Effects of US Import Tariffs on the Dutch and European Economy

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Summary

This report examines the impact of the new US import tariffs announced by incoming President Donald Trump during his campaign for his second term in 2025. These tariffs include a general 10% levy on all imports, 100% on vehicles, and 60% on goods from China. However, the exact rates and design of the tariffs remain unclear. While these measures are intended to boost US production of items such as vehicles and electrical appliances, they also lead to higher consumer prices due to the increased cost of imported consumer goods. Additionally, costs rise for US companies that rely on imported materials, weakening their international competitiveness. Higher domestic labour costs in both manufacturing and the service sector further erode the competitiveness of US industries.

For the Netherlands and the EU, the macroeconomic impact remains relatively limited, though specific manufacturing sectors are affected. Exports to the US account for only 4 to 5% of total Dutch exports, so the overall impact of the announced US trade tariffs is expected to be minimal. However, certain sectors in Dutch manufacturing experience more significant effects on production. The most impacted sectors include machinery and equipment manufacturing (-6%), electronic and optical products (-5.7%), and vehicles (-5.3%), driven by reduced exports to the US At the same time, the Dutch service sector benefits from the higher costs of US services, enhancing its international competitiveness. For the EU, the effects are similar, with larger declines in sectors like vehicles (-6.1%) and pharmaceutical products (-4.9%).

The impact of a retaliatory EU tariff of 10% on imports of US goods is limited. For the Netherlands, this results in a small decline of 0.2 percentage points in both exports and imports. Simultaneously, this strategy stimulates domestic production as US imports are partially replaced by Dutch products. Exports to third countries (outside the EU and US) are expected to increase. For the EU as a whole, the effects are similar: trade also declines by 0.2 percentage points, while production in certain manufacturing sectors rises as US goods are substituted with EU products.

General EU retaliatory measures have little impact on the US economy but do increase prices and further restrict trade. They also raise the risk of a trade war, which would negatively affect EU exports and consumers. This study assumes a limited and orderly trade conflict. Further escalation and increasing uncertainty about policy responses could have more severe consequences. For this reason, the EU has often opted for targeted measures against specific US sectors and additional strategies such as subsidies, tax incentives, and market diversification. These approaches are generally more effective, prevent escalation, and remain compliant with World Trade Organization (WTO) rules.

1 Introduction

The US government under former President Trump (2016–2020) was known for its protectionist trade policy, implementing measures to limit foreign competition and protect and stimulate domestic industries. This policy included raising import tariffs on goods from countries such as China, aiming to boost the US manufacturing sector and improve the trade balance. Following his re-election in 2024, a Republican administration is set to begin a new term in 2025 and will likely prioritize a similar trade policy. This raises the question of what impact new US import tariffs might have on European and Dutch products. This report examines the expected economic effects of these proposed tariffs on the Dutch and European economies, focusing on changes in trade flows, potential price increases, and the response of affected sectors.

An import tariff is essentially a tax on foreign goods that generates revenue for the imposing government. Governments may impose tariffs for various reasons, ranging from supporting local industries to addressing unfair trade practices. Legally, importers are responsible for paying these tariffs. Tariffs impact businesses, consumers, importers, exporters, and the broader economy. Most studies show that while tariffs benefit certain groups, they cause greater harm to others, leading to a decline in overall living standards and economic growth. Empirical evidence indicates that US tariffs in 2018 and 2019 were almost entirely passed on to US consumers, resulting in higher prices and reduced export growth (Fajgelbaum & Khandelwal, 2022).

A general import tariff of 10% on all imported goods would reduce US imports by increasing the prices of foreign products. This decreases demand for foreign goods and encourages consumers and businesses to choose domestic alternatives, which become relatively cheaper. The effect on imports is more significant when the tariff applies to all goods from all countries.

In addition to reducing imports, such a tariff would also affect US exports. Import tariffs influence US exports because many exported products rely on imported components and raw materials. These imported inputs become more expensive or less available due to the tariffs, raising production costs for businesses. This makes producing export goods less profitable or even unfeasible. While this effect remains limited in many sectors, it could be significant in industries heavily reliant on foreign inputs.

Another factor is the rise in wages within the United States, driven by growth in domestic production. Higher costs for imported goods shift demand toward domestic products, increasing production and employment. This heightened demand for labour results in higher wages. Increased labour costs not only make US goods more expensive but also reduce the international competitiveness of the US service sector. Services such as consulting, software development, and financial services often compete internationally on price and quality. Higher wages raise the costs of these services, hindering exports while potentially increasing service imports.

One of the stated objectives for imposing tariffs is to improve the US trade balance. While tariffs reduce US imports by increasing costs, they do not address the underlying factors determining the trade balance, such as savings behaviour and investment levels within a country (York, 2024). Additionally, US exports are likely to decline as tariffs make imported inputs and components used in export products more expensive (Handley et al., 2020). Finally, the US dollar is expected to appreciate due to the tariffs, combined with anticipated tax cuts (Clausing & Obstfeld, 2024). This appreciation makes imports cheaper and exports more expensive, preventing any significant improvement in the trade balance. Our trade model assumes that the trade balance remains balanced in the long term.

Extra-high tariffs on Chinese exports to the US could lead to trade diversion. Chinese products may be redirected to other markets, while the US sources non Chinese foreign products as substitutes. Moreover, transshipment or re-exportation could occur, where Chinese goods are shipped through other countries to obscure their origin. Products might also be modified at an intermediate destination to formally change their origin. For example, in 2023, the US Department of Commerce found that Chinese solar panel manufacturers had shifted assembly to countries like Malaysia, Thailand, Cambodia, and Vietnam after tariffs were imposed. The finished products were then exported to the US, effectively circumventing the tariffs (US Department of Commerce, 2023).

Research highlights that open, trade-dependent economies like the Netherlands are particularly vulnerable to protectionist measures by major trade partners like the US Similarly, studies focusing on other countries emphasize that economies highly integrated into global value chains and reliant on both imports and exports for economic growth and employment face increased risks under trade restrictions. This applies to the EU as well. US tariffs are expected to impact key sectors such as vehicles, chemicals, and pharmaceuticals. However, the impact is not evenly distributed: member states with greater export exposure to the US, like Germany, face larger economic effects than countries with a more regional EU focus. Indirect effects may also arise from global shifts in trade flows and increasing uncertainty in the international trade environment.

The literature reveals differences in how tariffs are modelled and the extent to which countries respond with countermeasures. Some studies incorporate broader GDP effects alongside direct impacts on trade flows, production, and employment. Reduced trade, for instance, can lead to lower productivity. Trade fosters knowledge exchange, contributing to productivity growth. Erken et al. (2024) estimate this effect for the Netherlands. Additionally, declining consumer and producer confidence could further reduce GDP. Diviney (2024) notes the significant impact of import tariffs on the eurozone industry, which is still recovering from the energy crisis. Germany, in particular, faces severe effects due to its large export volumes in chemicals, machinery, and transport equipment, heightening the risk of economic downturn.

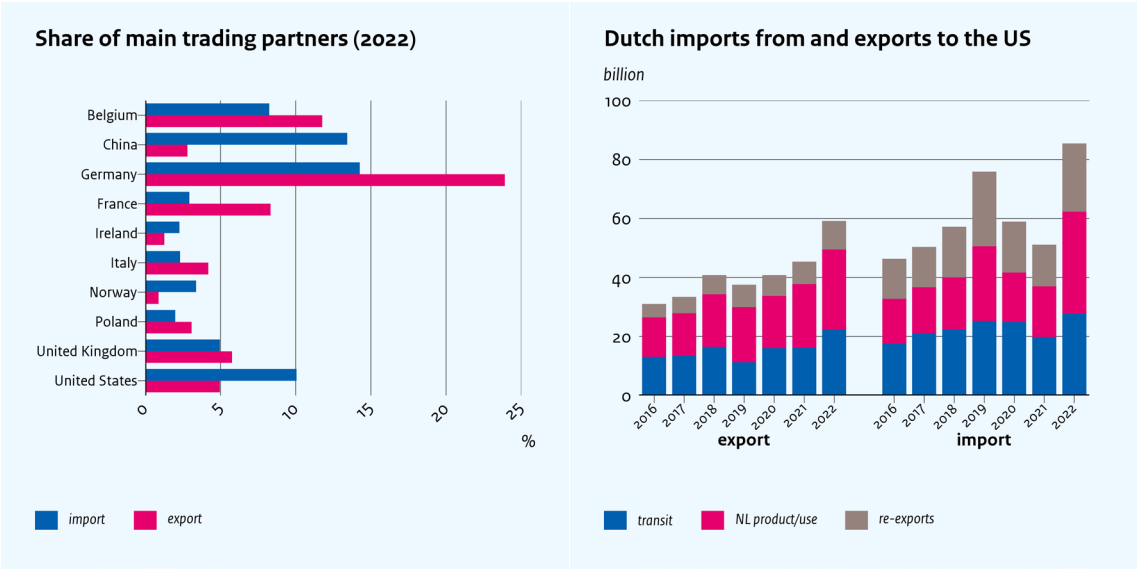
Our study does not include confidence and productivity effects. Confidence effects are challenging to quantify due to their uncertainty. The relationship between trade, knowledge transfer, and innovation is complex, making it difficult to incorporate into trade models. Empirical studies, as discussed in Bollen et al. (2016), also face methodological challenges in estimating these effects. As a result, the magnitude of such effects remains highly uncertain.

In addition to the studies mentioned, various institutions analyse the effects on other member states, the US, and China. An overview of these studies is provided in Appendix C. In all cases, trade in Europe declines, with US trade experiencing the most significant impact. Production in Europe decreases slightly, US manufacturing grows, and the service sector contracts.

1.1 Dutch trade with the US

Exports to the US have increased in recent years, aligning with the overall growth in Dutch exports. Figure 1.1 shows that Dutch imports from the US have fluctuated. For example, in recent years, the Netherlands has imported more LNG to offset the decline in Russian gas imports. As a result, in 2023, the US became the second-largest supplier of goods to the Netherlands (CBS, 2024). Slightly more than half of Dutch exports to and imports from the US consist of transit trade and re-exports (or imports for re-export): in 2022, 46% of exports to the US were Dutch products, and 40% of imports from the US were for domestic use.

Figure 1.1: Top 10 of most important trading partners of the Netherlands (left); exports to the US increase, imports fluctuate over the years (right)



Source: statistics Netherlands (link, link)

If the US imposes tariffs on imports, Dutch exports to the US will be affected. Table 1.1 shows that the Netherlands primarily exports machinery and transport equipment to the US This category accounts for 43% of all goods exports to the US, with approximately half of these goods produced in the Netherlands. When considering the total Dutch export of machinery and transport equipment, only 6.5% is destined for the US, with the remainder sold to other countries. Among goods exports to the US, chemical products are the second most important category. Approximately 50% of these are produced in the Netherlands. However, only 5.5% of all Dutch exports of chemical products are shipped to the US

In 2022, the Netherlands imported approximately €78 billion worth of goods from the US, of which just over €28 billion consisted of mineral fuels (mainly oil and gas). Table 1.1 shows that 10% of these mineral fuels were re-exported. Of all mineral fuels imported by the Netherlands, 15% originated from the US; this figure increased significantly in 2023 (CBS, 2024). Machinery and transport equipment, along with chemical products, are the second and third most significant import categories, accounting for 22% and 19%, respectively, of all imported goods from the US When considering the total import of machinery and transport equipment, only 6.6% comes from the US, with the rest sourced from other countries, and 12.5% of all imported chemical products are from the US A significant portion of these goods is also re-exported (16% and 39%, respectively).

Table 1.1: Goods the Netherlands imported from and exported to the US in 2022 (in trn euro)

		Import from the US			Export to the US				
SITC code		Total import from the US	% of total Dutch import	% transit	Total export to the US	% of total Dutch export	% re-export	% Dutch product	% transit
	Total goods	71.4	8.4%	20%	37.2	4.4%	39%	40%	21%
0	Food and live animals	1.5	2.5%	21%	2.0	2.1%	34%	59%	7%
1	Beverages and tobacco	0.2	3.3%	14%	0.9	9.1%	25%	52%	23%
2	Raw materials, excluding fuels	2.7	10.1%	33%	0.8	2.2%	27%	56%	17%
3	Mineral fuels and lubricants	22.9	12.0%	13%	5.2	2.4%	40%	49%	11%
4	Oils, fats, and waxes	0.1	0.9%	4%	0.1	1.3%	36%	57%	7%
5	Chemical products	15.9	13.5%	40%	8.3	5.1%	36%	42%	21%
6	Manufactured goods, classified by material	1.3	1.6%	19%	3.0	3.3%	35%	37%	28%
7	Machinery and transport equipment	15.6	6.0%	16%	12.3	6.5%	37%	30%	33%
8	Miscellaneous finished goods	11.2	11.3%	11%	4.5	4.9%	61%	20%	18%
9	Unclassified goods	0.0	0.8%	0%	0.1	4.2%	8%	90%	1%

Source: Statistics Netherlands (link)

The Dutch trade in services is smaller than its goods trade, but not with the US. This is because 'use of intellectual property,' the US is the main supplier, accounting for 63.8% (table 1.2). Additionally, 27% of imported telecommunication services come from the US A study on economic interdependence with the US by Meijerink et al. (2024) highlights that the Netherlands is highly dependent on American cloud services. When examining the distribution of services the Netherlands purchases from the US, 'use of intellectual property' is by far the largest category, comprising half of these services. Nearly a quarter (23%) consists of other business services.

The Netherlands not only imports many telecommunication services from the US, but the US is also a key destination for exported telecommunication services, accounting for 26.2%. Aviation is another significant category: 23.7% of services provided by Dutch airlines are sold to customers in the United States (mainly freight transport, not shown in the table). Regarding the distribution of services the Netherlands sells in the US, 'other business services' is the most prominent category, representing 44%.

Table 1.2: American services imported and exported by the Netherlands in 2022 (in million euros and as percentages)

	Imports		Exports	
Service	mln euro	% of total NL imports	mln euro	% of total NL exports
S Total Services	54.176	20,7%	29.473	10,5%
SA Industrial Services	1889	15,3%	348	3,7%
SB Maintenance and Repair	.		.	
SC Transport Services	3161	6,2%	6452	10,6%
SC1 Maritime Transport	1142	9,0%	1694	10,0%
SC2 Air Transport	737	11,0%	4263	23,7%
SC3 Other Transport	1216	4,1%	477	2,0%
SC4 Postal and Courier Services	66	4,3%	19	1,2%
SD Travel	863	4,8%	621	3,9%
SE Construction Services	154	5,1%	118	4,2%
SF Insurance Services	38	3,5%	62	5,0%
SG Financial Services	2099	15,0%	2107	14,0%
SH Use of Intellectual Property n.e.c.	27.243	63,8%	1839	4,4%
SI Telecommunication, Computer Services…	4599	17,4%	3805	9,8%
SI1 Telecommunication Services	1308	27,0%	1156	26,2%
SI2 Computer Services	2943	15,3%	2187	8,2%
SI3 Information Services	348	15,1%	461	5,9%
SJ Other Business Services	12.803	14,6%	12.963	15,9%
SK Personal, Cultural, and Recreational Services	358	13,7%	462	21,9%
Source: Statistics Netherlands (link)				

1.2 Scenarios

We calculated two scenarios, both based on the intentions announced by the incoming US president during the election campaign through various media. However, the exact rates and design of the tariffs remain unclear. The second scenario explores the potential effects if the EU imposes its own tariffs on US imports as a retaliatory measure in response to the American import tariffs:

1) First Scenario: This scenario calculates the effects of the US government imposing a 10% tariff on all imports of goods from all countries, 60% tariffs on all imports from China, and 100% tariffs on all car imports (in our analysis, this corresponds to industry sector C29, vehicles). The free trade agreement between the US, Canada, and Mexico (USMCA) is assumed to not remain intact, meaning US import tariffs would also apply to goods from Canada and Mexico.

2) Second Scenario: This scenario builds on the first scenario but includes a retaliatory action by the EU, imposing 10% tariffs on all imports of goods from the US Under WTO rules, the EU is entitled to take proportionate retaliatory measures.

2 Results

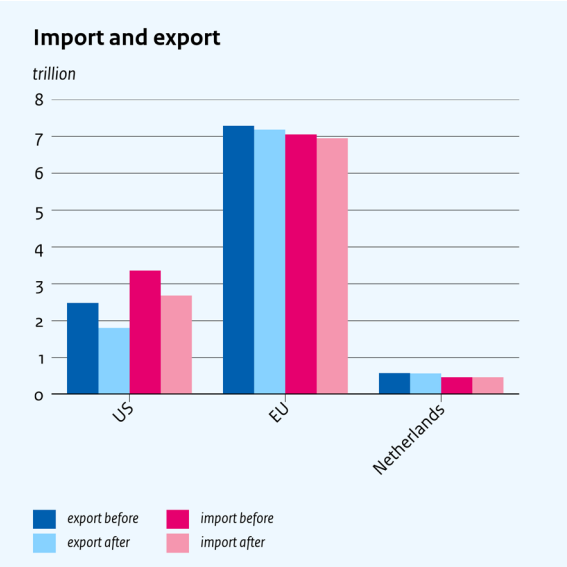
2.1 Scenario 1: 10%-import tariffs

A US import tariff of 10% on all imported goods will initially reduce imports into the US by approximately 20%. See Figure 2.1 for the changes in trade for the US, the EU, and the Netherlands. US imports decline because the tariff makes all imported goods more expensive, reducing demand for foreign products and making domestic products relatively more attractive. The effect is significant for the US because the tariff applies to all goods from all countries. It is assumed here that foreign exporters do not adjust their prices, passing the full cost of the tariff on to the US importer.

At the same time, the import tariff leads to a significant decrease in US exports, by more than 20%. This effect is less intuitive but can be explained by rising production costs in the US On one hand, higher wages, due to increased labour demand from heightened domestic production, weaken the US's competitive position in international markets. On the other hand, many US export products are manufactured using imported raw materials or intermediate goods. When the cost or availability of these inputs is negatively affected by the tariff, the cost of final products increases, limiting exports. However, our model results indicate that this latter effect remains limited in most sectors.

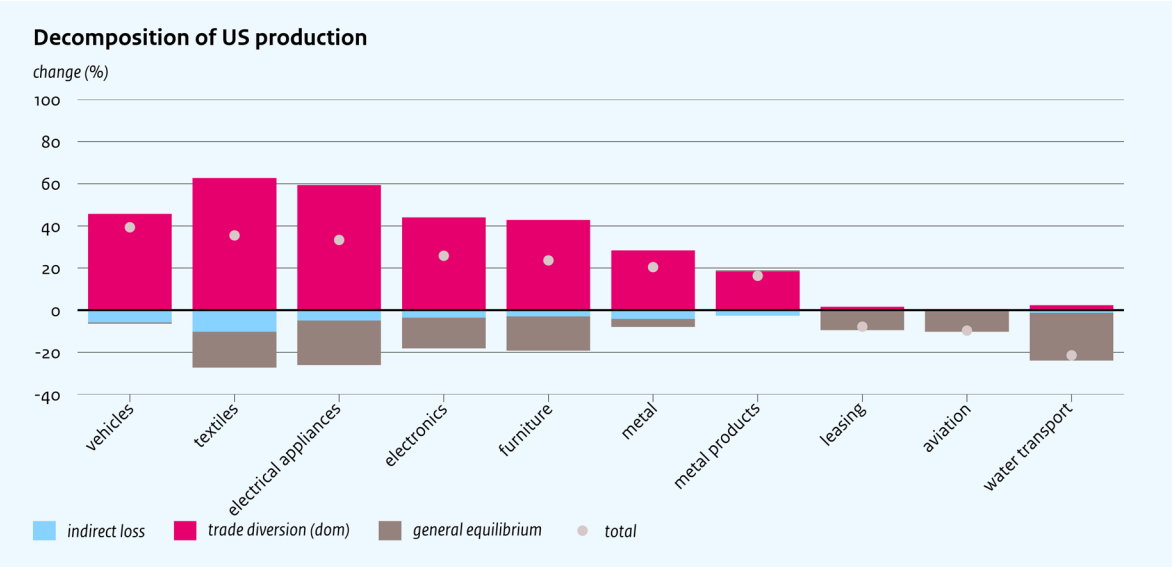
Trade for the Netherlands and the EU is much less affected. Although the US is an important trading partner, it is just one among many, as shown in figure 1.1. About 5% of all Dutch goods exports go to the US, and roughly 10% of all imported goods come from the US (see Table 1.1). Following the changed import tariffs, the EU and the Netherlands are expected to strengthen trade relations with other regions (trade diversion). See figures 2.3 and 2.4.

Figure 2.1 Changes in total import and export due to 10% American import tariffs



Our analysis shows that the US import tariff achieves the intended effect envisioned by the incoming president: real production in various US manufacturing sectors increases significantly. In particular, sectors such as vehicles, textiles, and electrical appliances see production growth exceeding 30% (grey dots), as shown in figure 2.2. The effect of trade diversion to domestic production (red bars) is even greater, reaching up to approximately 60% in textiles and electrical appliances. However, these gains are offset by opposing effects. The indirect loss (light blue bars) results from the decline in intermediate supplies to other countries, which reduce their production for export to the US Additionally, general equilibrium effects, such as higher production costs in the US due to rising wages and prices, create challenges for exporting sectors.

Figure 2.2 Effect of import tariffs on American sectors: manufacturing will produce more; services sector will lose

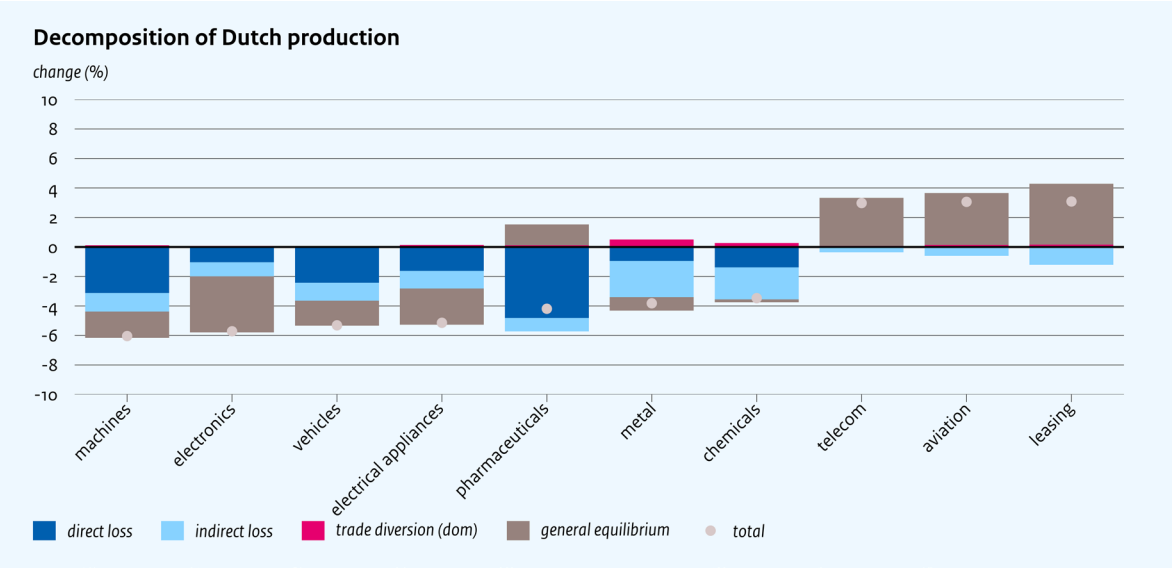


In the service sectors, which do not directly benefit from the tariffs, negative effects dominate. This is because import tariffs increase demand for domestic goods, leading to higher labour demand in the manufacturing industry. As a result, wages rise. However, these higher labour costs negatively impact service

sectors such as leasing, aviation, and transport, which rely on affordable labour and compete with foreign companies. This loss of competitiveness makes them less attractive to both domestic and foreign customers, potentially resulting in reduced activity and a smaller market share. Consequently, the US exports fewer transport services and imports more, leading to a decline in domestic transport production.

While the increased production in manufacturing is positive for employment in those sectors, it does not translate into greater overall welfare (real consumption) for the US as a whole. The production losses in the service sector largely offset the production gains in manufacturing. On balance, real production increases by only 0.2%, which is insufficient to compensate for the efficiency losses caused by replacing cheaper imports with more expensive domestic production. Due to the rising intermediate deliveries, real consumption actually declines, despite the slight increase in production.

Figure 2.3 Dutch manufacturing will face the most significant impact, while certain segments of the services sector are expected to grow.

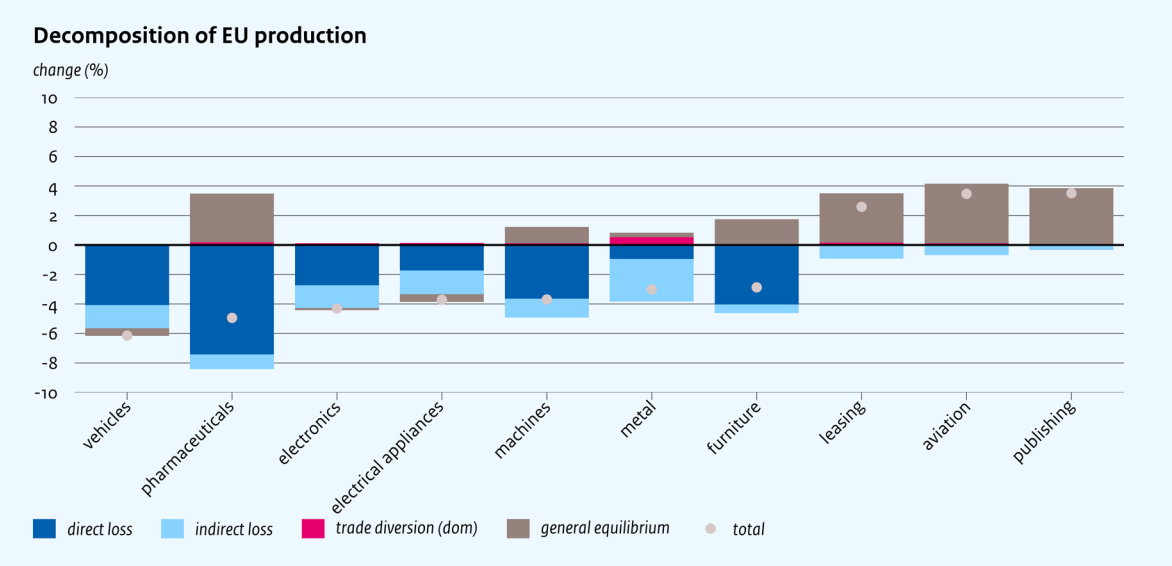


The effects of US import tariffs on Dutch industries present a clear contrast to the situation in the US In many ways, these effects mirror the impact on the American economy. Figure 2.3 illustrates how the tariffs imposed by the US affect the real production of several Dutch industries. Production in various sectors of Dutch manufacturing, such as machinery, electronics, and vehicles, decreases by a few percentage points. The composition of this decline varies. A significant portion results from direct losses (dark blue) due to reduced exports to the US Almost equally important are indirect losses (light blue), stemming from reduced supply to sectors in other countries that themselves export to the US Additionally, there are general equilibrium effects (grey) caused by price changes that are harder to trace. A smaller but noteworthy effect comes from domestic trade diversion (red): as the US increases domestic production, demand rises for certain intermediate goods, some of which are sourced from the Netherlands, such as products from the metal sector.

Effects in the Dutch service sectors also contrast sharply with the situation in the US While American service sectors suffer from higher labour costs and reduced competitiveness due to the tariffs, Dutch service providers benefit. This is because US manufacturing, stimulated by the tariffs, increases domestic production, leading to higher costs for American businesses (e.g., due to rising wages and more expensive production). Consequently, US goods and services become less competitive in the global market. For Dutch service sectors such as telecommunications, aviation, and leasing, this results in an improved position relative to their American counterparts. As US companies face higher costs, Dutch service providers gain a competitive edge, making it easier for them to compete. These sectors indirectly benefit from the shift in production to the US

and the associated rise in production costs for American companies, making Dutch services more attractive on the international market.

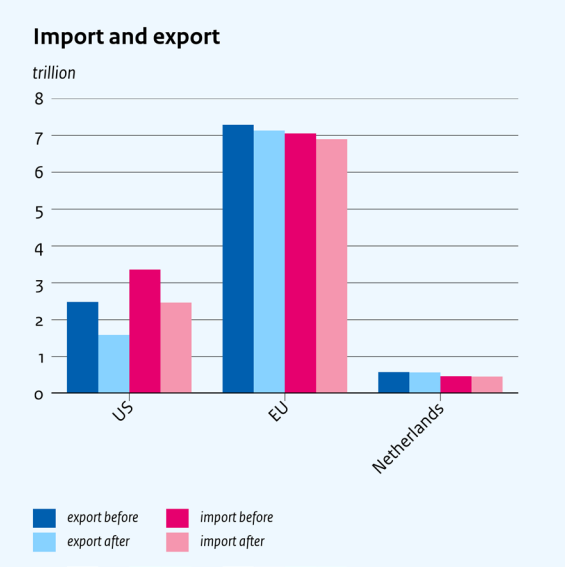
Figure 2.4 European manufacturing is also affected, while certain parts of the service sector experience growth



The effects of US import tariffs on the EU as a whole are similar to those observed in the Netherlands. While the specific sectors that gain or lose the most vary somewhat, the overall pattern remains consistent: manufacturing contracts, and this decline is partially offset by growth in service sectors (figure 2.4). The differences between the EU and the Netherlands are largely attributable to variations in production structures. For the EU as a whole, sectors like vehicles and pharmaceuticals are relatively more significant, whereas the Netherlands has a comparative advantage in the service sector, particularly in leasing.

The incoming president has proposed additional options beyond the 10% import tariffs, including the possibility of even higher tariffs. Therefore, we calculate a variation of the unilateral US tariffs scenario, considering the impact of doubling the tariff rate to 20%. Figure 2.5 compares the macroeconomic effects with the baseline scenario featuring 10% import tariffs. As expected, trade decreases more sharply for both the US and its trading partners under higher tariffs. However, the decline with doubled tariffs is clearly less than proportional. At double the tariff rate, US trade decreases by about an additional one-third. In terms of trade volume, the initial percentage points of a potential tariff have the greatest impact. This reflects the general economic principle that substitution is easiest at the margin. Companies and consumers can relatively easily adjust their choices when prices rise slightly, but further price increases have diminishing effects as fewer alternatives are available or adjustments become more challenging. The effects on specific sectors follow a similar pattern: they are amplified but grow less than proportionally compared to the tariff increase.

Figure 2.5 The effect of doubling the tariff further reduces trade, but not proportionally.



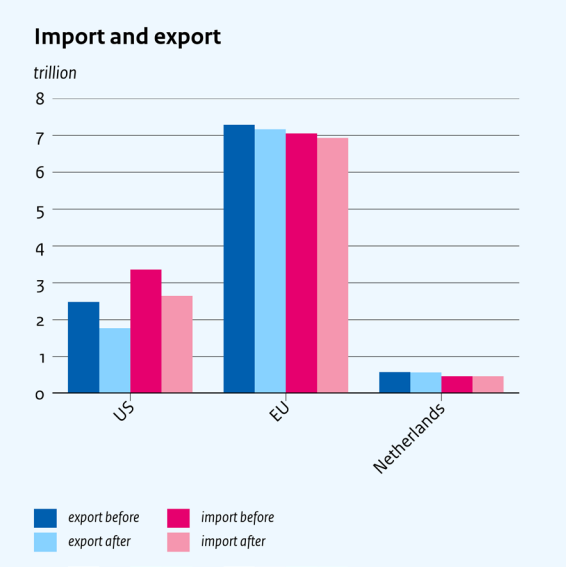
	10%		20%	
	export	import	export	import
US	-27,2	-20,2	-35,9	-26,6
EU	-1,5	-1,5	-2,2	-2,2
Netherlands	-1,2	-1,4	-1,7	-2,0

2.2 Scenario 2 : 10%-import tariffs and the EU retaliates with 10%

It is highly likely that the EU will respond with retaliatory measures following the introduction of US import tariffs. The unilateral tariffs imposed by the US, as discussed in Section 2.1, represent an extreme scenario, useful for illustrating the pure effects of import tariffs, but are unlikely to reflect realistic trade policy. US trading partners are expected to respond to these tariffs. The exact form of possible retaliatory measures is difficult to predict, but past trade conflicts suggest that targeted actions against specific US sectors are more likely than a general increase in tariffs. This is because import tariffs primarily impact domestic consumers. Since predicting the exact targeted measures the EU might adopt is challenging and a sector-level model lacks sufficient detail for this purpose, we illustrate the effects of retaliation by assuming a symmetrical trade policy: the EU mirrors the US approach and imposes a 10% tariff on imports from the US

The additional macroeconomic effects of a 10% EU retaliation are limited for both the EU and the US. Figure 2.6 shows the macroeconomic effects of EU retaliatory measures. The results in figure 2.6 closely resemble those in figure 2.1, which depicted the effects of unilateral US trade policy. US trade contracts slightly further, with a small additional decline in exports and a similarly small additional decline in imports. Likewise, the reductions in European trade and Dutch trade also increase slightly but remain between 1% and 2%. This effect is modest because the EU imposes import tariffs only on the US, and in our scenario, other countries do not impose retaliatory tariffs. As with unilateral US tariffs, the effects on imports and exports are nearly identical, as the model incorporates all equilibrium-restoring mechanisms over the long term.

Figure 2.6 A 10% retaliatory action by the EU has minimal impact on overall trade.



Difference between scenario 1 en 2 (in %)				
	scenario 1		scenario 2	
	export	import	export	import
US	-27,2%	-20,2%	-28,7%	-21,3%
EU	-1,5%	-1,5%	-1,7%	-1,7%
NLD	-1,2%	-1,4%	-1,4%	-1,7%

Imposing a 10% tariff on all US goods will have a limited impact on inflation in the EU. Higher import prices could drive inflation, as costs for businesses in various sectors increase. We assume that prices within the EU are endogenous (dependent on other factors), while the prices of imported goods from other countries are exogenous (fixed), and we assume these also rise by 10%. The price increase then depends on the extent to which sectors import, the share of imports coming from the US, and the proportion of consumer spending on products from each sector. Based on this calculation, the price increase is largest in the refinery sector (C19). The overall effect on the consumer price index (CPI) is an increase of 0.088 percentage points. This indicates that the impact on total consumer prices is minimal. If the share of US imports in the mineral sector increases from 16% to 23%, reflecting the recent rise in absolute oil and gas imports (see CBS, 2024), the CPI increase rises slightly to 0.093%.

Table 2.1 European trade retaliation dampens both the positive and negative production effects in the Netherlands.

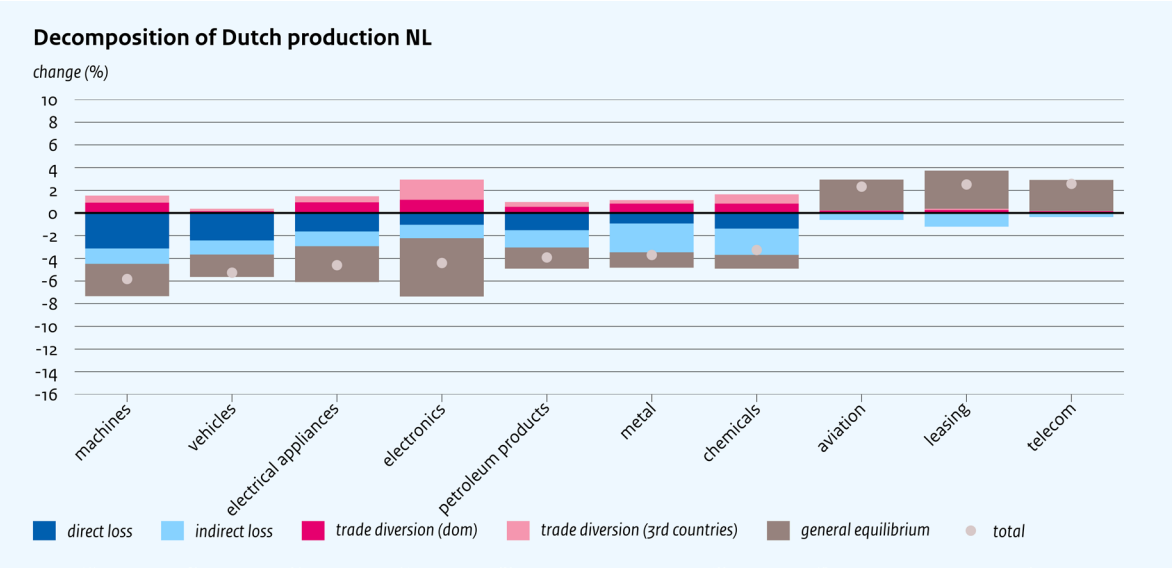
	Scenario 1	Scenario 2
Machinery	-6.0	-5.8
Electronics	-5.7	-4.4
Vehicles	-5.3	-5.3
Electrical Appliances	-5.1	-4.6
Pharmaceuticals	-4.2	-2.5
Metals	-3.8	-3.7
Chemicals	-3.5	-3.3
Telecommunications	3.0	2.6
Aviation	3.1	2.3
Leasing	3.1	2.5

The effects of retaliation can deviate significantly at the sectoral level compared to unilateral US tariffs. This is evident in Table 2.1. Figure 2.3 highlights two additional effects that arise alongside the impact of unilateral policies. First, there is a shift toward domestic production (red): higher import costs from the US lead to some products being manufactured in the Netherlands instead of being imported (figure 2.7). Second,

there is a shift in trade to third countries (pink): other EU countries, which also adopt the EU policy, replace part of their US imports with products from the Netherlands.

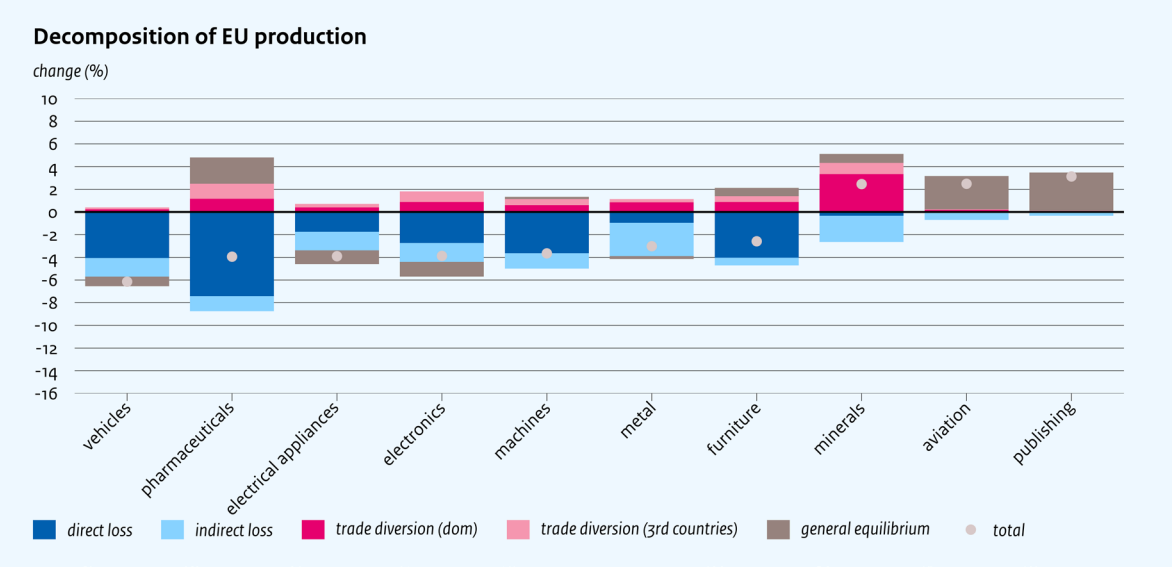
While the retaliation strategy introduces new effects, such as shifts to domestic production and trade with third countries, the overall picture remains unchanged. The manufacturing industry continues to experience negative impacts from the revised trade policies, including supply chain disruptions and higher costs due to more expensive or limited imports. Shifts, however, are visible. For example, the electronics sector can improve its position among the most negatively affected sectors due to the retaliation strategy, moving from second to fourth place (see figure 2.7). At the same time, opportunities for growth emerge in the service sector, possibly because it is less directly dependent on imported goods and benefits from domestic demand and alternative export opportunities. In summary, despite the additional effects, the manufacturing industry remains more vulnerable to trade restrictions, while the service sector may benefit from adjustments in trade policy.

Figure 2.7 EU retaliation leads to slightly more domestic production in the Netherlands' manufacturing industry, but the overall effect remains negative



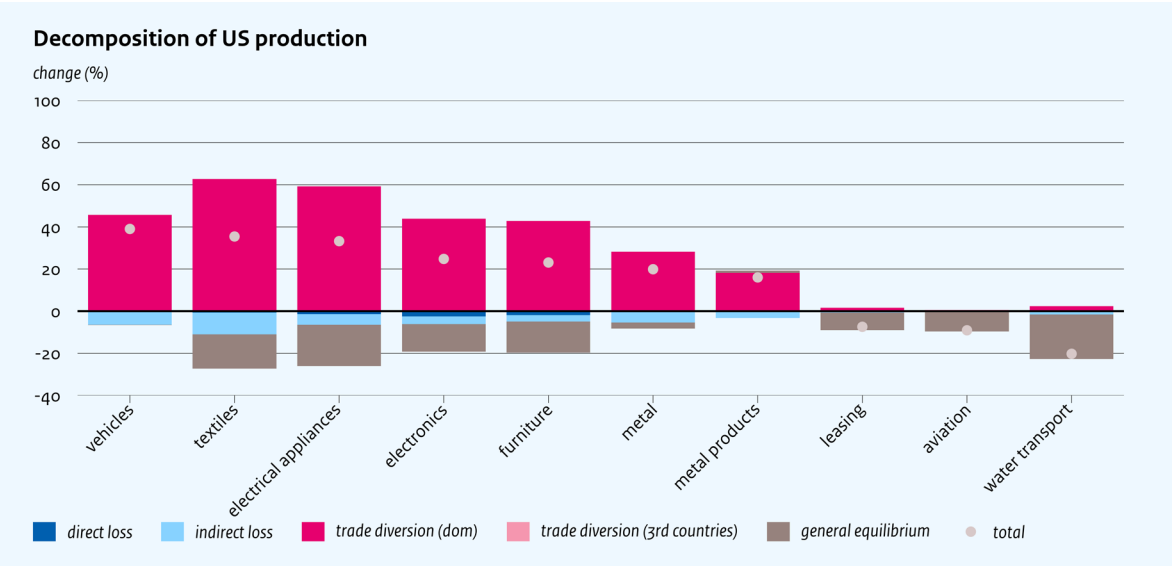
For the EU as a whole, the effects are similar to those observed for the Netherlands, although the specific sectors affected differ somewhat. Sectors of greater importance to the EU, such as vehicles and pharmaceutical products, are relatively more impacted by US tariffs (figure 2.8). This is because these sectors are more reliant on exports to the US, making them more vulnerable to the negative effects of reduced sales and production due to the tariffs. A significant effect of the tariffs is the so-called trade diversion within Europe. This means that, due to restrictions on US goods, European countries increasingly source products from other European countries.

Figure 2.8 European trade retaliation leads to increased domestic production in the manufacturing and resource extraction sectors within the EU



The EU's retaliatory measures (10% import tariffs on all US goods) have minimal impact on the US economy. The differences between Figure 2.2 and Figure 2.9 are negligible. This is because the broad impact of the US tariff on all goods from all countries is much larger than the EU's 10% tariff, which applies only to US goods.

Figure 2.9 European trade retaliation with a 10% tariff has little effect on the US compared to Scenario 1.



Retaliatory measures against US tariffs can also be counterproductive, as they increase the risk of a trade war. Broad retaliation could lead to a further decline in EU exports to the US and higher prices for European consumers. For this reason, the EU often opts for targeted trade measures that specifically impact politically sensitive US sectors. Additionally, the EU can take measures to mitigate the negative effects of US import tariffs. These include subsidies, tax incentives, investments in research and development, and promoting market diversification to reduce dependence on the US market. This latter approach is generally more effective, remains within World Trade Organization (WTO) rules, and avoids further escalation.

Appendices

A: Effects of the two scenarios for each industry in the Netherlands

Table A.1 Total production effects (in %) for the Netherlands in the two scenarios

NACE Rev. 2 Code	Name	Scenario 1	Scenario 2
A01	Agriculture	-1.29	-1.94
A02	Forestry	-1.59	-2.13
A03	Fisheries	-1.01	-1.19
B	Mining	-1.24	1.35
C10T12	Food and Beverage Industry	-1.20	-2.00
C13T15	Textiles, Clothing, and Leather	-1.38	-2.01
C16	Wood Industry	-0.87	-0.95
C17	Paper Industry	-1.20	-1.82
C18	Printing	-0.02	0.28
C19	Petroleum Products	-2.27	-5.87
C20	Chemical Industry	-3.47	-5.34
C21	Pharmaceutical Products	-4.19	-5.67
C22	Rubber and Plastic Industry	-2.62	-3.77
C23	Building Materials	-1.26	-1.80
C24	Metal Industry	-3.82	-5.82
C25	Metal Products	-2.55	-3.63
C26	Electronics	-5.72	-6.24
C27	Electrical Equipment	-5.14	-6.98
C28	Machinery	-6.04	-8.49
C29	Vehicles	-5.31	-5.61
C30	Other Transport Equipment	-1.90	-0.93
C31_32	Furniture and Other Industries	-1.42	-0.43
C33	Repair and Installation of Machinery	-2.55	-3.65
D35	Electricity, Gas, Steam	-0.78	-0.80
E36	Water Supply	-0.56	-0.75

E37T39	Waste Processing	-1.43	-1.99
F	Construction	-0.08	-0.17
G45	Automotive Trade and Repair	0.35	0.36
G46	Wholesale	1.20	1.65
G47	Retail Trade	-1.25	-1.55
H49	Land Transport	-0.26	-0.83
H50	Water Transport	-0.46	-1.12
H51	Aviation	3.06	3.67
H52	Storage and Logistics	-0.61	-1.07
H53	Postal and Courier Services	-0.50	-0.68
I	Hospitality	-0.06	-0.17
J58	Publishing	1.09	1.00
J59_60	Film and Television	0.74	0.92
J61	Telecommunications	2.98	3.79
J62_63	ICT Services	0.92	1.06
K64	Banking	2.19	2.75
K65	Insurance	-0.09	-0.11
K66	Financial Services	1.11	1.39
L	Real Estate	-0.04	-0.03
M69_70	Legal and Accounting Services	2.61	3.33
M71	Architecture and Engineering	1.03	1.25
M72	Scientific Research	1.74	1.93
M73	Advertising and Market Research	0.74	0.91
M74_75	Other Business Services	-0.07	-0.27
N77	Rental of Movable Goods	3.08	3.63
N78	Employment Services	-0.31	-0.42
N79	Travel Industry	-0.87	-1.25
N80T82	Security and Other Support Services	0.56	0.60
O84	Government	-0.03	-0.02
P85	Education	0.15	0.18
Q86	Healthcare	0.02	0.02
Q87_88	Social Care	0.01	0.04
R90T92	Arts, Entertainment, and Recreation	1.03	1.42

R93	Sports	0.19	0.24
S94	Advocacy Organizations	-0.01	-0.02
S95	Repair of Consumer Goods	-0.03	-0.09
S96	Other Personal Services	-0.05	-0.08
T	Households as Employers	-0.30	-0.48

B: Methods and data

Model structure

The CPB trade model is based on the structure of the work by Lorenzo Caliendo and Fernando Parro (C&P). Specifically, it relies on the study by Caliendo and Parro (2015). Compared to earlier versions of the CPB model (Bollen et al., 2020), which were based on Anderson and Van Wincoop (2003), the current model has the advantage of incorporating trade in intermediate goods. Other studies discussed in Section 1.1 often omit these value chains.

C&P includes standard elements of trade models. Consumers maximize a utility function with composite goods, consisting of domestically produced and imported varieties. The choice between suppliers is based on the lowest price ("Ricardian trade" as in Eaton and Kortum (2002)). In production, labour (as the primary input) and intermediate inputs are used, with intermediate demand also contributing to international trade.

The structure of trade is determined by relative prices, influenced by wages, input costs, and productivity parameters. Bilateral trade shares follow a gravity equation based on exporter and importer size and trade costs. Trade balances are maintained with constant surpluses or deficits.

The C&P model is a CGE model, simplified to solve for many countries and sectors:

- Constant value shares in consumption (Cobb-Douglas).
- Constant value shares in intermediate inputs.
- The same mix of domestic and imported varieties per sector.

Trade per sector is modelled as trade in varieties à la Eaton and Kortum (2002). Each country can produce all varieties, with stochastic differences in productivity (Fréchet distribution). Each country buys from the cheapest supplier, including trade costs.

The model uses relative differences from a baseline, calibrated on the FIGARO input-output table, eliminating the need for absolute productivity parameters. Required parameters include value shares derived from the input-output table and dispersion parameters based on substitution elasticities from gravity literature.

With 46 countries and 63 sectors in FIGARO, the model is too large for standard solutions. C&P introduced an iterative method: demand and supply prices are calculated first, followed by new trade shares and value flows. Adjustments to trade balances are made through wage changes per country until convergence is reached. This reduces the number of simultaneous variables and computational complexity.

Trade Data

The model is based on FIGARO data. The 2024 version includes IO tables for 2010–2022, covering 64 sectors in 46 countries, detailing value added, production, and trade flows, divided into intermediate (semi-finished) and final use (consumption and investment). The most recent table, 2022, is used to calibrate the model. The dataset provides a complete matrix of trade flows with four dimensions for intermediate deliveries (supplying country and sector, using country and sector) and three dimensions for final demand (supplying country and sector, using country). Combining trade data with national IO tables is crucial for accurately modelling domestic and imported goods.

An IO table adheres to two accounting identities. The gross production value of a sector equals the value of all intermediate deliveries plus deliveries for final use. The value added equals the gross production value minus the value of intermediate deliveries. Several model parameters are calibrated using FIGARO data to reproduce the IO table in the model's baseline:

- Input coefficients for intermediate deliveries.
- Trade shares per sector and country.
- Shares in final consumption per country.

Trade flows in the model have three dimensions: exporter, importer, and the sector of the traded product. This requires an aggregation step. Intermediate and final use of imports are combined to calculate average import shares applied to each receiving sector and final demand.

Tariff data comes from the World Bank's WITS database. The World Integrated Trade Solution (WITS) software provides access to data on international goods trade, tariffs, and non-tariff measures (NTMs) by country, along with relevant development data. For each analysis, this data is updated in the C&P model to include existing tariffs in scenario analyses.

Substitution Elasticities

The substitution elasticity of each sector is a key parameter for determining the general equilibrium effects of changes in trade costs. This elasticity shows how demand for products shifts when prices change due to altered trade costs. For instance, if the Netherlands imposes tariffs on German products, demand for cheaper alternatives from other countries increases. The substitution elasticity determines the extent of this shift and the impact of tariffs on the average price level.

The C&P model uses a sector-specific dispersion parameter, similar to substitution elasticity in Armington-CES models. This parameter reflects the spread of productivity and the comparative advantage of varieties per country. The dispersion parameter is equal to the substitution elasticity minus 1. We use estimated substitution elasticities from Freeman et al. (2022), based on import tariffs causing price changes. Since FIGARO data only covers recent, relatively stable periods, we use long-term WIOD data (1988–2011) from Freeman et al. (2022), which provides greater variation and more accurate estimates. Elasticities for services are set at 1.5 times the average for goods, resulting in a value of 10.6. Freeman et al. (2022) estimate elasticities using a standard gravity equation and the PPML method (Santos Silva and Tenreyro, 2006); see the appendix for details.

Decomposition of Changes in Production Volume

To clarify changes in production volumes per sector due to trade policies, we decompose them into five channels: direct loss, indirect loss, trade diversion (domestic and international), and other general equilibrium effects. The decomposition relies on input-output analysis. Using the trade shock and trade elasticities from the CPB trade model, we can reasonably estimate new import shares. These shares are successively integrated into an input-output model corresponding to the CPB trade model's structure:

- Direct loss reduces only trade flows affected by the newly introduced tariffs.
- Indirect loss incorporates value chain effects from intermediate deliveries of these lost trade flows.
- Domestic trade diversion accounts for the increased share of domestically demanded products due to rising import prices from tariffs, including value chain effects.
- International trade diversion considers substitution between trading parties and other countries (including value chain effects).

These effects are added one by one, with the size of each effect calculated as the difference between two input-output results.

The full trade model adds further general equilibrium effects beyond those derived from input-output calculations alone. These include:

1. Effects from tariff revenues: as trade volumes change, tariff revenues also change, generating demand effects.
2. Trade balance adjustments: wages in different countries adjust to restore original trade balances.
3. Indirect price effects from tariffs due to the use of traded goods as intermediates.

These effects are difficult to isolate and are summarized as "general equilibrium," representing the residual effect after subtracting the four effects above from the total.

Table B1 Estimated partial tariff elasticities from Freeman et al. (2022a)

Sector	Partial Tariff Elasticity	Standard Error
Agriculture	-4.1*	1.0
Forestry	-4.1*	1.0
Fisheries	-4.1*	1.0
Mining	-6.8*	1.2
Food Industry	-3.2*	0.7
Textile Industry	-4.8*	0.8
Wood Industry	-3.2*	0.7
Paper Industry	-3.2*	0.7
Printing Industry	-3.2*	0.7
Petroleum Industry	-7.0*	2.2
Chemical Industry	-7.2*	1.1
Pharmaceutical Industry	-7.2*	1.1
Rubber and Plastic Industry	-6.0*	1.0
Other Non-Metallic Industries	-5.4*	1.7
Primary Metal Industry	-5.9*	0.7
Metal Products	-5.9*	0.7
Electrical Engineering Industry	-12.1*	1.8
Electronic Devices Industry	-12.1*	1.8
Machinery Industry	-13.2*	2.0
Automotive Industry	-8.1*	1.7
Other Transport Equipment Industry	-8.1*	1.7
Furniture Industry	-12.1*	1.3
Other Industries and Repairs	-12.1*	1.3
All Service Sectors	-10.6	

Table note: The estimated partial tariff elasticity equals minus the substitution elasticity. The * indicates that the estimate is significant at a 95% confidence level. Italicized sectors were estimated together with the sector listed directly above them and therefore share the same partial tariff elasticity. The service sectors have a partial tariff elasticity of 1.5 times the average for all goods sectors. See Freeman et al. (2022a) for more information on the estimation method

C. Literature Review

The German IfW Kiel Institute calculated the effects of US tariffs on the German economy. Their study assumes a 60% tariff on Chinese goods and a uniform 10% tariff on imports from countries without a free trade agreement with the US This results in a 2.5% contraction in global trade in the first year and 4% in the long term. If trading partners retaliate, the contraction could double. Chinese exports are estimated to decrease by around 10%, while US exports could fall by up to 38%. Additional US tariffs are expected to reduce global GDP by 0.75% in the short term and 0.6% in the long term (equivalent to losses of €750 billion and €600 billion). The EU economy would shrink by €18 to €21 billion, with Germany losing €4 to €6 billion. A collapse of the WTO would result in an EU GDP decline of more than 0.5%, significant losses for China, and a slight decrease for the US In a trade war between the EU and the US in the automotive and digital sectors, EU GDP would drop by 0.25% compared to just 0.04% for the US A trade agreement, however, would yield positive effects, with larger benefits for the US Strategically, it remains critical for the EU to defend the multilateral trade system, as the GDP losses from a deteriorating WTO and fragmented trade are 2–4 times greater than those from a bilateral trade war with the US (Felbermayr et al., 2024).

The German IW Institute simulated the impact on Germany under two scenarios First, US tariffs rising to 10% on all imports and 60% on imports from China in 2025; and second Chinese retaliation with a 40 percentage point increase on US imports (Obst et al., 2024). The global economy is hit harder than the US by these tariff shocks. In scenario 2, global GDP in 2028 would be more than 1% lower than the baseline, leading to a 4.5% reduction in German exports and €27 billion less investment, with Germany's GDP falling by 1.4%. The EU would also be more heavily impacted than the US While the US sees GDP losses of 1–1.4% in the early years, its GDP by 2028 would remain nearly neutral in scenario 1 due to improvements in trade and fiscal balances. However, in scenario 2, US GDP losses persist in the medium term. These shocks provide only limited improvement to the US trade balance. Obst et al. (2024) therefore consider tariff-based policies to reduce trade deficits ineffective, especially due to persistent budget deficits and reduced competitiveness from a stronger currency.

A study analysing the impact of US tariffs on Sweden and the EU estimates a 16% drop in Swedish exports to the US, with the automotive, transport, pharmaceutical, and chemical industries particularly affected. EU trade with the US would decrease, while imports from China would rise by about 7%. The US would also experience trade declines, with imports and exports expected to fall by 10% and 14%, respectively. The industries targeted for protection would suffer the most due to their integration into global value chains. China's exports to the US could drop by as much as 66%. These tariffs pose risks such as rising costs for businesses and consumers, disruption of trade flows—particularly in green technologies—and undermining international trade rules. They could also lead to retaliation, escalating tensions, and political instability, with more severe consequences than initially expected (Nordgren et al., 2024).

The UK NIESR Institute used its NiGEM model to analyse the economic impact of US import tariffs on the UK, US, and China. In a scenario where the US imposes a 60% tariff on Chinese imports and a 10% tariff on imports from other countries, with retaliatory measures from trading partners, US GDP growth would decline by 1.3–1.8 percentage points over two years. Cumulatively, US real GDP could be up to 4% lower, with inflation rising by 3.5–5 percentage points. China's GDP would shrink by approximately 1%, with potential disinflation if it avoids retaliation. Globally, GDP growth would decline by 1% over two years, with world GDP and trade falling by 2% and 6%, respectively, after five years. Economies with strong trade ties to the US, such as Mexico and small open European countries, would be hardest hit, experiencing GDP losses of 3–5% over five years (Bernard et al., 2024).

The Korean KIEP Institute analysed the effects of various tariff scenarios on the US and South Korea. Their ten scenarios include universal tariffs (10%), Section 301 tariffs (25% or 60% for China), and reciprocal tariffs. An interesting aspect of this study is its analysis of countries with and without trade agreements with the US The study finds that while the US trade balance could improve by $171.5 billion to $315.3 billion, economic growth would decline across all scenarios, with significantly higher consumer prices and export

losses of $5.3 billion to $24.1 billion. The study concludes that additional tariffs might temporarily improve the US trade balance but effectively act as a higher tax burden on American consumers and increase inflationary pressures. Imposing tariffs on partners with free trade agreements could lead to higher inflation and legal disputes (Kim, 2024).

Finally, several studies analyse the impact on different countries, including the US, China, Mexico, and Canada. Bouët et al. (2024) simulate a scenario where the US increases tariffs on all imports by 10% and imposes a larger 60% tariff on Chinese imports. Tariffs on imports from Canada and Mexico remain unchanged due to USMCA membership. In this scenario, all affected trading partners impose equivalent tariff increases on US imports. As a result, global export volumes decrease by 3.4%, and global GDP contracts by 0.5%. Economic activity declines more significantly in the US and China (both -1.3% GDP). European countries experience limited negative impacts, while Canada (+1.3% GDP) and Mexico (+6.6% GDP) benefit from their privileged status under USMCA. Key consequences include the near-complete decoupling of US-China trade and a decline in US wages, while wages rise in Canada and Mexico.

A London School of Economics (LSE) study examines the impacts on the US, China, and the EU. It estimates that proposed tariffs (10% on all foreign goods, 60% on Chinese goods, and 100% on imported cars) could reduce US GDP by 0.64% and Chinese GDP by 0.68%, while the EU would see a modest decline of 0.11%. A 100% tariff on imported vehicles would significantly reduce the affordability and sales of electric vehicles in the US, as approximately 30% of its EV market relies on imports. Within Europe, the impacts vary: Germany's GDP would decrease by 0.23%, while Italy would face minimal effects (-0.01%). The German automotive sector would be the hardest hit (Saussay, 2024).

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