in Japan for the first time ever … [all emphases added]

The baseline 15 percent tariff meant that Japan would escape the 25 percent US sectoral tariff on automobiles. The model of a combination trade and investment deal seems to have been crucial, even though it left ambiguous whether the tariff would be increased if the investment targets were not reached. The details of how President Trump would direct investments were unclear. The remarkable allocation of 90 percent of profits to the United States was soon corrected by Japan's chief trade negotiator, who stated that profits would be allocated according to each side's committed risk and financial contribution.[42]

[42] River Akira Davis and Choe Sang-Hun, "Murky Pledges of Investment Cast Shadow on Trump's Trade Deals," *New York Times*, July 31, 2025.

Facing the same August 1 deadline, on July 27 the ***European Union*** reached an agreement with features similar to those of the Japan deal. The new tariff applicable to most products would be 15 percent, not the 30 percent threatened by the Trump administration in mid-July. The EU eliminated all tariffs on US industrial goods. The 15 percent tariff would apply to EU auto exports, pharmaceuticals, and semiconductors, overriding any higher sectoral rates. However, the EU was to continue to pay the 50 percent tariff on steel and aluminum. The EU was to purchase $750 billion in US energy imports through 2028. The EU was to invest $600 billion in the US over the same period, which "is in addition to the over $100 billion EU companies already invest in the United States every year" (White House, 2025j). The EU would streamline sanitary certificates for US pork and dairy products, and not adopt or maintain network usage fees or tariffs on electronics transmissions. It would also "purchase significant amounts of US military equipment" (ibid).

There were numerous critiques that the EU had acceded to a lopsided agreement. French Prime Minister François Bayrou called it "a dark day," and French President Emmanuel Macron had been advocating EU retaliation in response to the US threat of a 30 percent tariff.[43] But EU trade commissioner Maros Sefcovic emphasized "It's not only about the trade: It's about security, it's about Ukraine, it's about current geopolitical volatility".[44] As discussed above, it is indeed questionable whether the US would have had sufficient monopsony power to avoid EU retaliation in the absence of geopolitical considerations.

The agreement reached with ***Korea*** on July 30 followed the pattern set by those for Japan and the EU.[45] The US tariff was set at 15 percent, well below the threatened 25 percent reciprocal rate (table 3). Like those from Japan and the EU, Korea's automobile exports were to enjoy access at the 15 percent rate despite the 25 percent sectoral rate. In return, Korea committed to invest $350 billion in the US, of which $150 billion would be focused on Korean companies entering US shipbuilding. The KORUS free-trade agreement of 2012, updated in 2018 in the first Trump administration (USTR, 2018), meant that there were no major further liberalizations offered by Korea.

A central question about the three major deals by August was their potential inconsistency with the objective of reducing the US trade deficit. The mobilization of large amounts of additional investment inflows into United States implies increased upward pressure on the dollar as more euros, yen, and won are converted to purchase US dollars for the purpose of investing in plant and equipment and paying US workers. The combined increase in annual investment inflows promised by the EU, Japan, and Korea amounts to $400 billion annually over the next three years, or 1.2 percent of GDP each year over this period. This amount could

[43] Liz Alderman, "France Criticizes EU's Trade Deal With Trump," *New York Times,* July 28, 2025. European law professor Alberto Alemano argued that the "staggering sums" of investment and purchases would divert resources from European development while "legitimizing bilateral coercion over the multilateral, rules based World Trade Organization system." *Project Syndicate*, July 30.

[44] Jim Tankersley, "Europe Accepts a Trump Trade Deal With Other Worries in Mind," *New York Times,* July 28, 2025.

[45] For a description of the agreement, see Lydia DePilllis and Choe Sang-Hun, "South Korea Reaches Trade Deal With Trump," *New York Times*, July 30, 2025. There was no White House Fact Sheet posted on the Korea deal.

translate to a rise in the dollar by 7.3 percent, to widen the trade deficit enough to offset the increase in capital inflows.[46]

The other tariff war settlements placed reciprocal rates at 19 percent for Cambodia, Indonesia, Malaysia, Philippines, and Thailand; and at 20 percent for Vietnam (down sharply from 46 percent in April). These reciprocal rates were to remain additive to existing MFN rates, in contrast to the new non-additive baseline tariff of 15 percent agreed for Japan, the EU, and Korea.

Major Deals Still Missing

By mid-August, the US had reached new trade agreements with 9 of its 15 largest US trading partners based on imports, accounting for 36.6 percent of US import value in 2024.[47] As noted, the three largest partners with no agreement yet (Mexico, China, and Canada) represented a combined 41.2 percent of 2024 imports. Of the remaining 58 countries specified in the US Executive Order of July 31 (White House, 2025d), 36 were given rates of 15 percent for the new reciprocal tariff. The benchmark baseline rate established in the Japan, EU, and Korea agreements had become the reciprocal rate for almost two-thirds of the listed economies still without deals.[48] The other rates were at 10 percent (2); 18-20 percent (5); 25 percent (5); 30 percent (4); 35 percent (2); and 39-41 percent (4).

The most important missing deals as of mid-August were for Mexico, China, and Canada. Missing deals for Brazil and India were also of special concern given unique political considerations. The crucial case of China is discussed separately below.

For ***Mexico*** and ***Canada***, in principle the presumptive outcomes would be relatively close to free trade with the US. In the Liberation Day (April 2) launch of its global tariff war, the Trump administration indicated that goods covered by the USMCA free-trade area negotiated in the Trump-45 administration would not be subject to either the uniform 10 percent reciprocal tariff or to the 25 percent emergency tariff imposed earlier on grounds of the fentanyl crisis (White House, 2025b). As much as 87 percent of Mexico's exports to the United States is reportedly USMCA-compliant.[49] Although only about 40 percent of Canadian exports were compliant in 2024, the compliance rate reached nearly 60 percent in May.[50] In the past, because relevant US MFN tariffs were low, firms considered the registration process unduly burdensome. Under the new non-compliant rate, one estimate places prospective compliance at 86 percent (RBC, 2025).

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[46] That is: -1.2/-0.165 = 7.3. See note 16 regarding the real exchange rate impact coefficient in my estimates of Fundamental Equilibrium Exchange Rates.

[47] See table 3.

[48] Countries that had not been specified in the original Liberation Day list continued at the minimum 10 percent reciprocal rate.

[49] Emiliano Rodriguez Mega, "Caught Between Tariffs and China, Mexico Adapts to an Unpredictable U.S.", *New York Times*, July 6, 2025,

[50] Amanda Coletta, "For Canada's Carney, No Deal With Trump Might Be Better Than A Bad One," *Washington Post*, August 1, 2025.

Nonetheless, on July 31 the Trump administration boosted the general tariff on Canada to 35 percent, while extending the deadline for negotiations with Mexico by 90 days.[51] (In late October, the US extended the deadline for Mexico by "a few more weeks").[52] The contrast between delay and confrontation with Mexico and Canada versus prompt conclusion of agreements with Japan, the EU, and Korea seems likely to reflect key economic and geopolitical differences. First, Canada and Mexico rely much more heavily on the US market, with an average US share of 77.6 percent in their exports. The corresponding simple average for the EU, Japan, and Korea is only 18.1 percent (in 2024; Table 1). Much greater US monopsony power against Canada and Mexico meant that the US held a stronger economic bargaining position against them than against the EU, Japan, and Korea. Second, there were no prospective commitments of large investments in the US by its two neighbors, in contrast to the large commitments announced by the EU, Japan, and Korea. Third, in geopolitical terms, Trump has talked about annexing Canada to the United States and sending troops into Mexico to deal with drug cartels, in contrast to counting on the EU in confrontation with Russia and on Korea and Japan in that with China.

If one reverts to the analytical framework the Trump administration has used for its tariff war, in which additional tariffs would go halfway toward eliminating US bilateral deficits, it is striking that the "adjusted reciprocal tariff" comes out at just 7.7 percent for Canada (i.e. 10 percent minimum) and 17 percent for Mexico (table 3), far below their current rates of 35 percent and 25 percent respectively. However, the high tariff on Canada also reflects a cycle of retaliation and counter-retaliation, albeit one much more restrained than that between China and the United States in April. In response to the fentanyl-related US tariff of 25 percent imposed by the United States in early February, on March 4 Canada imposed a 25 percent tariff on imports from the United States on a range of products amounting to $30 billion per year, with the list subject to eventual expansion to $155 billion (Canada, 2025). In mid-August, US ambassador to Canada Pete Hoekstra stated that China and Canada had been "two countries that have been relatively harsh against the United States …", and that he did not see the US and Canada reaching an agreement soon.[53]

On October 23, Trump stated that he was ending trade negotiations with Canada in response to what he considered a fraudulent advertisement by the Province of Ontario during the World Series baseball championship. The advertisement televised a selected section from a 1987 speech by Ronald Reagan extolling the virtues of open trade.[54] On October 25, Trump posted on

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[51] James Wagner, Emiliano Rodriguez Mega, and Ian Austen, "Trump Imposes 35% Tariff on Canada and Grants Mexico a 90-day Extension," *New York Times*, July 31, 2025.

[52] Jack Nicas and Emiliano Rodriguez Mega, "U.S. Gives Mexico More Time to Meet Demands to Avoid Tariffs," *New York Times*, October 27, 2025. The US was still seeking removal of "54 barriers to trade that aren't tariffs, such as disputes about intellectual property."

[53] Mackenzie Gray and Jillian Piper, "Canada's Counter-tariffs 'pulled the rug out from' CUSMA, US Envoy Says," *Global News*, August 14, 2025.

[54] Jessie Yeung, "Trump Says He's Ending Canada Trade Negotiations over Anti-Tariff Ad," *CNN*. https://www.cnn.com/2025/10/23/politics/trump-ends-trade-negotiations-canada

social media that he would add another 10 percent to the 35 percent tariff on Canadian goods, over the same issue. [55]

The cases of Brazil and India represent the influence of geopolitics (or personal politics) hindering rather than helping negotiation of agreements in the Trump tariff war. As shown in table 3, ***Brazil*** was not even included as a country warranting a special reciprocal tariff, because it has run trade deficits rather than trade surpluses against the US. However, on July 9 President Trump announced that on August 1 the US would impose a 50 percent tariff on Brazil because of the "witch hunt" by the Brazilian government in prosecuting and persecuting former President Jair Bolsonaro.[56] Current Brazilian President Luiz Inácio da Silva fiercely resisted Trump's effort to influence release of Bolsonaro, who has been accused of conspiracy in an unsuccessful coup attempt after he lost the presidential election in 2022.[57] On July 30, the Trump administration imposed an additional tariff of 40 percent on imports from Brazil, bringing the total tariff including the minimum 10 percent reciprocal to 50 percent. The executive order cited an "extraordinary threat" to the US represented by the Brazilian government's "persecution … of former Brazilian President Jair Bolsonaro …" (White House, 2025k). On September 11, 2025, Brazil's Supreme Court convicted Bolsnaro, sentencing him to 27 years in prison.[58] However, on November 20, 2025, President Trump signed an executive order removing the 40 percent additional reciprocal tariff on Brazilian beef and coffee, "citing progress in negotiations with Mr. Lula."[59]

For ***India***, on August 6 the Trump Administration issued an Executive Order imposing a 25 percent tariff as a secondary sanction for importing oil from Russia, "to address the national emergency stemming from the Government of the Russian Federation's actions against Ukraine … (White House 2025n). Together with India's 25 percent rate in the listing of the reciprocal tariffs for 69 economies percent specified in the July 31 update (White House 2025l), the 25 percent for sanctions brought the total tariff on India to 50 percent.

China

Negotiations Status by August 2025

New special protection against China under the Trump-47 administration began on February 1 with a 10 percent tariff associated with the fentanyl crisis (White House 2025a). On March 3, a Presidential Action increased this tariff to 20 percent because "the PRC has not taken

[55] Max Matza, "Trump Raises Tariffs on Canadian Goods over Reagan Advert," BBC, October 25, 2025.
[56] Jack Nicas and Ana Iovanova, "Behind Trump's Decision to Tax Brazil to Save Bolsonaro," *New York Times*, July 11, 2025.
[57] Tom Phillips, "Bolsonaro Allies Nearly Launched Military Coup in 2022, Police Report Says," *The Guardian*, November 26, 2024.
[58] Ana Ionova and Jack Nicas, "Bolsonaro Sentenced to 27 Years in Prison for Plotting Coup in Brazil," *New York Times*, September 11, 2025. The charges against Bolsonaro and seven co-conspirators (including the Navy commander) "included disbanding courts, empowering the military and assassinating the president-elect" (Luiz Inácio da Silva).
[59] Jack Nicas, "Jailing of Brazil's Ex-President Exposes Limits to Trump's Power," *New York Times*, November 25, 2025. This action followed the mid-November exemption of beef, coffee, and certain other agricultural imports from reciprocal tariffs applicable to most countries, discussed below.

adequate steps to alleviate the illicit drug crisis" (White House, 2025b). On "Liberation Day" (April 2), the reciprocal tariff announced for China was set at 34 percent (White House, 2025l). Together, the two tariffs amounted to 54 percent in new special protection against China.

China retaliated immediately against these special tariffs, with 10 percent tariffs on US natural gas, coal, and farm machinery in February, 10 percent tariffs on US food and agricultural products in March, and a general 34 percent reciprocal tariff on all US goods on April 4 to mirror the US reciprocal tariff. After two more rounds of US and Chinese counter-retaliation, by April 11 the total US special protection against China stood at 145 percent, and that of China against the United States, at 125 percent. Then, on May 12 a Presidential Action "suspending 24 percentage points" of the reciprocal tariff on China for 90 days left the reciprocal rate at 10 percent. The statement cited "discussions with the PRC" in progress that constituted "a significant step by the PRC toward remedying non-reciprocal trade arrangements" (White House 2025f). As shown in table 3, in early August the new special US tariff on imports from China stood at 30 percent, comprising 20 percent for the fentanyl crisis and another 10 percent for the temporarily reduced reciprocal tariff. China responded by cutting its retaliatory tariff back to 10 percent.[60]

On August 11, another presidential executive order extended the suspension for an additional 90 days. US Trade Representative Jamieson Greer stated that if an agreement was not reached, US tariffs on Chinese imports could rise to 80 percent. Although Treasury Secretary Scott Bessent downplayed the likelihood of such an outcome, he was pressing Chinese negotiators on addressing China's excess manufacturing capacity and its purchases of oil from Russia and Iran.[61]

A crucial retaliation threat by China that may have forced a US pause was the prospective cutoff of exports of heavy rare earth elements and magnets, essential to the defense, energy, and automotive sectors. On April 4, China imposed restrictions requiring licenses for firms to export seven medium and heavy rare earth elements and magnets. Remarkably, China has had a global monopoly on the processing of heavy rare earth elements. The US Department of Defense has set a goal of developing a complete mine-to-magnet supply chain to meet all US defense needs by 2027 (Baskaran and Schwartz, 2025).[62]

China-US Trade War Truce, October 30

On October 30, 2025, President Trump met with China's President Xi Jinping in Busan, South Korea, where they agreed to pause the US-China trade war for one year.[63] The bilateral

[60] Daisuke Wakabayashi, Amyu Chang Chien, and Alan Rappeport, "US and China Agree t Temporarily Slash Tariffs in Bid to Defuse Trade War, *New York Times*, May 12, 2025.

[61] Alan Rappeport, "Trump Extends China Tariff Truce by Three Months," *New York Times,* August 11, 2025.

[62] Dysprosium (Dy) is an example of an essential heavy rare earth element. Its primary use is in production of high-strength permanent magnets retaining magnetic properties at high temperatures. It is used in electric motors, especially in electric vehicles; wind turbines; nuclear reactors; and energy storage systems. "Understanding Heavy Rare Earth Elements (HREEs) and Their Impact on Modern Industry," *AEM News*, March 14, 2025. Also see Keith Bradsher, "China Halts Critical Exports as Trade War Intensifies," *New York Times*, April 13, 2025.

[63] This section draws upon: Daisuke Wakabayashi and Keith Bradsher, "Trump and Xi, Hoping to Ease Trade War, Agree to 1-Year Truce, *New York Times*, October 30, 2025; Josh Chin and Meredith McGraw, "Trump Cuts China

trade conflict had surged again at the end of September, after the US Commerce Department broadened regulations banning foreign companies from doing business with American companies to include subsidiaries of any banned company holding a stake of 50 percent or more, greatly expanding the number of banned companies. China retaliated by requiring export licenses for many product sectors, including especially rare earth mines, refineries, and magnet factories. The new licenses were to include any magnets containing at least 0.1 percent of value from Chinese rare earth metals. Trump responded with the threat of an additional 100 percent tariff on all Chinese products.

At Busan, Xi agreed to suspend application of the new licensing requirements for one year.[64] He also agreed to resume Chinese purchases of US soybean exports, which China had cut off in May, and pledged the purchase of 25 million metric tons (mmt) of US soybeans annually in 2026-28, up from an annual average of 24.3 mmt in 2023-24. He pledged strong actions on chemicals used in production of fentanyl.

Trump agreed to cut the fentanyl-crisis tariff from 20 percent to 10 percent, effectively reducing the average US tariff on Chinese goods from 57 percent to about 47 percent (including a 27 percent tariff level already in place in 2024, reflecting US protection adopted in the Trump-45 administration). He agreed to suspend for one year the new US restrictions adopted in September on exports to subsidiaries of banned foreign companies. Both leaders agreed to pause reciprocal port fees that erupted in late October.[65]

Longer Term Perspectives

China's share of world production of manufactured goods has risen dramatically over the past two decades. As shown in Figure 8, the World Bank (2025b) estimates that this share rose from 8.6 percent in 2004 to 30.5 percent by 2021, easing to 28.8 percent in 2023.[66] In contrast, in the same period the share of the euro area fell from 22.4 percent to 14.1 percent. The US share fell from 22.2 percent in 2004 to 15.5 percent by 2021 (the most recent data in the World Bank series), and the share of Japan fell from 14.2 percent in 2004 to 5.1 percent in 2022.

Tariffs after Xi Talks," *Wall Street Journal*, October 31, 2025; and Doug Palmer, "Bessent: China Will Buy 87 million metric tons f US Soybeans through 2028," *Politico*, October 30, 2025.

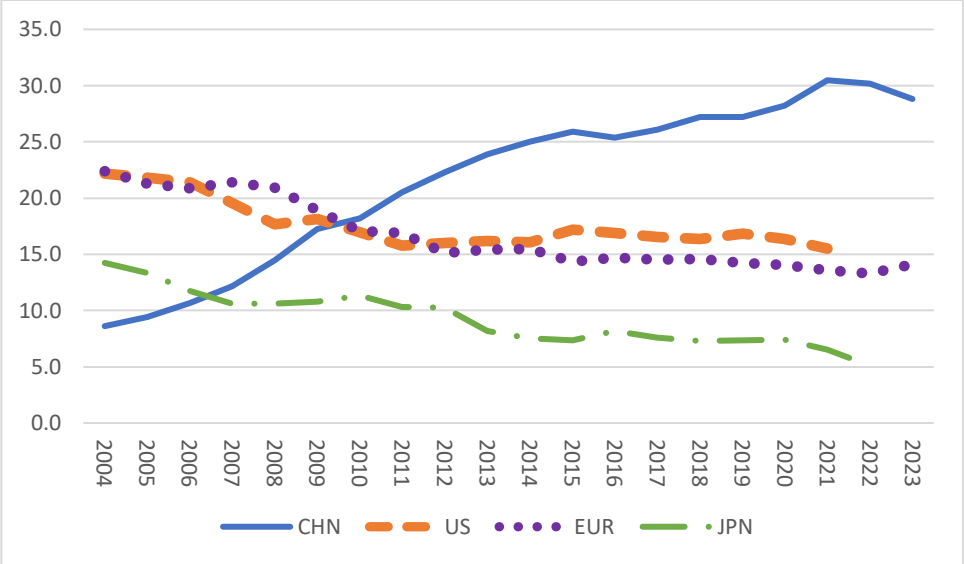
[64] However: "While China agreed to suspend new draconian restrictions on rare earth exports that it announced on Oct. 9, it said nothing to alter the licensing regime it introduced in April. That means US auto, electronics and defense companies wishing to import Chinese rare-earth magnets still must undergo the onerous process of securing government licenses, which can take many weeks and sometimes result in denials." Hannah Miao, Jon Emont, and Raffaele Huang, "Trade Détente Brings Little Peace to Business," *Wall Street Journal,* October 31, 2025.

[65] On October 14 the US had started charging special port fees on Chinese vessels, in Section 301 unfair trade action. China retaliated with special port fees on US ships. Weilun Soon, "US, China to Suspend Reciprocal Port Fees By One Year, *Bloomberg*, October 30, 2025.

[66] The World Bank data report national accounts value added in ISIC (International Standard Industrial Classification) divisions 15-37.

Figure 8

Shares of Global Manufacturing Value Added:
China, US, Euro Area, and Japan, 2004-2023



Source: World Bank (2025b)

The World Bank estimates are based on national accounts data for manufacturing sectors at current exchange rates for each year. The rise in China's global share measured in dollars is likely to have risen in part because of an appreciation of the Chinese yuan renminbi by about 17 percent from 2004 to 2023; and the shares of Japan and the euro area are conversely likely to have fallen in part because of depreciation against the dollar by about 18 percent and 13 percent respectively.[67] However, physical quantity data also show sharp increases in China's share of world manufacturing over the past two decades.[68]

It seems to have largely escaped attention in the tariff war that US imports from China have fallen sharply, from a peak of $539 billion in 2018 to $439 billion in 2024. Imports from

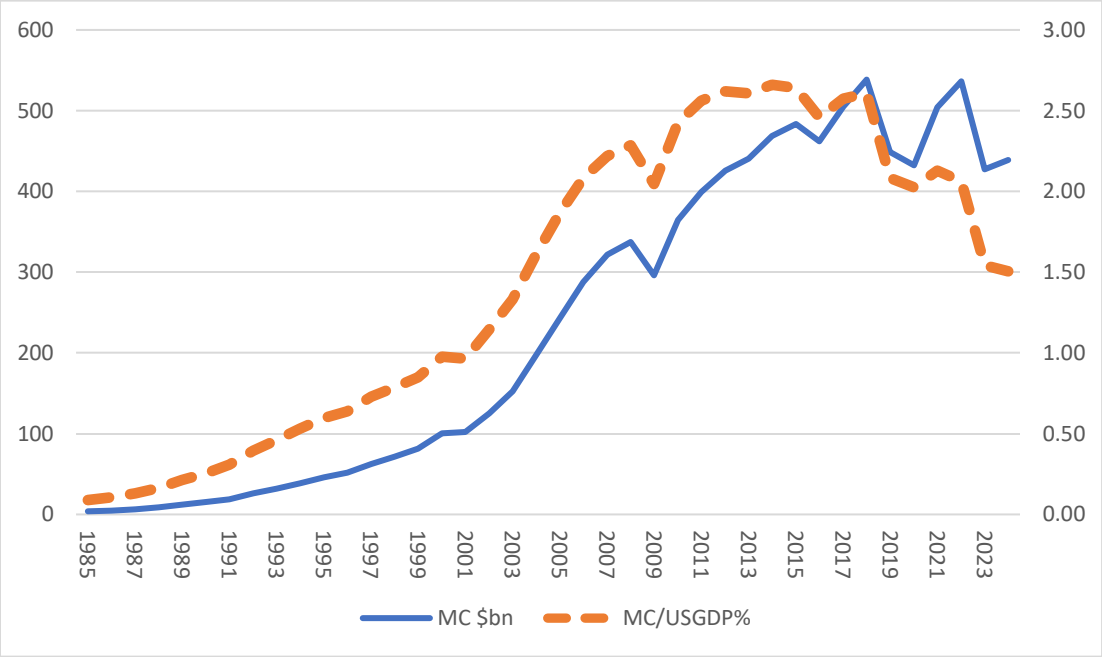
[67] Exchange rate changes calculated from FRED (2025c) data series DEXCHUS, DEXJPUS, and DEXUSEU.

[68] From 2003 to 2023, world production of motor vehicles rose from 64.5 million to 93.5 million. China's share rose from 8.1 percent to 32.3 percent. The US share fell from 18.6 percent to 11.3 percent; the share of the five largest European producers (Germany, France, Spain, Italy, and Belgium) fell from 22.2 percent to 9.9 percent; and Japan's share fell from 16.3 percent to 9.6 percent. (International Organization of Motor Vehicle Manufacturers, 2023). For crude steel, world output rose from 968 million metric tons in 2003 to 1,994 million metric tons in 2023. China's share of world production rose from 22.7 percent to 54.0 percent. The corresponding shares fell from 9.7 percent to 4.3 percent for the United States; from 16.6 percent to 6.6 percent for the European Union; and from 11.4 percent to 4.6 percent for Japan. (World Steel Association, 2025; International Iron and Steel Institute, 2004).

China surged from a pre-MFN (Most Favored Nation) level of about 1 percent of US GDP in 2000-01 to a high plateau of about 2.6 percent by 2012 through 2018, but then plunged to 1.5 percent by 2024 (Figure 9). The decline reflected protection imposed in the first Trump administration and largely continued in the Biden administration, as well as disruption from the pandemic.[69] Nonetheless, China remains by far the most prominent US adversary in the TGTW.[70]

Figure 9

US Imports from China, 1985-2024
($ billions, left; %GDP, right)



Calculated from FRED (2025a, b)

WeightedTariffs

The US tariff rates by early August provide a basis for obtaining a lower-bound estimate of the increase in protection in the Trump Global Tariff War. The tariffs shown in columns 7 and

[69] Average US tariffs on imports from China rose from 3.1 percent at the beginning of 2018 to 12.0 percent in September 2018 and then 21.0 percent by September 2019. After declining slightly to 19.3 percent in February 2020, they reverted to 19.9 percent by September 2024 near the end of the Biden administration (Bown, 2025).
[70] The primacy of China reflects in part widespread attention to estimates that placed job losses to imports from China in the range of 2 million during the decade after it gained permanent MFN status in 2000, with about half in manufacturing (Autor, Dorn, and Hanson, 2013; Acemoglu, Autor, Dorn, Hanson, and Price, 2016). In 2020 I estimated that those studies had overstated the shock, placing the manufacturing job loss at about 700,000 and finding a *gain* of about 40,000 jobs in the rest of the economy (Cline with Xu, 2020).

8 of Table 3, and the shares in 2024 US imports are calculated from column 2 of Table 3. The estimates do not include additional new protection at the sectoral level.

Table 4

US Tariffs on Major Economies as of August 7, 2025
and Shares in US Goods Imports in 2024 (percent)

	Import	Tariff (%):	August:	
	Share (%)	pre-TGTW	Reciprocal	Total
Australia	0.51	2.4	10	12.4
Brazil	1.30	2.4	50	52.4
Canada (a)	12.63	1.44	7.48	8.92
China (b)	13.43	20.7	30	57.6
European Union	18.54	2.4	15	15.0
India	2.68	2.4	50	52.4
Israel	0.68	2.4	15	17.4
Japan	4.54	2.4	15	15.0
Korea	4.03	2.4	15	15.0
Malaysia	1.61	2.4	19	21.4
Mexico (c)	15.48	0.31	3.56	3.87
Saudi Arabia	0.39	2.4	10	12.4
Singapore	1.32	2.4	10	12.4
Switzerland	1.94	2.4	39	41.4
Taiwan	3.56	2.4	20	22.4
United Kingdom	2.08	2.4	10	12.4
Vietnam	4.18	2.4	15	17.4
Rest of World	11.11	2.4	12.5	14.9
weighted total		4.41		20.59

a. Assumes 80% exempt. b. Bown (2025) c. Assumes 40% exempt before, 80% exempt after.
Source: calculated from Table 3.

The import-weighted average of the new tariffs (column 3) is 20.6 percent, for most economies comprising an estimated beginning point of 2.4 percent for MFN tariffs in 2024, plus the incremental reciprocal tariffs in place by early August. On this measure, the increment from the Trump Global Trade War amounts to 16.2 percentage points. The Congressional Budget Office has estimated that the average US tariff has risen by 18 percentage points (Swagel, 2025). The estimate in Table 4 is consistent with the CBO estimate in view of the likely range for the additional sectoral protection. An increase of 18 percent in protection is a useful benchmark for examining the welfare costs of the TGTW.

Exemptions

On November 14, 2025, President Trump issue an executive order exempting numerous agricultural goods from the reciprocal tariffs (White House, 2025o). The most prominent were coffee and tea, beef and other meats, fruits and nuts, and cocoa. The action followed unfavorable election results in three state and local elections (New York City, Virginia, and New Jersey), with concern about higher grocery prices a seemingly contributing factor.[71]

Hufbauer and Zhang (2025) estimate that based on January-August data, total 2025 imports for the food products in question would be $85 billion. This amount represents 2.6 percent of total imports in 2024. Hufbauer and Zhang calculate that the tariff savings will amount to $4.6 billion, or $35 per US household. Going forward, a central question will be whether there is a much wider granting of exemptions. Manufacturing firms relying heavily on imported inputs could be a source of pressure for exemptions.

Economic Costs of Protection

Static: Harberger welfare triangles

Trump's uniform base tariff to be applied to all countries and all goods, for countries that do not have a trade surplus with the United States, is 10 percent. In principle the static welfare costs of such a tariff, in the absence of any foreign retaliation, would be relatively modest. As shown in Appendix A, the "deadweight loss" of a 10 percent tariff on a good with large international supply at constant cost could be only about one-half of one percent of the initial value of the imports in question. The tariff would raise 9 percent of the original import value, shifting that amount of consumer surplus (value to consumer in excess of what consumers would be willing to pay) to the government. However, an additional loss of 0.5 percent would be suffered by consumers with no corresponding gain in government revenue. With US imports of goods amounting to $3.3 trillion in 2024, this welfare loss would reach $16 billion. With imports shrinking by 10 percent (Appendix A), revenue from the base tariff would be $288 billion annually, or an average of $2,260 per US household.[72]

At higher tariffs, this deadweight loss of welfare would escalate rapidly (quadratically, rising with the square of the tariff). In the illustration in Appendix A, a tariff of 50 percent would have a loss of consumer surplus of 12.5 percent of the initial value of the imports uncompensated by revenue gain to the government. Because of the shrinkage in import volume, the revenue collected would rise less than proportionately with the tariff. In the example in Appendix A, raising the tariff from 10 percent to 50 percent causes revenue to rise only from 9 percent to 25 percent of the initial value of the imports, little more than a doubling rather than quintupling.

The static welfare costs of the TGTW can be estimated as follows, applying the equation for welfare losses set forth in Annex A.[73] Before the tariff war, the US average tariff was 4.41 percent (table 4). In the absence of the tariff, imports would have been 4.22 percent cheaper.[74]

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[71] Andrea Shalal and David Lawder, "Trump Cuts Tariffs on Beef, Coffee, and Other Foods as Inflation Concerns Mount," *Reuters*, November 15, 2025.

[72] In 2019-2023 there were an average of 127.5 million US households (Census, 2025).

[73] $L_{dw} = 0.5M_0^v \times t^2$, where L_{dw} is deadweight loss, M_0^v is import value

[74] That is: 1-(1/1.0441) = -0.0422.

With an import price elasticity of -1, merchandise imports in 2024 would have been 4.22 percent higher, at $3,435 billion.[75] Static welfare costs were an estimated $3.33 billion.[76] For a TGTW benchmark increase of 18 percentage points in the average US tariff, the tariff level will have risen to 22.41 percent. Static welfare costs will have risen to $86.25 billion annually.[77] The static welfare costs of the TGTW amount to the increase, $82.92 billion per year. Against the 2024 GDP base ($29.2 trillion; BEA, 2025a), this loss amounts to 0.284 percent of GDP.

This estimate for static welfare loss turns out to be somewhat larger than the 0.2 percent of GDP medium-term output loss against baseline estimated by McKibbin, Noland, and Shuetrim (2025b) using the "G-Cubed" dynamic general equilibrium model. They find a larger initial loss, however, reflecting temporarily higher interest rates needed to counter the inflationary shock of higher tariffs.[78]

Dynamic Welfare Losses

A. Estimates based on OECD (2003) "sources of growth" model

Over time, the dynamic welfare gains from open trade are likely to be larger than static gains. Greater openness permits greater gains from specialization in sectors with comparative advantage. It provides larger economies of scale for export sectors. It provides external competitive stimulus to technological change. An important study by the Organization for Economic Cooperation and Development two decades ago (OECD, 2003) provides one basis for quantifying the prospective dynamic costs of the high protection being imposed on the US economy in the Trump Global Tariff War.

The study reviewed growth patterns of 20 advanced-economy members of the OECD in the period 1980-2000. It examined the impact of changes in institutional or policy factors on output per working age person. The study applied a growth model with output as "a function of capital, employment, the efficiency with which they act together, and the level of technology" (p. 73). Its statistical results found benefits from reducing inflation, reducing the variability of inflation, growth costs from increasing the tax burden, benefits from increased research and development intensity, and benefits from "increased trade exposure" (p. 88). The analysis recognized that "small countries are naturally more exposed to foreign trade, regardless of their trade policy", and accordingly adjusted the indicator of trade exposure for country size (p. 70).[79]

The analysis found that an increase of 10 percentage points of GDP in trade exposure generated an increase in output per working age person by 4 percent, over and above any potential influence on the accumulation of physical capital (p. 88). The trade exposure variable was approximately the sum of exports plus imports divided by GDP, and an increase of 10

[75] Goods imports were $3,296 billion in 2024 (Census, 2025a).
[76] That is: 0.5 x 3435 x 0.0441^2
[77] That is: 0.5 x 3435 x 0.2241^2
[78] Their output losses from baseline are about 0.2 percent of GDP annually in 2025 and again during 2029-2035, but reach an average of 0.65 percent of GDP in 2026-2028. (Their figure 2.)
[79] The adjustment involved regressing the crude trade exposure variable on population size and applying the estimated regression residuals as the adjusted trade variable.

percentage points of GDP was "about the increase observed" for OECD experience over the two decades.

The OECD trade exposure variable was: $E = X + (1-X)*M_p$, where X is the ratio of exports to GDP, and M_p is the ratio of imports to apparent consumption (GDP + imports – exports); p. 78. For the United States in 2024, GDP was $29.3 trillion; goods exports were $2.08 trillion; and goods imports were $3.3 trillion. The trade exposure variable stood at 17.17 percent of GDP.[80]

Table 4 above places the average US tariff at the end of 2024 at 4.41 percent, representing 2.4 percent MFN rates against all partners except China, Canada, and Mexico. The high rate for China (20.7 percent) more than outweighed the low rates for Canada and Mexico. With a starting protection rate of 4.41 percent, the increase of 18 percentage points reported by the CBO by August brought the tariff average to 22.41 percent. The corresponding price increase for imports implied by the TGTW amounted to 17.29 percent.[81] With unit arc import price elasticity, imports should be expected to decline from 11.29 percent of GDP to 9.63 percent of GDP. Lerner Symmetry implies a corresponding decline of exports from 7.14 percent of GDP to 6.08 percent. Applying the base period ratio of imports to apparent consumption, the OECD trade exposure index would decline from 17.17 percent of GDP to 15.03 percent of GDP.[82] Applying the OECD coefficient of 0.4, the decline in the trade exposure index by 2.14 percent of GDP can be expected to cause a dynamic efficiency loss that reduces medium and long-term GDP by 0.856 percent of GDP from baseline.

Table 5 applies these estimates to the CBO's January 2025 projections of US GDP to estimate prospective static and dynamic welfare losses of the TGTW over the coming decade. The first column reports the real level of US GDP for each year, at 2025 GDP prices. The second column applies the static loss estimate (0.284 percent of GDP) for each year. The third column applies the dynamic loss, assuming that the full impact (0.856 percent of GDP) only arrives by the tenth year, and that in prior years the dynamic effect rises annually by one-tenth of this total. The choice of ten years for the phase-in period of long-term growth effects is based on the fact that the OECD analysis was calculated using a comparison of the 1990s to the 1980s.

The overall effect is that the static and dynamic welfare losses from the new tariffs rise steadily from 0.37 percent of GDP in 2026 to 1.14 percent of GDP in 2035. The total loss over 10 years is $2.58 trillion at 2025 prices. These losses do not include macro-economic losses in 2026-28 associated with macroeconomic adjustment forced by temporarily higher inflation and needed monetary tightening.

[80] With X = 7.14 percent of GDP, M = 11.29 percent of GDP, the OECD trade exposure measure was 7.14 + (0.929)x11.29 = 17.17 percent of GDP.

[81] 100 x (1.221/1.041 -1), and assuming full passthrough of the tariffs.

[82] That is: 6.08+(0.929)x9.63 = 15.03.

Table 5

Static and Dynamic US Welfare Losses from Trump Global Tariff War
at August 2025 Tariff Levels ($ billion at 2025 prices; percent)

	Baseline	static	dynamic	total loss	total loss
	GDP (a)	loss	loss	$ bn at p'25	% GDP
2026	30,997	88.0	26.53	114.6	0.37
2027	31,544	89.6	54.00	143.6	0.46
2028	32,094	91.1	82.42	173.6	0.54
2029	32,668	92.8	111.85	204.6	0.63
2030	33,263	94.5	142.37	236.8	0.71
2031	33,869	96.2	173.95	270.1	0.80
2032	34,493	98.0	206.68	304.6	0.88
2033	35,123	99.8	240.52	340.3	0.97
2034	35,755	101.5	275.46	377.0	1.05
2035	36,384	103.3	311.45	414.8	1.14
10 years				2,580.0	

a. CBO January 2025 projections of real GDP at 2025 prices
Source: CBO (2025c); author's calculations

B. Estimates based on gravity models

Somewhat larger estimates of dynamic welfare effects from trade have been found in "gravity" models of trade that use geographic location of countries to construct how much trade would be expected given location and then examine the additional impact on income from higher than predicted trade. An influential study by Frankel and Romer (1999) using a geographic instrumental variables approach found that "a rise of one percentage point in the ratio of trade [exports plus imports] to GDP increases income per person by at least one-half percent" (p. 394). Rodrik, Subramanian, and Trebbi (2004) found instead that because remoteness correlates with being near the equator, associated with worse health conditions and institutions, the Frankel-Romer results were not robust. However, Feyrer (2019) obtained estimates comparable to those in Frankel-Romer using a panel identifying changes over time rather than a cross-section for a single year, with country effects removing "any of these deep determinants of income differences" (p. 5). Feyrer also took account of the rising share of air freight over time.

The lower-bound Frankel-Romer estimate of dynamic gains from trade is close to the OECD (2003) estimate, with a coefficient of 0.5 rather than 0.4, as applied to the simple sum of exports and imports relative to GDP rather than the OECD's broadly similar weighted sum of exports as a percent of GDP and (less than fully weighted) imports as a percent of apparent

consumption. As just discussed, one should expect the TGTW to reduce US imports from 11.29 percent of GDP to 9.63 percent of GDP, and to reduce exports from 7.14 percent of GDP to 6.08 percent. The decline in the ratio of imports plus exports to GDP would be from 18.43 percent to 15.71 percent, or by 2.72 percent. Applying the Frankel-Romer lower-bound coefficient, medium-term output would be expected to decline from baseline by at least 0.5 x (2.72) = 1.36 percent. With this higher dynamic loss but the same static welfare loss as shown in Table 5, total loss from the TGTW by 2035 would reach 1.64 percent of baseline GDP, larger than the OECD-based estimate by half of one percent of GDP.

Frankel and Romer found a much higher upper-bound estimate of the impact of trade on growth: an increase of two percent in income per person for each percentage point of GDP increment in the ratio of exports plus imports to GDP (Frankel and Romer, 1999, p. 381). Feyrer's results find a lower upper bound, at a corresponding coefficient of 0.75 rather than 2 (Feyrer, 2019, pp. 26-27). At Feyrer's upper bound, the dynamic loss in table 5 would reach 2.04 percent of GDP by 2035, placing the total loss including static welfare at 2.32 percent of GDP from baseline.

C. Estimates based on Computable General Equilibrium (CGE) models

Hufbauer and Hogan (2023) estimate dynamic gains from opening trade by surveying CGE calculations of likely consequences of selected trade policy changes. They derive a "dollar ratio" metric indicating the ratio of the change in GDP resulting from a change in trade that exceeds simple proportionate growth accompanying baseline GDP. Based on 9 models from the period 2014-2023, they calculated an average "dollar ratio" of 0.30.[83] For example, an increase in exports plus imports by $100 billion in excess of what would be expected from proportionate growth along with GDP would increase GDP by $30 billion. They estimated that by 2022, US GDP was about 10 percent higher than it would have been if there had been no opening of trade in the postwar period. Applying their 0.3 parameter, the prospective reduction of US imports plus exports by 2.72 percent of GDP as the likely outcome of the TGTW implies a prospective loss of 0.816 percent of GDP from baseline future GDP.

D. Welfare loss, overview

These estimates suggest that *the Trump Global Tariff War will inflict annual economic losses on the order of 1 to perhaps as much as 2 percent of US GDP from its future baseline*. This range corresponds to $2,200 to $4,400 annually for the average household, and $850 to $1,650 annually for the median household.[84] There appears to be no recognition in the Trump administration that the higher tariffs constitute a self-inflicted wound rather than a strategic triumph on grounds that the European Union, Japan, and Korea caved in rather than retaliating with higher protection against the United States.

[83] The models included a US International Trade Commission study of US trade with free trade agreement partners; WTO studies on the Trade Facilitation Agreement (reducing bureaucratic trade delays) and on the US-China trade conflict; ADB studies on the Trans-Pacific Partnership agreement and the Regional Comprehensive Economic Partnership; and three academic studies.

[84] Calculated from BEA (2025), FRED (2025h), and Census (2025c).

The comparison of dynamic welfare estimates also suggests that the sources of growth approach in the OECD (2003) study as well as the gravity model approach (most recently in the Feyrer, 2019 estimates) may more fully capture longer term losses from higher protection than do the CGE models. As an example, in the important estimates by McKibbin, Logan, and Noland (2024) using the G-Cubed intertemporal general equilibrium model, an increase of 10 percentage points in average US tariffs with no retaliation was projected to reduce US GDP from baseline by an average of 0.23 percent during the first 6 years, but by only 0.07 percent by 2031-2040.[85] In contrast, application of the 0.4 coefficient in the OECD model implies a permanent loss from baseline of 0.71 percent of GDP.[86]

This contrast, and comparison of the CGE models surveyed by Hufbauer and Logan (2023) to the OECD and gravity model approaches, suggest that at least some of the leading CGE models may primarily capture the shorter-term macroeconomic losses associated with temporary surges in inflation from higher import prices and forced response by monetary authorities boosting interest rates, rather than longer term dynamic welfare effects of higher protection. If the longer-term effects are indeed larger, it will be even more misguided to characterize emerging losses as only a temporary price necessary to pay to create more manufacturing jobs.

Regressive Distributional Effect

Tariffs are a tax on consumption. Because consumption as a percent of income falls as income rises, tariffs are a regressive form of taxation. In contrast, the income tax is progressive. The Yale Budget Lab (2025) estimates that the "2025 Tariffs" have a short-run distributional effect that reduces disposable income by 3.6 percent for the first decile, 2.3 percent for the second, 1.9 percent by deciles 5 and 6, falling to 1.5 percent by the ninth decile and 1.1 percent by the tenth.[87] Clausing and Lovely (2024, p. 14) estimated that the prospective Trump tariffs would reduce after-tax income by 4.2 percent for the lowest quintile, 2.7 percent for the middle quintile, 1.9 percent for the top quintile, and 0.9 percent for the top 1 percent of households.[88]

Potential Revenue

The Congressional Budget Office estimates that the 18 percent rise in tariffs by late August 2025, if maintained, would raise revenue by $3.3 trillion over the 11 years 2025-2035, and the reduction in borrowing needs would also mean a reduction in provide interest payment

[85] See their figure 17.

[86] Using price elasticities of -1 and assuming Lerner symmetry on the side of exports, adding 10 percentage points to the 2024 US average tariff of 4.41 percent (table 5) would reduce merchandise imports plus exports from 18.43 percent of GDP to 16.66 percent. Multiplying the reduction of 1.77 percent of GDP by the coefficient 0.4 yields 0.71 percent medium- and long-term reduction in GDP from baseline.

[87] The group argues that long-term distributional effects are ambiguous because "owners of capital hold rents rather than consume them in the short-run, but do consume them over their life-cycle in the long-run" (p. 12)

[88] They applied decile estimates of the share of consumption *excluding* housing, personal insurance, and pensions in after-tax income as weights. These shares fall sharply, from 85 percent in the second decile to 43 percent by the ninth decile and 34 percent by the tenth (p. 12). The estimates placed total consumer loss from the proposed tariffs at "nearly 2 percent of GDP" (p. 13).

savings of $0.7 trillion over the period (Swagel, 2025, p. 1).[89] Total nominal GDP over this period was projected at $407 trillion (CBO, 2025c), so the $4 trillion in fiscal savings from the new tariffs and associated lower interest costs would amount to 1 percent of GDP annually.[90]

Figure 10 shows three paths for the projected federal deficit as a percent of GDP. The first ("Jan25") is the CBO's January 10-year budget forecast. The second (+OBBA) is obtained by adding to the first the incremental annual changes reported by the CBO in its estimates of the effects of the One Big Beautiful Bill Act.[91] The third path (+TGTF) adds the effect of the new Trump tariffs.[92] For the 10-year period as a whole, the simple average fiscal deficit in the January outlook was 5.8 percent of GDP. The OBBA boosted this average deficit to 6.5 percent of GDP. The Trump Global Tariff War trimmed it again to 5.6 percent of GDP.

Although the Trump tariffs might accordingly be seen as basically an offset to the excesses of the OBBA for fiscal purposes, they come with a major cost in terms of their static and dynamic efficiency losses.[93] Crucially, however, the probability of true permanence of the new tariffs seems relatively low. They face legal challenges. The lopsided deals with the EU, Japan, and Korea may face future pushback. If the Supreme Court rules against the IEEPA-based "reciprocal" tariffs, their replacement by Section 301 (unfair trade) and Section 232 (security) tariffs may be more difficult than foreseen by administration officials.[94]

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[89]Assuming an average tariff at 20 percent in early September 2025, Clausing and Obstfeld place prospective tariff revenue at $400 billion annually. They point out that standard practice in fiscal estimates applies a revenue offset of about one-fourth because "tariffed dollars cannot be taxed elsewhere in the system" (p. 13), leaving the adjusted amount at only $300 billion.

[90] A potentially important caveat about the CBO estimate is that it seems to imply sharp cuts in imports. As noted above, US goods imports were $3.3 trillion in 2024, or 11.3 percent of GDP. An extra tariff of 18 percent would represent additional revenue of 2.03 percent of GDP if imports remained unchanged. Over the 11 year period extra revenue would be 2.03 percent of $407 trillion, or $8.3 trillion. The CBO estimate of $3.3 trillion thus seems to imply a decline of imports from their baseline path by 60 percent. Moreover, as Clausing and Obstfeld (2025, p. 14) note, the CBO estimate is static in the sense of not taking account of negative effects of tariffs on economic activity.

[91] The OBBA made permanent the tax cuts in the 2017 Tax Cuts and Jobs Act, provided some increase in the cap on deductions for state and local taxes, made the estate and gift tax exemption level permanent, and included certain temporary exemptions (including overtime pay and tips) (Bunn, Muresianu, and McBride, 2025).

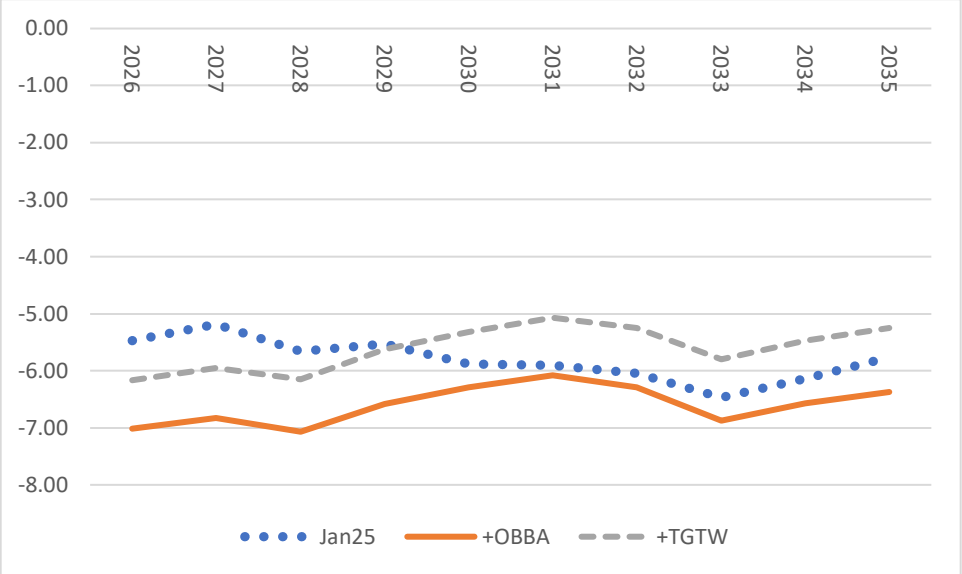
[92] The CBO's $3.3 trillion in primary revenue amounts to 0.81 percent of cumulative nominal GDP. The increment between path +OBBA and path +TGTW is set at 0.81 percent of GDP, plus the annual phase-in of rising savings on interest such that the total reaches $0.7 trillion by 2035.

[93] Clausing and Obstfeld (2025, p. 1) estimate that efficiency losses would approach one-third of revenue raised. The estimates in Table 5 above would amount to losses of 0.767 percent of GDP over the decade. With total nominal GDP at $407 trillion for the decade, the efficiency loss would be $3.1 trillion, representing three-fourths of the CBO fiscal gain of $4 trillion over the decade.

[94] Jeff Cox, "Bessent Says US has 'Lots' of Options to Use on Tariffs If It Loses Supreme Court Case," *CNBC*, November 4, 2025. The Treasury Secretary specifically mentioned Section 232 of the Trade Expansion Act of 1962 and Section 301 of the Trade Act of 1974.

Figure 10

Projected US Federal Budget Balance Before and After "One Big Beautiful Bill Act" and Trump Global Tariff War Tariffs (2026-2035, percent of GDP)



Source: Calculated from CBO (2025a, d); Swagel (2025)

The greatest threat to revenue potential of the Trump tariffs may come from the President himself. He has stated that the tariff revenue could be used for "A dividend of at least $2000 a person (not including high income people!)".[95] The Committee for a Responsible Federal Budget (2025) estimates that the proposed dividend would cost $6 trillion over 10 years. That outcome would turn the CBO's $4 trillion net fiscal gain into a $2 trillion net fiscal loss over the decade. The path of TGTW fiscal balance in Figure 10 would then shift from being about 1 percent of GDP higher than the OBBA path to being about 0.5 percent of GDP lower.

Supreme Court Review

On November 5, 2025, the US Supreme Court held oral arguments on the legality of the Trump administration's application of the 1977 International Emergency Economic Powers Act (IEEPA) as the main basis for its tariff war. As expected, principal issues that emerged included reservations about the seeming transfer of power to tax from congress to the executive branch and the related "major questions" issue whereby massive tax revenue is involved without a single mention of the word "taxation" in the IEEPA.[96] Addressing the Trump administration's argument that the power to "regulate" imports in IEEPA implied taxation but that revenue was only "incidental", Justice Neil Gorsuch asked Solicitor General D. John Sauer: "Could the president

[95] Posted on Truth Social, November 9, 2025.

[96] In 2022, the Supreme Court curbed the Environmental Protection Agency's power to address climate change because there was no "clear congressional authorization" to do so; and in 2001, an opinion by Justice Antonin Scalia observed that Congress does not "hide elephants in mouse holes". Adam Liptak, "Will Trump's Tariffs Survive Supreme Court's 'Major Questions' Test?

impose a 50 percent tariff on gas-powered cars and auto parts to deal with the unusual and extraordinary threat from abroad of climate change?" Sauer replied in the affirmative.[97]

A leading economics commentator inferred from the hearing that "at least six of the nine justices – the three liberals, [plus] Roberts, Gorsuch and Amy Coney Barrett. – are ready to uphold the lower court's decision and rule against Trump."[98] Interviewed after the hearing, Jack Goldsmith, an assistant attorney general in the George W. Bush administration, thought that the government had the better of the technical arguments but predicted that "… a majority of the court will be very worried … about giving a president basically unconstrained tariff authority to raise revenue that Congress as a practical matter cannot reverse."[99]

Shane and Litan (2025, pp. 14-15) argue that "… it is entirely possible that the Supreme Court would uphold some or all of the IEEPA-based tariffs if re-imposed under the [national security] Section 232 [Trade Expansion Act of 1962]. …the president could also invoke Section 301 … as an alternative or supplement". A more remote possibility would be application of section 338 of the Tariff Act of 1930, the Smoot-Hawley legislation tarred with the reputation of contributing to the Great Depression.[100] This section, which has never been used, gives the president the power to impose a tariff of up to 50 percent against countries that discriminate against the United States.[101] It is important to recognize that even if the IEEPA-based tariffs are not sustained or replaced, US tariffs would remain higher than at any other time in the postwar period, reflecting the new sectoral protection under section 232 and high protection on China under section 301 already in place by 2024.[102]

Conclusion

The Trump Global Tariff War has been launched under three false premises. First, it attributes the erosion of the share of manufacturing jobs in US employment to unfair trade practices of major trading partners, rather than automation and demand shifts toward services. Second, it similarly attributes a persistent trade deficit to such practices, rather than focusing attention on the need to reduce excessive US fiscal deficits and the need for exchange rate realignment to narrow external deficits. Third, it has been implicitly based on the premise that higher tariffs do not impose any damage on the US economy, ignoring the static and dynamic welfare costs of protection. Unless corrected, the new high levels of US tariffs will impose self-inflicted static and dynamic efficiency losses reaching 1 to 2 percent of GDP annually from baseline levels by 2035.

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[97] Matt Ford, "Trump is About to Find Out What It's Like to Be a Democrat," *The New Republic*, November 7, 2025.
[98] Greg Ip, Why Tariffs Are in Peril at High Court," *Wall Street Journal*, November 7, 2025.
[99] Jack Goldsmith and John Guida, "Is This the End of Trump's Tariffs?" *New York Times*, November 7, 2025. He added that "… the secretary of the Treasury has made it easier for the court to avoid doing so by claiming in recent weeks that the administration can continue imposing tariffs based on other narrower and somewhat 'more cumbersome' authorities ,,,"
[100] A Google AI query yields the following: "In introductory college textbooks, the Smoot-Hawley Tariff Act of 1930 is typically viewed as a **major policy blunder** that exacerbated the Great Depression, but not its primary cause."
[101] Ana Swanson, "Tariffs are Here to Stay, Even if the Supreme Court Rules Against Trump," *New York Times*, November 5, 2025.
[102] The Yale Budget Lab (2025) finds that the average US tariff rate would remain at 9.1 percent without the reciprocal tariffs applied under IEEPA.

Whether or not the Supreme Court rejects use of the International Emergency Economic Powers Act as the basis for the "reciprocal" tariffs, they should be shifted to Section 301 unfair trade and Section 232 national security tariffs. Their calculation should not be based on bilateral trade imbalances, nor should they have a 10 percent minimum. Any new Section 301 tariffs should be linked demonstrably to country-specific subsidies and other trade-distorting practices, and calibrated accordingly.

An important area for meaningful national-security intervention warranting industrial policy action not covered by section 232 is domestic production of rare earth minerals and magnets, revealed in the Tariff War to be a potential stranglehold by China. Meaningful Section 301 tariffs would also be important for China in view of distortions reflecting past government subsidies to industrial exports. China has finally acknowledged that it should no longer enjoy "special and differential" treatment on grounds of being a developing country.

To address any need to narrow the US external deficit, reduction of the excessive US fiscal deficit path and coordinated realignment of exchange rates by partners with large external surpluses (not bilateral trade surpluses with the US) should be pursued, rather than imposition of high Every Nation Different tariffs. The new high tariffs cannot be relied upon to help address the fiscal deficit problem, for four reasons. They will tend to act as a penalty to US exports as a consequence of pushing up the dollar in foreign exchange markets as fewer dollars are spent on imports. Requests for exemptions, particularly by firms using imported intermediate inputs, will likely erode the tariffs. They are likely eventually to bring retaliation not yet seen, given the modest share of US purchases in the exports of most economies other than Canada and Mexico. Finally, the tariff revenue is politically susceptible to being given away in populist handouts.

The Trump Global Tariff War has achieved some important reductions in foreign protection, most notably in the removal of all tariffs on US industrial goods by the European Union and the elimination of some long-standing trade barriers by Japan. It is time to declare victory and redesign the basic strategy toward more carefully tailored measures and far less self-inflicted damage. The goal should be to return US tariffs far closer to their low single-digit average before the TGTW, from the now high average tariff level of about 22 percent.

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Appendix A

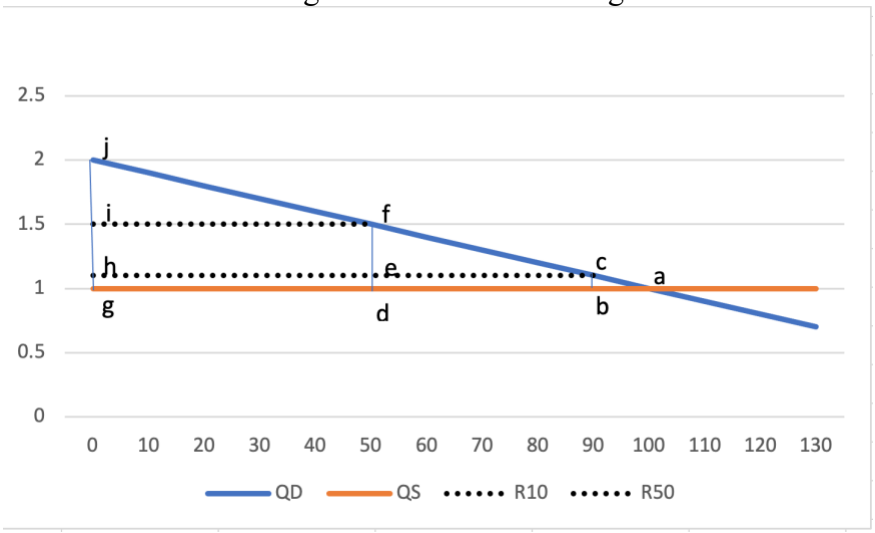
Static Welfare Costs of Tariffs

The classic measure of the static welfare cost of a tariff is the "Harberger triangle" of "deadweight loss" from the amount of lost consumer and producer surplus in excess of the amount of revenue accruing to the government from the tariff.[103] Figure A.1 shows the relevant welfare triangles for a country importing a product with large world supply and effectively a flat world supply curve (QS) at the price of unity. The country's demand curve is downward sloping line QD.

The country's equilibrium imported amount of the good is quantity 100 at price 1, shown as point *a* on the diagram. Suppose the government imposes a tariff of 10 percent, boosting the price from 1.0 to 1.1. The new equilibrium occurs at quantity *b*, 90 units of the good. The demand curve has an "arc elasticity" that is unity, meaning that for any higher price, the percent reduction from the initial import of 100 units equals the percent increase in the price from its free-trade level of unity. Thus, the 10 percent tariff cuts imports from 100 to 90.[104]

Figure A.1

Harberger Static Welfare Triangles



[103] See e.g. Harberger (1971). Consumer surplus is the cumulative area under the demand curve from zero imports up to the quantity of imports at the market equilibrium where the demand curve intersects the supply curve. At each price higher than equilibrium and quantity below equilibrium, there would have been consumers willing to pay a higher price. Producer surplus is the corresponding cumulative amount above an upward sloping supply curve. For imports with large world supply, the supply curve is horizontal (infinitely elastic) over the relevant range facing the individual country, and over this range there is no producer surplus.

[104] If the price elasticity of demand were instead a constant "point elasticity" of unity, the reduction would be smaller, because the 1 percent quantity reduction for an additional 1 percent price increase would be applying that price increase to a smaller and smaller base. For example, with a constant arc price elasticity of -1, a 50 percent price increase cuts demand from 100 to 50 units; with a constant point elasticity of -1, the cut is only to 60.5 units.

Consider a product in which the price and quantity units of Figure A.1 are $1,000 and 1,000 tons, respectively. With no tariff, total import consumption value is $100 million. The 10 percent tariff raises revenue amounting to only $9 million, because the price increase cuts imports to only 90,000 tons. The deadweight loss of the tariff is the area of the small triangle *abc*, consumer surplus that has disappeared. With height of 0.1 $ thousand and base of 10 thousand tons, this triangle has a value of $0.5 million. The rectangle *ghbc* comprises former consumer surplus that has been transferred to the government ($9 million).

If instead the government imposes a tariff of 50 percent, imports are cut to 50 units (50,000 tons). The price facing consumers rises 50 percent, to $1,500 per ton. The amount of revenue raised is now rectangle *gifd*, amounting to 0.5 $thousand raised on each of the 50 thousand tons that continue to be imported. Tariff revenue is $25 million. But consumer surplus lost is now triangle *abc* ($0.5 million) plus rectangle *decb* plus triangle *efc*. Area *dech* is 4/9 of area *ghcb*, or $4 million. The area of triangle *efc* is one-half the base of 40,000 tons times the height of 0.4 x $1,000 (or $400), amounting to $8 million. So the total consumer surplus loss is $12.5 million. With tariff revenue of $25 million but consumer surplus loss of $12.5 million, the deadweight loss of the tariff is $12.5 million.

The deadweight loss of the tariff rises as the square of the tariff. A tariff of 50 percent is 5 times a tariff of 10 percent but imposes a deadweight loss that is 25 times as large ($12.5 million instead of $0.5 million in figure A.1). The quadratic increase reflects the fact that with both the height (price) and base (quantity) changing, the magnitude rises with the square of the changes (quadrilatically).

With the arc price elasticity of demand for the import at a constant -1, and with the world supply curve horizontal over the relevant range, it turns out that *the deadweight loss of a tariff equals the square of the tariff rate, multiplied by one-half the initial import value*. The government *revenue* from the tariff turns out to be *the initial import value multiplied by: the tariff rate minus the square of the tariff rate*.

Specifically, let M_0^v be the initial import value, P_0 the initial price to consumers (the world pricc), Q_0 the initial quantity imported, and $\boldsymbol{t}$ the tariff rate newly imposed. Then the triangle of deadweight loss in consumer surplus will have the value of the change in the quantity imported (base of the triangle) times the increase in price to the consumer (height of the triangle) times one-half. Accordingly, and defining L_{dw} as the deadweight loss:

$$A.1)\ L_{dw} = 0.5 \times [Q_0 - Q_1] \times [P_1 - P_0]$$

$$= 0.5 \times [Q_0 - (1-t)Q_0] \times [P_0(1+t) - P_0] = 0.5 \times Q_0[1-(1-t)]] \times P_0[(1+t)-1]$$

$$= 0.5 \times Q_0 P_0 \times t \times t = 0.5 M_0^v \times t^2$$

Imposing a 50 percent tariff on an import with initial value of $100 million will cause a deadweight loss in consumer surplus of $50 million multiplied by 0.5^2, or $12.5 million, per the example discussed above.

Defining ***R*** as the amount of revenue that will be collected by the government, which is also the transfer of former consumer surplus to the government:

$$A.2)\ R = t \times M_1^v = t \times [M_0^v(1-t)] = M_0^v(t-t^2)$$

Again using the example of initial import value of $100 million and a new tariff of 50 percent, the tariff revenue will be $100 million x (0.5-0.25) = $25 million.

Appendix B

Calculating the Trump Reciprocal Tariffs

The USTR (2025a) has published the methodology it applied to arrive at the "reciprocal" tariffs announced on the April 2, 2025 "Liberation Day" launching of the tariff war. The method is as follows.

In the bilateral trade of the United States with any individual economy, let "*m*" be the value of imports from the country, and "*x*" be the value of US exports to the country, in 2024. Then the US trade balance with the country will have been $x - m$. If there was a deficit, then $x < m$. The reciprocal tariff is calculated as the change in the existing tariff that would have been needed to eliminate the deficit. Designated as "Δt", this reciprocal tariff will depend on the size of the deficit (m-x); the price elasticity of demand for imports, ε; and the pass-through elasticity of the import price to the tariff, φ. The USTR authors assumed that imports are highly price elastic, with $\varepsilon = -4$. They also assumed that pass-through of tariffs to prices is modest, at $\varphi = 0.25$. The combined effect is that the elasticity of imports with respect to the tariff is substantial, at $\varepsilon\,\varphi = -1$. For example, an extra tariff of 10 percent will reduce imports by 10 percent.

The desired change in imports is the amount needed to reduce imports to the same size as exports, so:

1) $\Delta m = x - m$

The change in imports that is induced by the change in the tariff is:

2) $\Delta m = \Delta t \times \varepsilon \times \varphi \times m$. From 1) and 2),

$$3) x - m = \Delta t \times \varepsilon\varphi m$$

Accordingly,

$$4) \Delta t = \frac{x - m}{\varepsilon\varphi m} = \frac{x - m}{-4x0.25m} = \frac{x - m}{-m} = 1 - \frac{x}{m}$$

For example, if exports were only 70 percent of imports, placing x/m at 0.7, then the reciprocal tariff will be $\Delta t = 0.3$, namely, a tariff of 30 percent.

The reciprocal tariffs announced on April 2, 2025 further "adjusted" them by simply cutting them in half, as shown in text table 3. When exports are greater than imports, the reciprocal tariff for the country is nonetheless set at a minimum of 10 percent. The resulting reciprocal tariff, expressed in percentage terms, is then:

$$5) \Delta t_{adj} = Max\ (10; 0.5 \times (1 - \frac{x}{m}) \times 100)$$

Appendix C

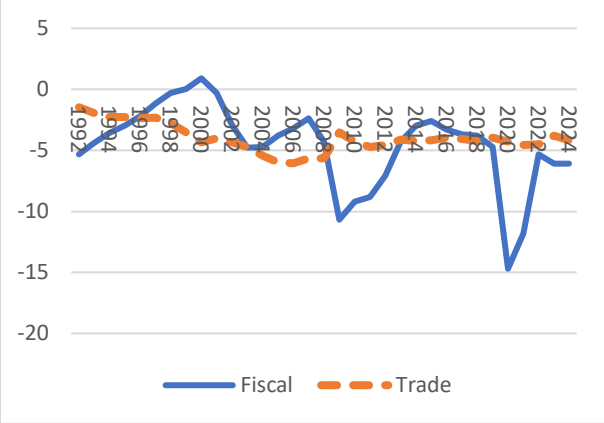
Fiscal Balances and the Trade Balance

As discussed in the main text, two different approaches arrive at estimates indicating that the US trade and fiscal deficits are closely related, albeit not identical twins. Figure C.1 shows the merchandise trade balance and the federal fiscal balance as percentages of GDP for the period 1992-2024.

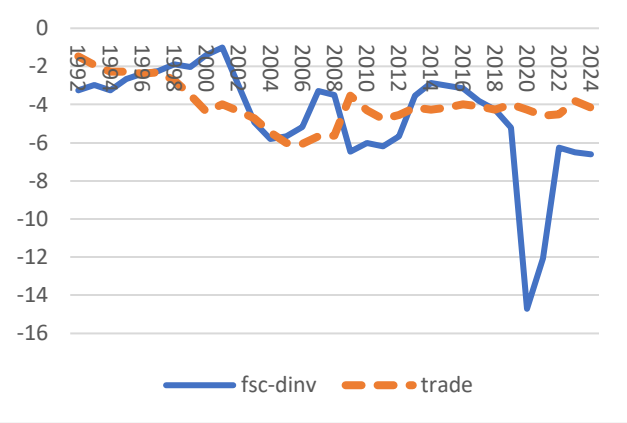
Figure C.1

US Goods Trade and Federal Fiscal Balances, 1992-2024
(percent of GDP)

A. Fiscal balance only



B. Fiscal bal. - Investment bal. deviation



Sources: Census (2025), CBO (2025a), BEA (2025)

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Although panel A of figure C.1 shows some similarities in the paths of the fiscal and merchandise trade balances, with a deteriorating trend in both from 2001 through 2008, there is larger variability in the fiscal series. There is a large fiscal improvement from 1992 through 2000, reflecting the Clinton-era fiscal adjustment and the dot-com boom, but large downswings in 2008-09 from the Great Recession and in 2020-21 from the pandemic recession and federal assistance expenditures.

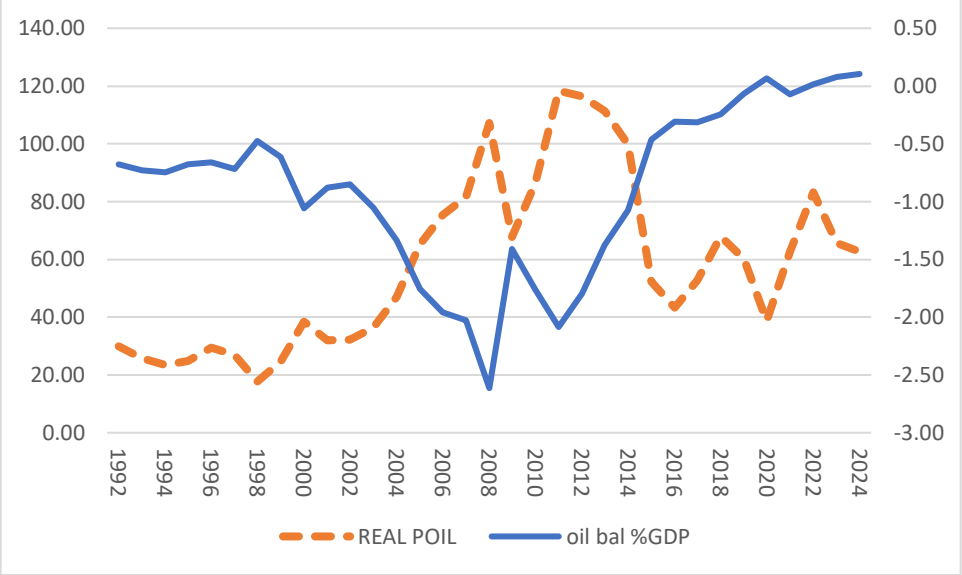
Panel B shows the fiscal influence adjusted by the deviation of investment from the full period average. For the full period, gross private investment averaged 17.6 percent of GDP. From 1992 through 2000, the deviation of private investment from this average rose persistently from -2.0 percent of GDP to +2.3 percent of GDP, representing demand pressure that offset the curbing of demand from narrowing fiscal deficits. Then in the Great Recession the private investment deviation swung to -4.2 percent of GDP in 2009 and about -3 percent in 2010-11. With the swings in private investment partially offsetting the fiscal swings, the path of the fiscal balance minus the investment deviation shown in panel B adheres much more closely to that of the goods trade balance than does the path of the fiscal balance alone in panel A, for the period 1992-2012.

Oil trade has been another major factor causing swings in the goods trade balance. Large swings in international oil prices were the driving factor in the oil trade balance up through 2010. Thereafter a sharp increase in US oil and gas production contributed a major improvement in the external goods trade balance.

Figure C.2 shows the real price of UK Brent oil in US dollars per barrel, deflating by the US GDP deflator (with 2015 = 100), on the left axis. It also shows the trade balance in petroleum products as a percent of GDP, on the right axis. The oil trade balance has improved by about 2 percent of GDP from 2006-12 to 2020-24.

Figure C.2

Real Price of Europe Brent Oil (2015 dollars per barrel, left)
And US Petroleum Goods Trade Balance (percent of GDP, right)



Source: calculated from FRED (2025d), BEA (2025b), EIA (2025)

A statistical test incorporating the influences of the oil balance and swings in private investment as well as the fiscal balance can then be estimated as shown in equation C1.

$$C1. \quad Z_t^{NO} = -2.12 + 0.2179\, F_t - 0.6193\, I_t^P ; adj\ R^2 = 0.52$$
$$\qquad\qquad (-8.7) \quad (4.75) \quad (-5.85)$$

In this equation, Z_t^{NO} is the non-oil merchandise trade balance as a percent of GDP; F_t is the federal fiscal deficit as a percent of GDP in year t; I_t^P is gross private investment as a percent of GDP; and t-statistics are shown in parentheses. All coefficients are statistically significant, although the adjusted R^2 at 0.52 shows only a modest degree of explanation. Figure 6 in the main text uses this equation to show the paths of actual and predicted non-oil merchandise trade balances as a function of the fiscal balance and the deviation of gross private investment from the period average. As noted in the main text, the coefficient on the fiscal balance is close to that

found in the linear general equilibrium model in my earlier study of the implications of adopting a border tax adjustment for the United States (Cline, 2017).

Appendix D

Trade in Services

The Trump reciprocal tariff calculations are based on bilateral imbalances in the trade of goods. However, the United States has a comparative advantage in services. If the reciprocal calculations are redone using goods and services trade, the bilateral tariffs turn out to be lower for all of the major economies considered in Table 3 above. The difference are notably large for the European Union, Korea, and India, and especially Switzerland.

Table D.1 reports total US exports and imports of services in 2024 by major category. As shown in the table, in 2024 US exports of services were $1.15 trillion. In comparison, exports of goods were $2.08 trillion; services exports were 55.3 percent as large as goods exports, arguably too large to be ignored. Whereas the total trade deficit on goods alone was $1,214.5 billion, the total deficit on goods and services combined was 903.5 billion, approximately three-fourths as large (Census, 2025). The table shows the breakdown of services trade by major category.

Table D.1
US Trade in Services by Category, 2024 ($ billion)

	Exports	Imports	Balance
Maintenance, repair	35.5	28.0	7.5
Transport	102.2	154.7	-52.5
Travel (a)	213.8	178.9	34.9
Construction	2.5	2.4	0.1
Insurance	28.2	95.1	-66.9
Financial	194.5	63.4	131.1
Charges for use of Intellectual Property	169.5	54.0	115.5
Telecommunication, computer, information	90.8	72.6	18.2
Other business	263.9	159.7	104.2
Personal, cultural, recreational	21.1	26.8	-5.7
Government	30.8	25.6	5.2
Total	1,152.7	840.5	311.9

a. business; personal (including health, education)
Source: Census (2025).

Table D.2 shows the calculation of the Trump-like reciprocal tariff when goods and services, rather than just goods, are included. For each of 12 major trading partners included in the 30 economies shown in text table 3 above, column 1 in Table D.2 shows 2024 exports, column 2 imports, and column 3 the ratio of exports to imports. Column 4 shows the computed "adjusted" reciprocal tariff, using the Trump administration's formula (see Appendix A and column 5 of text table 3).[105]

[105] The 12 economies accounted for 57 percent of US goods and services trade turnover in 2024. Note that the calculation in column 4 applies the adjustment of one-half of the raw calculation, but does not impose a minimum reciprocal tariff of 10 percent.

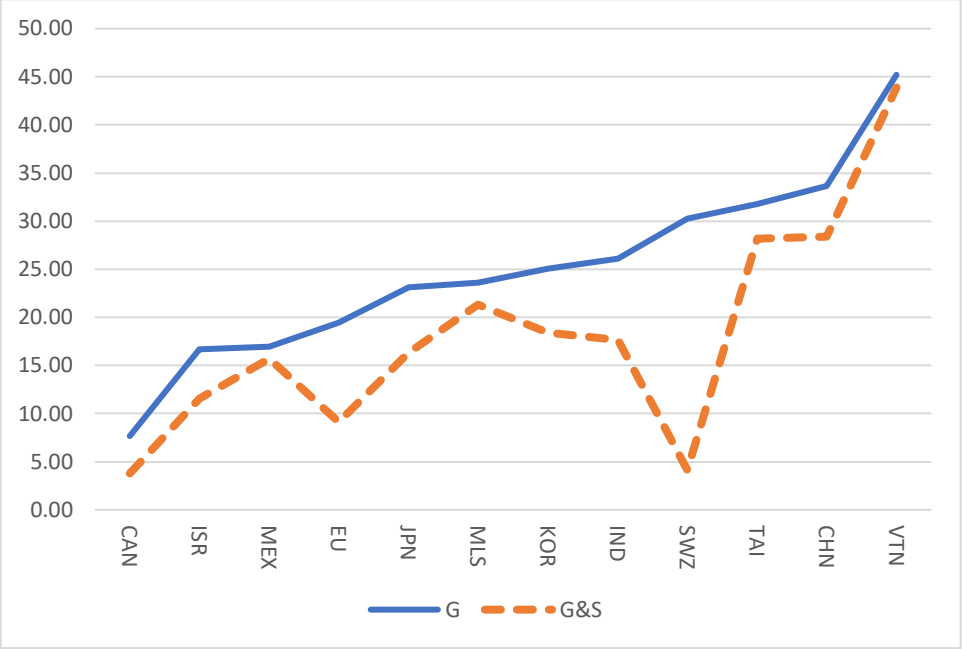
Table D.2
Adjusted Reciprocal Tariff Using
Trade in Goods and Services

		1	2	3	4
		XGS	MGS	ratio	adj. recip. Tariff
Canada	CAN	440.7	476.8	0.92	3.8
China	CHN	199.3	461.4	0.43	28.4
European Union	EU	666.7	815.2	0.82	9.1
India	IND	83.4	129	0.65	17.7
Israel	ISR	24.2	31.5	0.77	11.6
Japan	JPN	129.4	192.2	0.67	16.3
Mexico	MEX	384.9	560.7	0.69	15.7
Malaysia	MLS	31.5	54.9	0.57	21.3
South Korea	KOR	93.9	148.6	0.63	18.4
Switzerland	SWZ	90.2	98.4	0.92	4.2
Taiwan	TAI	56.6	129.6	0.44	28.2
Vietnam	VTN	16.7	136.5	0.12	43.9

Source: Census (2025) and author's calculations

Figure D.1 arrays these economies from the lowest to highest adjusted reciprocal tariffs, and reports both versions of the calculation: goods only, and goods & services. For all of these economies, the broader inclusion yields a lower reciprocal tariff. The most extreme difference is for Switzerland, which shows a rate of 4.2 percent using goods and services but 30.3 percent using goods only (Table 3, main text).

Figure D.1
Reciprocal Tariff Calculation Based on
Goods and Services versus Goods Alone



Source: Census (2025); author's calculations

Appendix E

Import Volume and Tariff Revenue Response to Tariff Level

Clausing and Obstfeld (2025), or CO, emphasize an inherent contradiction between using tariffs to reduce imports *and* raise fiscal revenue. Tariffs that successfully reduce imports will reduce the base on which the tariffs will be collected, making the realized proportionate increase in tariff revenue less than the proportionate increase in the tariff. They identify a tariff Laffer curve whereby revenue will start falling back again once the tariff reaches an estimated 53 percent in one model (Constant Elasticity of Substitution, CES, of 3), or as low as 32 percent for an alternative model.[106] At the ratio of imports to GDP for the US in 2024, 11 percent, both models show a high price elasticity of imports: (-)2.76.

In contrast, in the series of estimates of Fundamental Equilibrium Exchange Rates (FEERs) prepared during 2008-2012 with John Williamson and continued thereafter by the author, the Symmetric Matrix Inversion Method (SMIM) model applied import and export elasticities of unity (Cline and Williamson, 2008; Cline, 2017b). Nominal external adjustment through exchange rate depreciation occurred on the export side but not on the import side, because real reductions in import volumes were seen as being offset by rising import prices.

Significant episodes of dollar swings suggest an import price elasticity much closer to unity than to (-) 3. For example, from April 2009 to July 2012 the real effective exchange rate of the dollar declined by 15.2 percent (Federal Reserve, 2025). Despite the corresponding increase in real import prices by 17.9 percent, the (lagged) real volume of goods imports did not decline, but rose by 6.1 percent from 2010 to 2013.[107] Yet a price elasticity of -2.76 would have predicted an import decline of 49 percent. Even taking account of rising income with recovery from the Great Recession, as well as incomplete exchange rate pass-through, this divergence casts doubt on the high import price elasticity in the CO estimates.

The CO estimates apply methodology developed in Feenstra, Luck, Obstfeld, and Russ (FLOR) (2014). That study observes that: "Values around unity are common in various studies of substitution between domestic and imported goods carried out over decades by researchers who generally applied OLS [Ordinary Least Squares] to datasets more highly aggregated than ours" (p. 39). They argue that OLS estimates are downward biased because of positive correlation of error terms with the relative price variable. However, their exposition of this proposition is opaque (pp. 10-11).

The median FLOR estimate for US imports places the price elasticity at 0.89 (absolute value) using OLS. In contrast, their estimates applying Two Stage Least Squares and Generalized Method of Moments to remove the downward bias show an overall median import price elasticity of 1.63.[108] This level is far below the CO elasticity of 2.76.

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[106] In the alternative "translog" model, "the absolute value import price elasticity becomes very large as the import share declines, implying that higher tariffs quickly become prohibitive" (CO, p. 11).

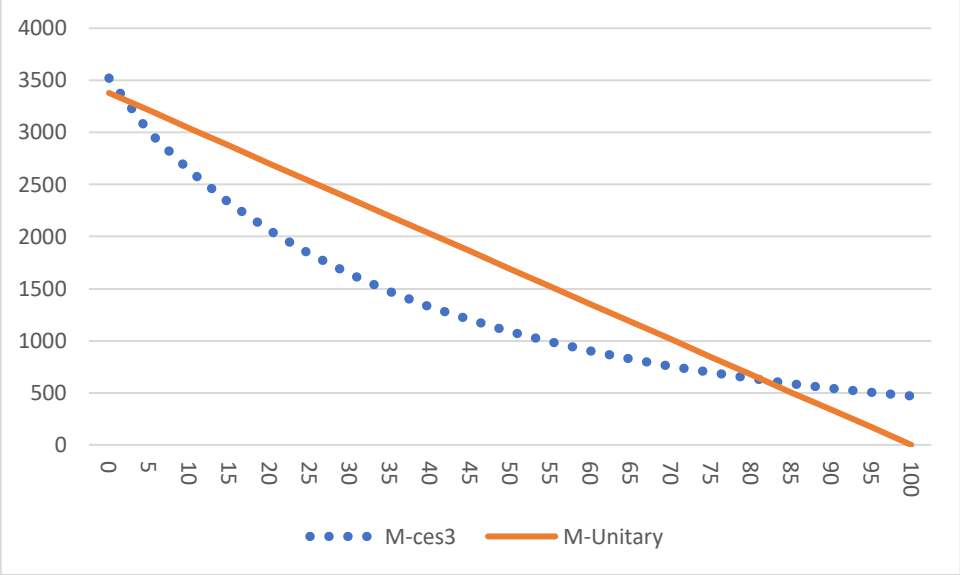
[107] Calculated from BEA (2025) for GDP deflator for goods imports, and Census 2025b for goods import values.

[108] Calculated from their table 4, p. 26. There are four model specifications applied to eight broad product sectors.

Figures E.1 and E.2 replicate the CO results for 2024 import values and tariff revenue that would have been expected if US tariffs had been higher than their actual level of 2.4 percent, in the paths "M-ces3".[109] As an example, if tariffs had averaged 20 percent, US goods imports would have fallen from their baseline $3.3 trillion to $2.06 trillion (E.1), yielding revenue of only $412 billion (E.2), in the CO model using the CES elasticity of 3 (import price elasticity of -2.76). In contrast, using an import arc price elasticity of unity, goods imports would have been $2.7 trillion (E.1), and tariff revenue would have been $550 billion (E.2).

Figure E.1

Hypothetical US Merchandise Imports in 2024 ($ billions, vertical) under Alternative Tariff Levels (percent, horizontal) and Price Elasticities[a]



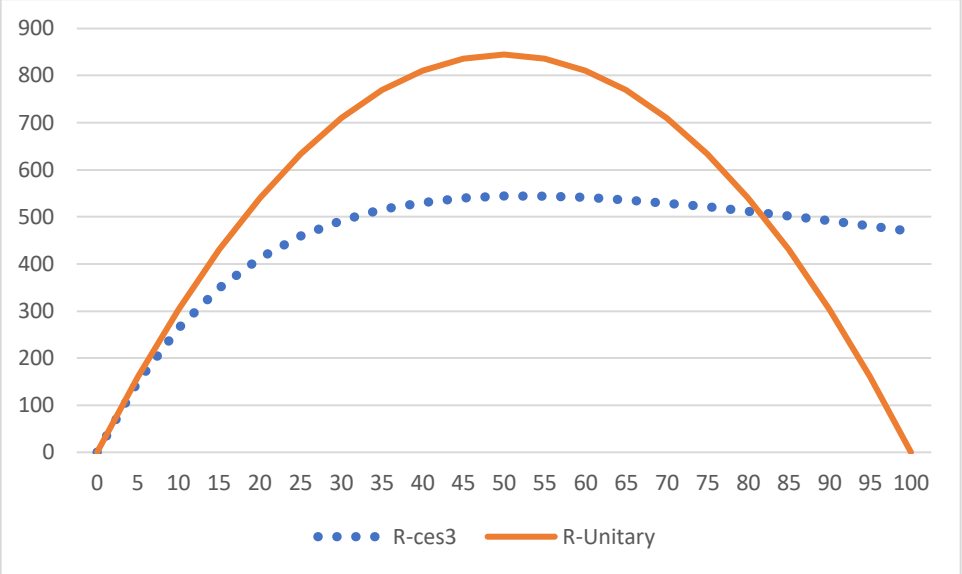
a. ces3: CES elasticity of 3; Unitary: arc price elasticity of -1

As shown in Figure E.1, an arc price elasticity of -1 generates a straight-line decrease in imports as the tariff increases, with imports falling by 50 percent for an increase of the tariff from zero to 50 percent (for example). The CES-3 version causes a much sharper initial decline in imports. In the most relevant range, even under Trump tariff conditions, the average tariff is in the vicinity of 20 percent to 30 percent. In this range, unit arc price elasticity leaves imports and tariff revenue higher than in the CES version. However, using the unit arc elasticity, imports and revenue fall lower than in the CES version once tariffs reach about 80 percent.

[109] The CO estimates are from the posted data disclosure at: https://www.piie.com/publications/working-papers/2025/tariffs-fiscal-policy

Figure E.2

Expected US Tariff Revenue in 2024 ($ billions, vertical)
under Alternative Tariff Levels (percent, horizontal)[a]



a. Equals import volumes in Figure E.1 multiplied by corresponding tariff rates

Figure E.2 correspondingly shows that tariff revenue in the CES-3 version is far below tariff revenue in the unitary arc price elasticity version until tariffs reach the range of 60-80 percent. Peak revenue occurs at a tariff of 50 percent for unitary elasticity and 55 percent for the CES-3 elasticity.[110] Revenue then remains nearly flat in the CES-3 case, but begins to fall sharply in the unitary case.

[110] For the unitary arc price elasticity, with M_0 as the initial import level and M_1 as the import level after imposing a tariff of t, $M_1 = M_0 \times (1 - t)$. Tariff revenue is then: $R = tM_1 = M_0 \times (t - t^2)$. The derivative of the final bracketed expression with respect to t is: (1-2t). This derivative turns negative once the tariff reaches 0.5, yielding the symmetric revenue curve peaking at a 50% tariff in Figure E.2.