



*The announcement of **30%** tariffs on European imports by President Donald Trump on 14 July 2025 – a few months after the Liberation Day when he first announced cross-country reciprocal tariffs on American imports—has reignited debate over the economic consequences of tariff policy. This move, part of a broader shift in US trade strategy, signals protectionism reminiscent of Trump’s first term. As the European Commission considers retaliatory measures, concerns are mounting over a potential trade war. Against this backdrop, the experience of the 2018 US–China trade tensions offers important lessons. That episode reshaped global trade flows and pricing dynamics—and provides a valuable lens through which to assess the potential fallout of the current US–EU standoff. In this note, we examine the plausible impacts of the US tariffs on EU goods, drawing insights from historical episodes, empirical elasticity proxy estimates, and pass-through rates to assess possible outcomes under different scenarios.*

*The main findings of this Topical Commentary are the following:*

- *Literature indicates significant variation in trade elasticities across products and trading partners ranging from as low as **0** to as high as **15**, suggesting that tariff effects can be significantly heterogeneous.*
- *Analysis of historical American tariff episodes in 2018 shows ambiguous trade movements of Chinese goods – products of steel did not indicate drastic long-term changes in trade while aluminum goods hint at deepening two-sided trade ties between EU and China.*
- *Estimated import elasticity proxies mostly align with literature estimates and range from **0.2** to **13.6** with aluminum plates as an exception surpassing an elasticity of **78.7** indicating extreme volatility of demand with respect to price fluctuations.*
- *With estimates at hand, we find that for aggregate trade as well as for steel and aluminum commerce in the EU a **30%** tariff could lead to differing impacts on both demand and trade value.*
- *Using three hypothetical tariff pass-through values of **30%**, **50%**, and **70%**, we find that a fall in export demand for all steel products would span between **2%** and **28%** when the decrease for some aluminum goods would reach up to **29%**.*
- *Analysis also suggests that new US tariffs could notably affect aggregate EU trade values as well as GDP fluctuations – a fall in imports would be as small as **5.7%** and as large as **17%** whereas exports would fall anywhere between **0.7%** to **4.2%**.*
- *A decrease in annual GDP value would be between **0.021%** and **0.124%**. However, as it only includes the accounting side of estimation, these may just be on the lower bound of estimates<sup>1</sup>.*

**Disclaimer: The views expressed in this commentary are those of the authors and do not necessarily reflect those of the Bank of Lithuania or the European System of Central Banks.**

## Introduction

Global trade dynamics have increasingly come under strain from shifts in trade policy, rising geopolitical tensions, and supply chain disruptions. In particular, the imposition of tariffs has become a central tool in economic policy, exemplified most prominently by the US–China trade tensions beginning in 2018. Such policy shifts have reignited debate among economists about the magnitude of trade elasticities, the extent

<sup>1</sup> We are grateful to Kasparas Vasiliauskas for his insightful comments and valuable input during the preparation of this commentary. Any possible imprecisions are solely our own.

of tariff pass-through to prices, and the broader macroeconomic consequences of protectionist measures.

Understanding how import and export volumes react to price changes—including those induced by tariffs—is crucial for assessing potential impacts on trade flows, industry-level outcomes, and overall economic welfare. Elasticities of import demand play a key role in determining the extent of trade diversion, changes in trade values, and potential GDP effects. At the same time, pass-through rates determine how much of a tariff is absorbed by exporters or translated into higher import prices, influencing both inflationary pressures and consumption patterns.

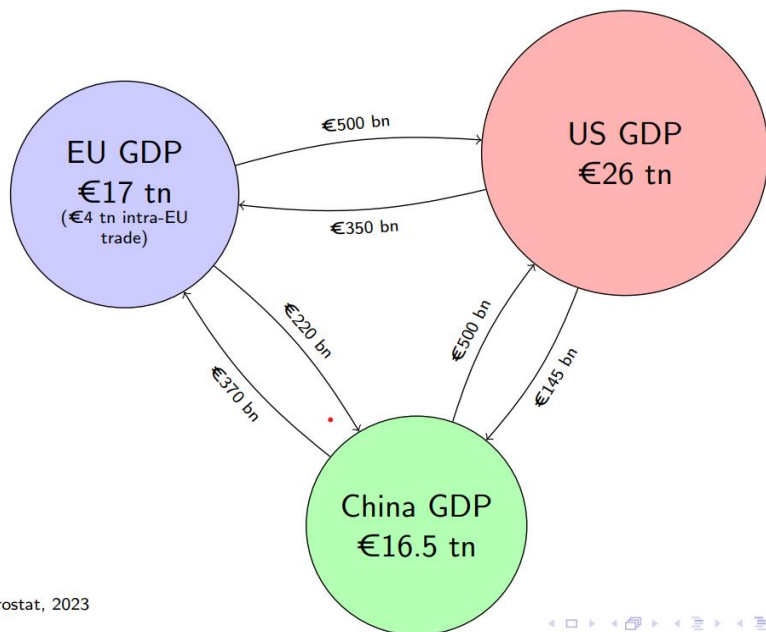
This note explores the potential implications of hypothetical US tariffs imposed on EU goods, drawing lessons from historic 2018–2019 trade tensions. We employ several analytical approaches, including the calculation of trade elasticity proxies based on historical price and quantity data, and constant-price trade value analysis to distinguish between price-driven and volume-driven changes in trade flows. Scenario analyses are conducted to assess possible effects of **30%** tariffs at different pass-through rates on aggregate, product-specific trade, and economic variables such as GDP.

The structure of the note is as follows: Section 1 – Topic Relevance; Section 2 – Literature Review; Section 3 – Theoretical Framework; Section 4 – Historical Precedent; Section 5 – What if War? Empirical Results; Section 6 – Concluding Remarks.

## 1. Topic Relevance

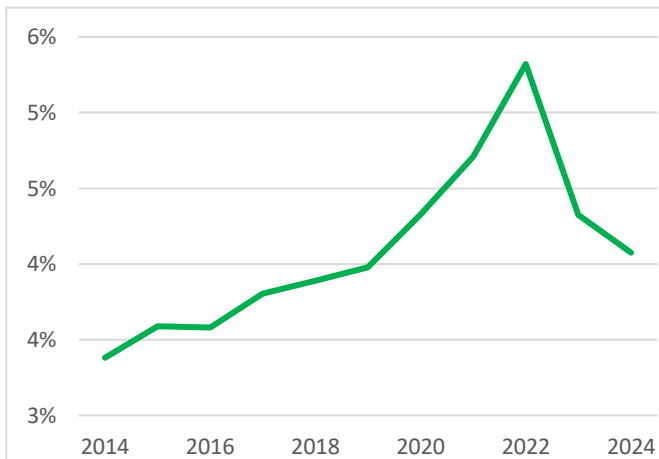
Trade relations between the European Union, the United States, and China are of vital importance for Europe's economic performance, given the sheer size and interdependence of these economies as is shown in Figure 1 below.

**Figure 1. Trade Relations between the US, the EU, and China (2023)**



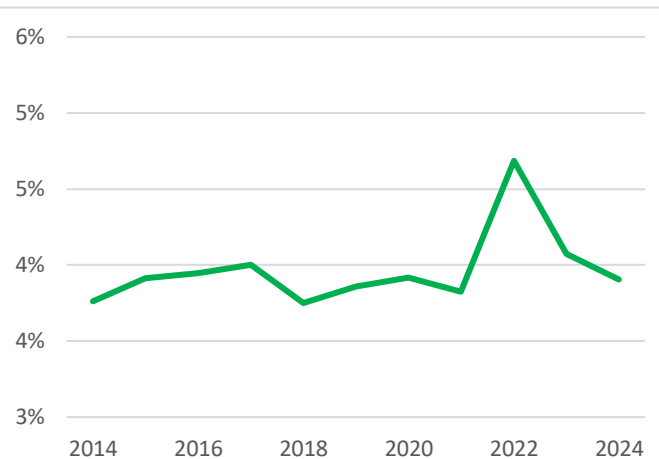
The EU, with a GDP of €17 trillion and extensive trade ties both within and outside its borders, conducts around €500 billion in exports trade with the US and €220 billion with China annually. It is also important to underline that the share of these values with respect to GDP have shown specific tendencies across the three countries' bilateral commerce relations. The case for European and Chinese trade reveals the ever-deepening relationships, both from the European (Figure 2) and the Chinese side (Figure 3). As far as the US is concerned, although the trade value as a share of GDP has over time decreased vis-à-vis China on both sides (Figures 4 and 5), the proportions remain significant as much as in the case of American trade with the EU (Figures 6 and 7).

**Figure 2. European Trade with China as a Proportion of GDP**



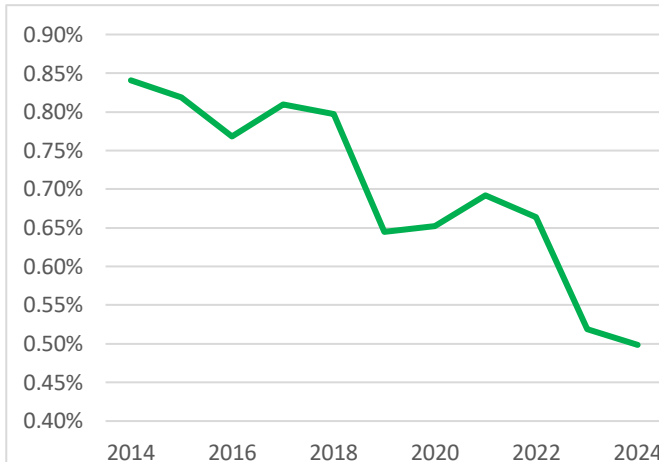
Source: Authors' calculations, Eurostat

**Figure 3. Chinese Trade with the EU as a Proportion of GDP**



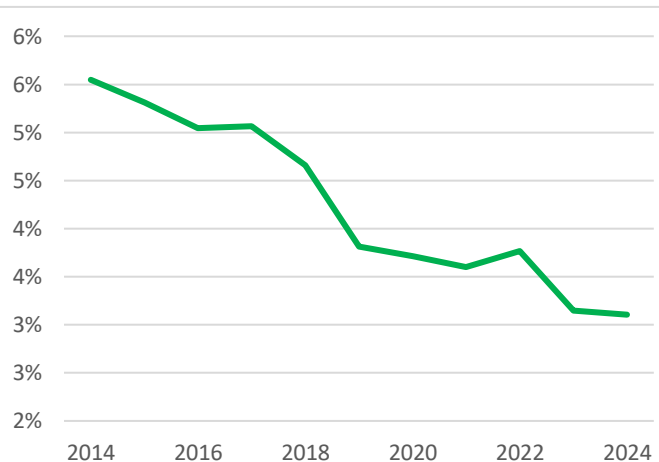
Source: Authors' calculations, Eurostat

**Figure 4. American Trade with China as a Proportion of GDP**



Source: Authors' calculations, US Census Bureau

**Figure 5. Chinese Trade with the US as a Proportion of GDP**



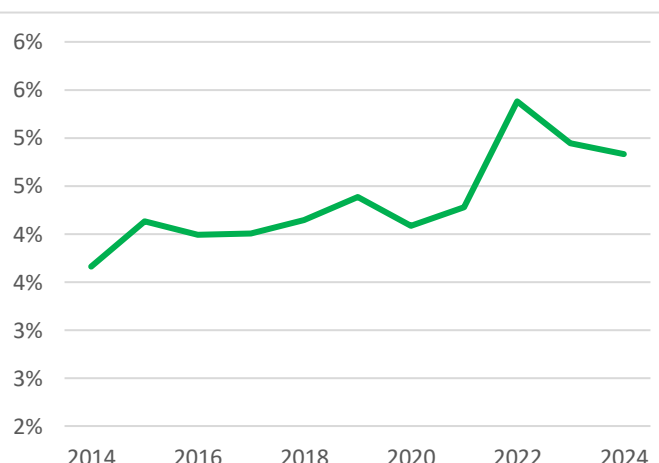
Source: Authors' calculations, US Census Bureau

**Figure 6. American Trade with the EU as a Proportion of GDP**



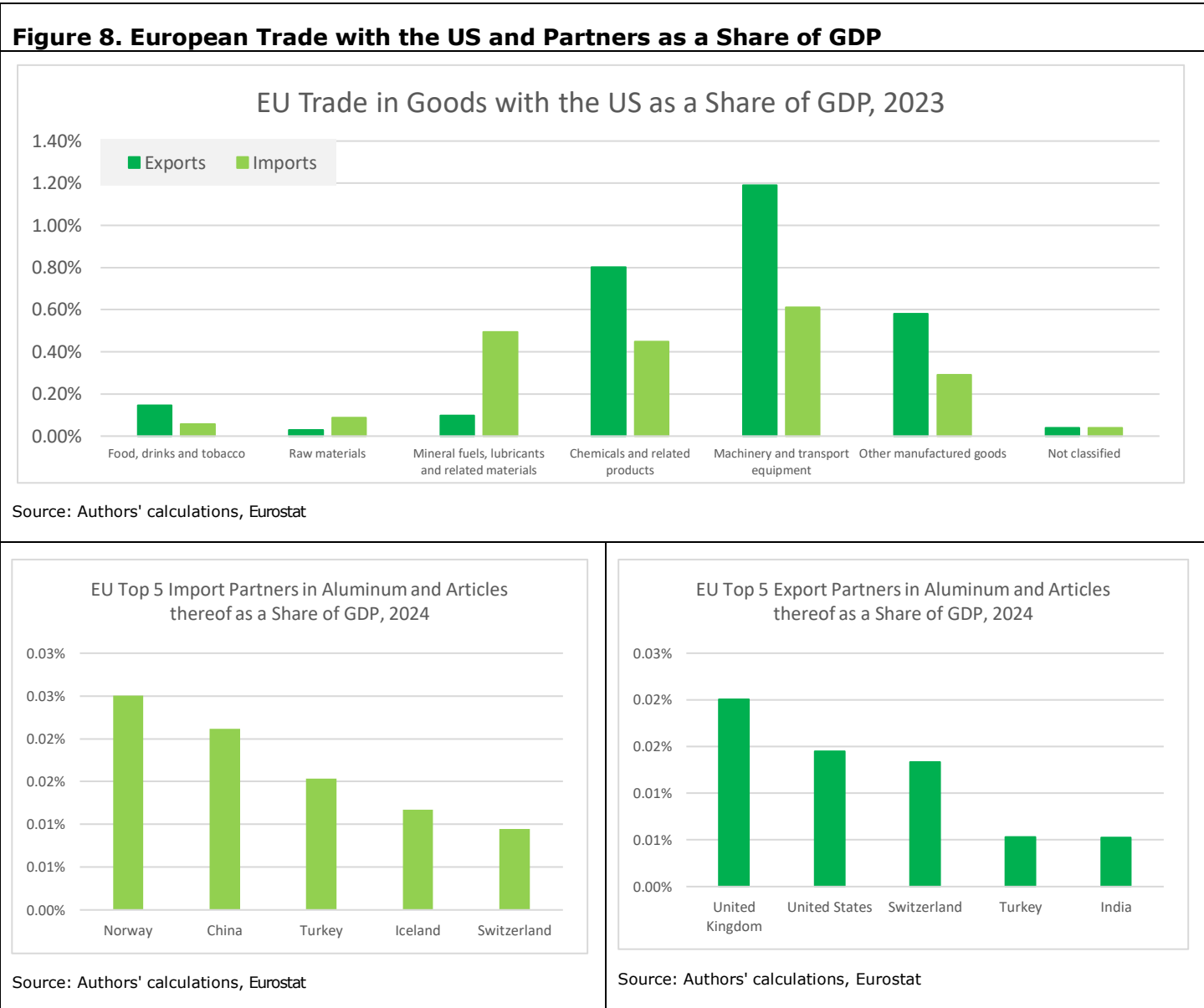
Source: Authors' calculations, US Census Bureau

**Figure 7. European Trade with the US as a Proportion of GDP**



Source: Authors' calculations, US Census Bureau

Furthermore, Figure 8 shows that European industries—from automotive and machinery to luxury goods—rely heavily on stable access to foreign markets and affordable imported inputs, such as steel and aluminum. Disruptions to these trade flows can have significant consequences for European production costs, competitiveness, and economic growth.



Now, with new US tariffs imposed on Chinese goods in early 2025 and parallel discussions about levying duties on European imports, the risk of a broader trade conflict has returned. The timeline of events in 2025—ranging from initial tariff announcements to retaliatory measures and pauses in escalation—illustrates how quickly trade relations can deteriorate and how policy uncertainty can disrupt markets.

Beyond trade volumes, these tensions pose risks of **trade diversion**, as goods once destined for the US may flood EU markets or vice versa, reshaping competitive dynamics. Geopolitical considerations also pressure Europe to navigate between two major partners whose economic relations are increasingly fractious. Moreover, tariffs can transmit directly into inflationary pressures, raising costs for European businesses and consumers alike.

In this context, understanding **trade elasticities** and **tariff pass-through rates** becomes crucial for quantifying potential impacts of hypothetical US tariffs on EU goods. This research seeks to inform policymakers about the possible trade and economic consequences should such a trade war materialize.

## 2. Literature Review

The economic literature on trade elasticities, tariff impacts, and global trade dynamics provides essential foundations for understanding the potential consequences of new tariff measures. Early seminal work by Krugman (1979) highlighted the role of product variety and love-of-variety preferences in shaping trade patterns, setting the stage for later empirical analyses. Broda and Weinstein (2006) expanded this approach by estimating elasticities of substitution across thousands of imported goods, revealing considerable heterogeneity across sectors and showing that gains from increased product variety were substantial, contributing as much as **2.8% of US GDP**. Their method of exploiting variations in import shares and relative prices is a benchmark for elasticity estimation.

The issue of the **International Elasticity Puzzle**—the observation that macro-level trade elasticities appear significantly lower than micro-level estimates—has been explored in depth by Ruhl (2008). He argues that measured aggregate trade flows respond sluggishly to price changes because extensive-margin adjustments (such as entry or exit of firms and products) play a crucial role, whereas intensive-margin elasticities appear higher when looking at product-level data. Haller and Fitzgerald (2014) similarly investigate this puzzle, emphasizing the importance of firm-level dynamics in shaping aggregate trade responses.

Beyond elasticities, understanding how tariffs affect prices and quantities depends crucially on pass-through dynamics. Cavallo et al. (2021) analyze US tariff episodes, finding that pass-through to import prices averaged around **60%**, implying that foreign exporters partially absorb tariff costs. Ahmad and Ahmad (2024) focus on US steel imports, confirming significant pass-through to domestic prices, with some variation across steel product categories. Hiller and Savage (2021) provide further evidence that tariff pass-through can also affect retail markets, as shown in the tablet computer industry, while Hayakawa and Ito (2015) present tariff pass-through estimates across a large set of tariff lines globally ranging from **28.2% to 72.7%**, highlighting significant cross-product heterogeneity.

Finally, Gnocato et al. (2025) examine tariffs across global supply chains, presenting summary tables of potential import duty shock impacts (these will be discussed further in Section 5 of the note) and showing how tariff impacts cascade through different stages of production and trade. Their findings emphasize that even moderate tariffs can produce significant shifts in trade flows and prices when supply chains are deeply interconnected. Collectively, these studies underscore the importance of accurate elasticity and pass-through estimates for predicting the outcomes of potential new trade tensions between the US and the EU.

**Table 1. Summary of Key Literature**

| AUTHOR (YEAR)            | MAIN FINDINGS                                                                                                                                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Broda & Weinstein (2006) | Elasticities of substitution across imported goods observe considerable heterogeneity across sectors and gains from increased product variety are substantial, contributing as much as <b>2.8% of US GDP</b>    |
| Ruhl (2008)              | Measured aggregate trade flows responds sluggishly to price changes as extensive margin adjustments play a crucial role, whereas intensive-margin elasticities appear higher when looking at product-level data |
| Cavallo et al. (2021)    | US tariff episodes help estimate pass-through to import prices of approximately <b>60%</b> , implying that foreign exporters partially absorb tariff costs                                                      |
| Ahmad & Ahmad (2024)     | US steel imports confirm significant pass-through to domestic prices, with some variation across steel product categories.                                                                                      |
| Hiller & Savage (2021)   | Tariff pass-through can also affect retail markets, as shown in the tablet computer industry                                                                                                                    |
| Hayakawa & Ito (2015)    | Tariff pass-through estimates across a large set of tariff lines globally range between <b>28.2%</b> and <b>72.7%</b> , highlighting significant cross-product heterogeneity                                    |
| Gnocato et al. (2025)    | Even moderate tariffs can produce significant shifts in trade flows and prices when supply chains are deeply interconnected                                                                                     |

Source: Authors' summary

### 3. Theoretical Framework

The economic impact of tariffs hinges on how they impact prices and quantities in international trade. As shown in Figure 9, a tariff imposed on imported goods increases their price, shifting the price level upward from an initial free trade level to the one with tariffs. This price increase leads to a decline in the quantity of imports, moving along the downward-sloping demand curve from quantity in free trade through tariffed settings. The steeper the demand or supply curves (i.e. the more inelastic demand), the smaller the reduction in quantity imported for a given price increase as well as smaller losses in welfare (deadweight loss).

**Figure 9. Impact of an Imposition of a Tariff**

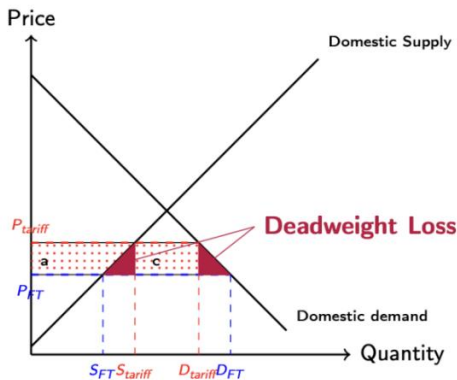


Figure: Consumers surplus is decreased of  $(a + b + c + d)$  . Producers gain  $a$ . And Government gains  $\text{tariff} \times \text{import} = c$ .

Source: OFCE

Elasticities are central to quantifying this effect. As illustrated by Figure 10, **import/export demand elasticity** measures how sensitive the quantity of imports/exports is to price changes. It is usually expressed as follows:

$$\varepsilon_{t+1} = \frac{\frac{Q_{t+1} - Q_t}{Q_t}}{\frac{P_{t+1} - P_t}{P_t}} = \frac{\% \text{ Change in Quantity}}{\% \text{ Change in Price}} = \frac{\% \Delta Q}{\% \Delta P}$$

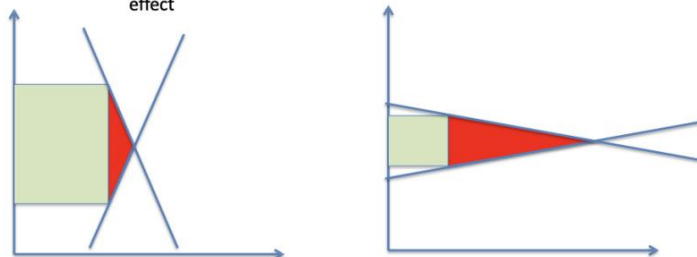
where  $\varepsilon$  represents the elasticity of demand,  $Q$  governs the quantities and  $P$  is for goods' price levels both denoted at time  $t$ . Thus, it is clear from the definition that a higher elasticity entails a sharper decrease in import/export quantities when prices rise.

**Figure 10. Relation between Elasticity and Efficiency**

### The impact of a tax

Insight #2 – Taxation of **inelastic goods** is more efficient than that of elastic goods

Example: Soda tax with few effect



Source: OFCE

In practice, not all of a tariff is necessarily passed through to import prices. **Tariff pass-through** captures the share of the tariff reflected in higher prices faced by importers. Pass-through rates below **100%** imply that exporters absorb part of the tariff cost, softening the price increase. Thus, the real price shock governs both the pass-through and the tariff rate together and actual price level increase can be defined in the following manner:

$$\% \Delta P = \% \Delta \tau \times \varphi ;$$

Where  $\Delta P$  stands for a change in price levels,  $\Delta \tau$  is the change of the tariff rate and  $\varphi$  is the tariff pass-through rate. This and the formula for elasticities will prove crucial in Sections 4 and 5 of the note where trade elasticity proxies and impacts on both micro- and macro-level variables will be estimated.

The aforementioned framework allows estimating how tariffs of different sizes—and varying pass-through rates—would impact import quantities, trade values, and potentially broader economic indicators. Understanding these mechanisms is crucial for evaluating the risks of future tariff scenarios on the European economy.

## 4. Historical Precedent

### Background

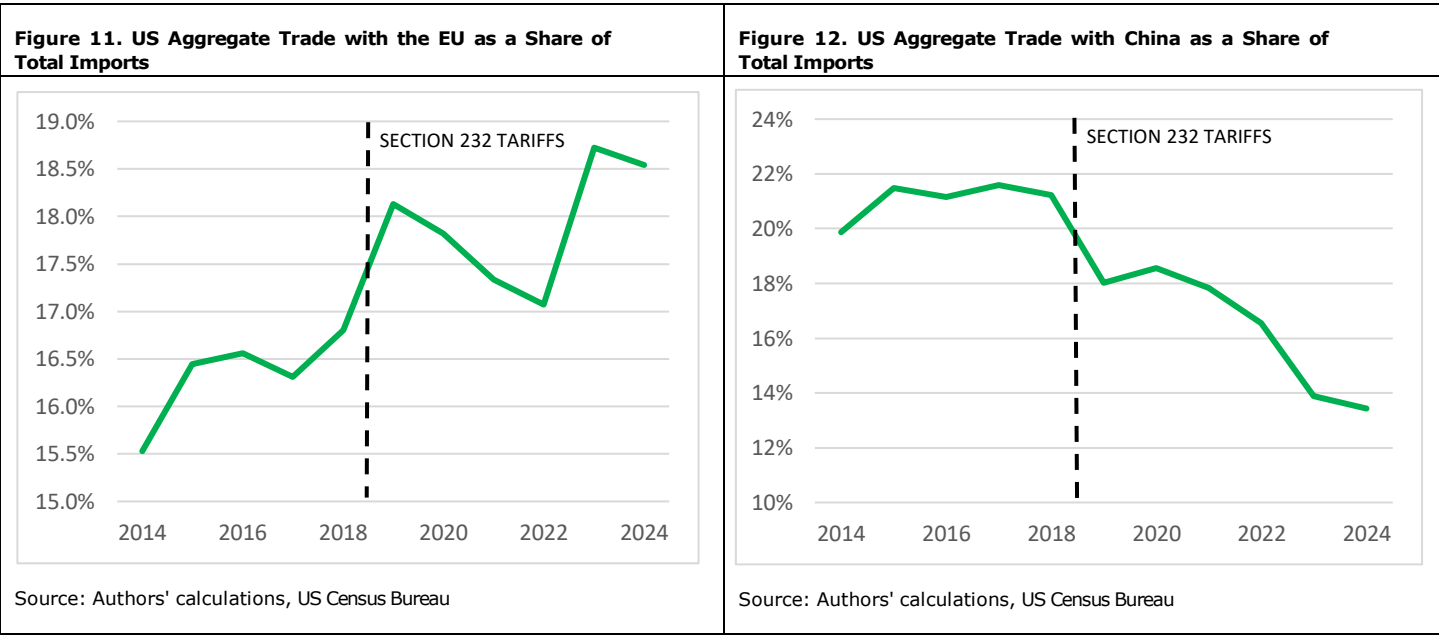
Before estimating the impact of a potential trade war, it is key to first consider the events in 2018 that provide a basis for the analysis in Section 5. In 2018, the United States launched a significant trade conflict with China, imposing tariffs initially set at **10%** and later raised to **25%** on a broad range of Chinese products. This marked a sharp departure from the trend of declining global trade barriers seen in previous decades.

In retaliation, China imposed its own tariffs on American goods, escalating tensions and creating uncertainty across global markets. As we will see, US imports from China changed substantially in some fundamental sectors like those of raw materials, while European imports from China started to increase, signaling plausible **trade diversion** as firms sought new suppliers.

At the same time, global prices for key materials like aluminum and steel rose, reflecting costlier inputs and disruptions in supply chains. The developments underscored how tariffs can reshape trade flows, influence market prices, and provoke economic repercussions—a crucial context for assessing the risks and potential effects of any future US tariff measures targeting European goods.

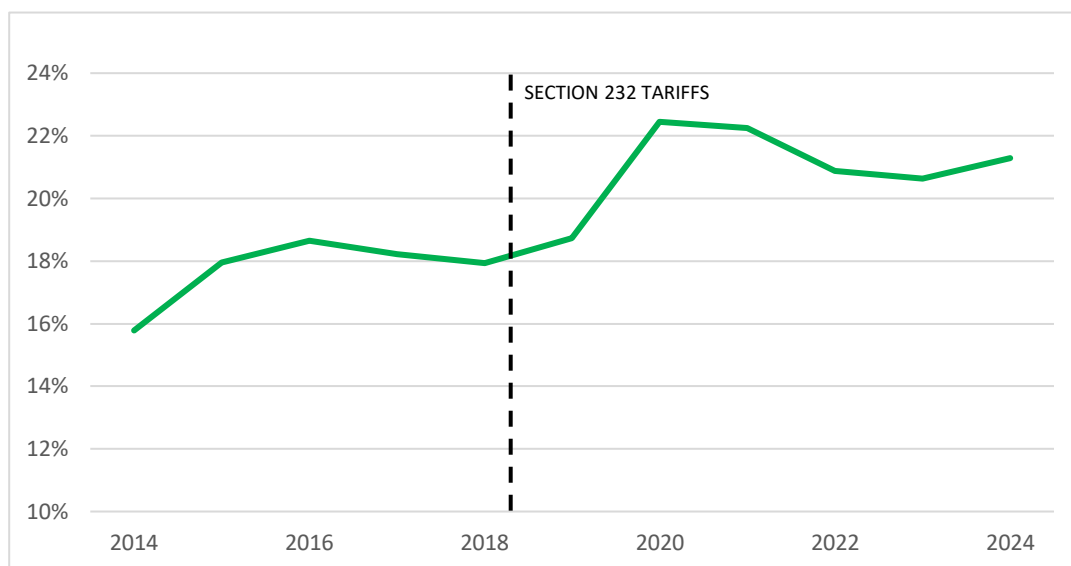
### Aggregate Changes

First of all, it is important to find any aggregate tendencies taking place after 2018. In Figures 11 and 12, we can see how American import values from both China as well as the EU relative to total imports have fared from 2014 to 2025. In general, while trade share of European goods seems to have gradually increased since the 2020 Pandemic, there has been little change in trade after the 2018 tariff imposition. This has not been the case for Chinese goods whose share has been gradually decreasing.



What is more, if we examine trade between the EU and China, the increase in trade is evident unlike in the American case. Figure 13 displays the general trend with increasing imports from China as a share of total imports that peaked in 2019 and remained relatively unchanged because of reasons like the need to substitute for the American and later, starting in 2022, Russian trade market that was lost after the start of the full-scale invasion of Ukraine. Nevertheless, as far as 2018 is concerned, the effect on aggregate imports' share from China still seems to be impacted upward.

**Figure 13. EU Aggregate Trade with China as a Share of Total Imports**



Source: Authors' calculations, Eurostat

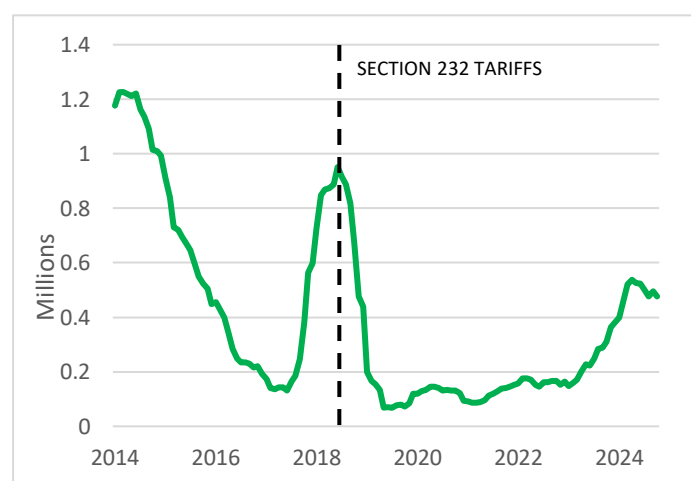
## Micro-Level Impact

However, dissecting trade in specific goods lets us ascertain more conspicuous tendencies underlying the 2018 trade tensions. Notably, if we concentrate on two main raw materials that were tariffed – steel and aluminum – we can find differing and unique trends. For comparison, we compile trade data based on the Eurostat and US Census Bureau monthly observations from 2014 and 2025. To establish deflated real values of imports and exports, we calculate historical prices of the period between 2020 and 2024. Real values of trade and then their 12-month moving averages are obtained by linking these historical prices with specific quantities of four-digit **Harmonized System** codes, the very same ones that will be used when determining trade elasticities later.

To start with, we consider fluctuations in specific steel and aluminum goods that are generally governed by two-digit HS codes of 72-73 and 76 respectively. They are further dissected into four-digit codes for more detail and based on the fact that these were the codes specifically targeted by **Section 232** (tariffs against national security threats) and **Section 301** (tariffs against unfair trade practices) import duties.

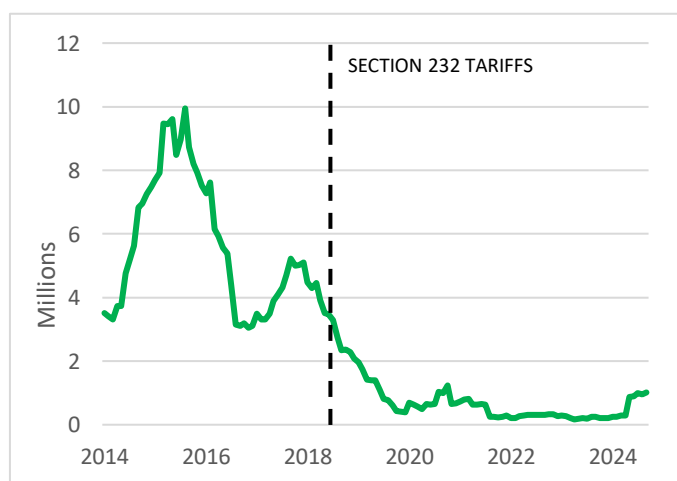
For the US, it seems that in most cases the events in 2018 unfolded in a similar manner. For example, steel products 7212 and 7305 (present in Figures 14 and 15 respectively) have experienced a decrease in demand after the imposition of new tariffs in March 2018. It is still important to note that afterwards this fall is not as obvious for 7305 steel that had already been decreasing even before the imposition of tariffs.

**Figure 14. Real US Imports of 7212 Steel from China**



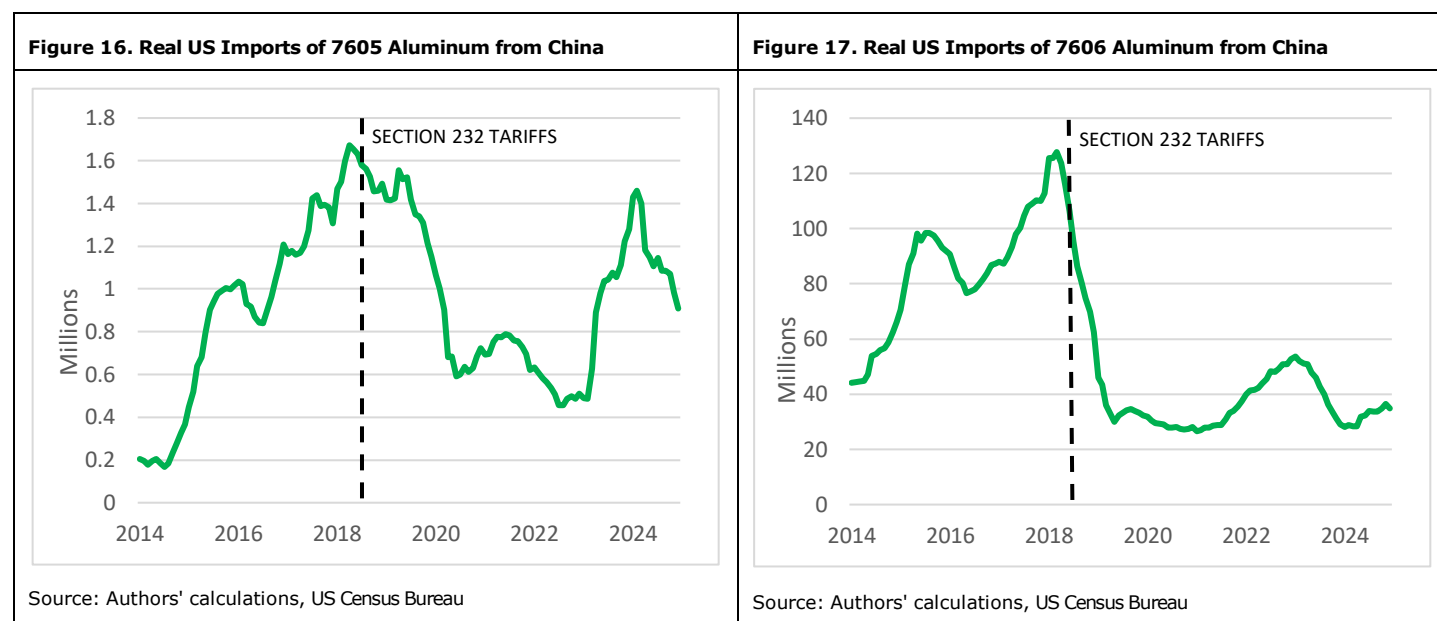
Source: Authors' calculations, US Census Bureau

**Figure 15. Real US Imports of 7305 Steel from China**

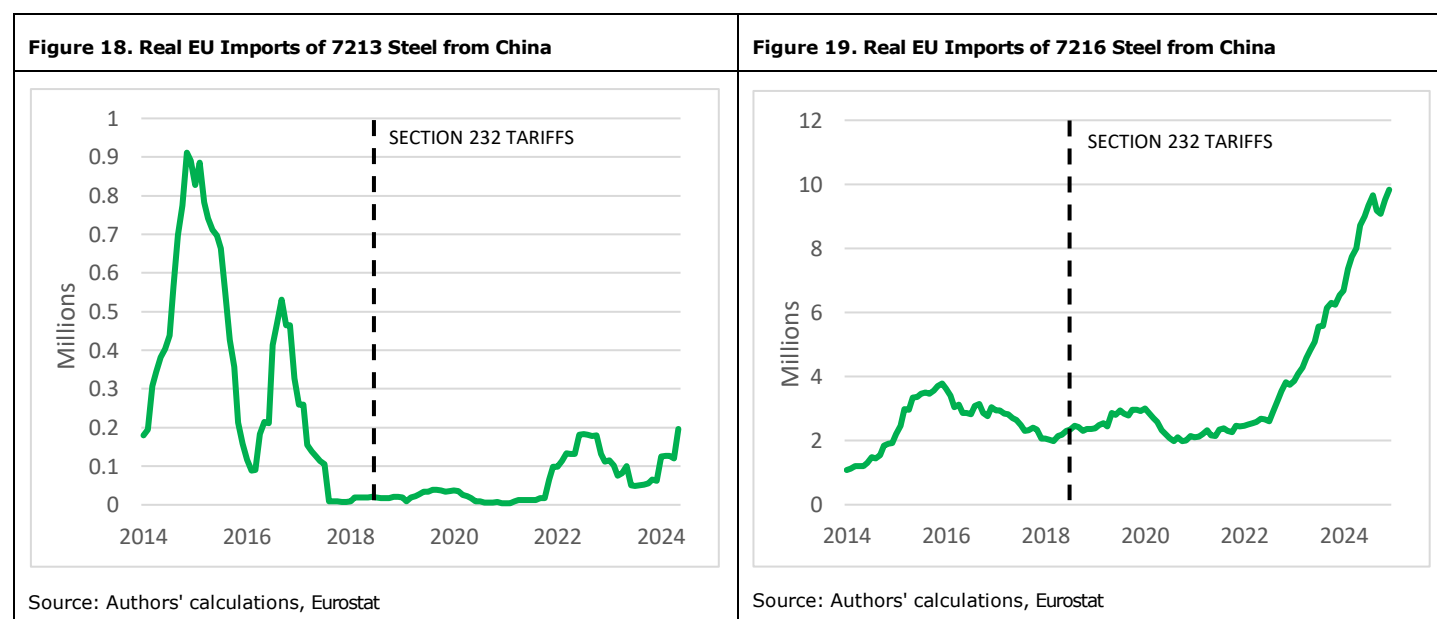


Source: Authors' calculations, US Census Bureau

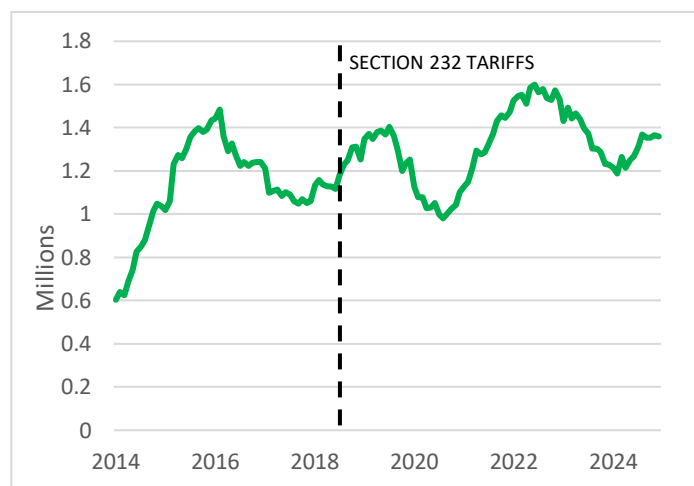
The case for aluminum displays clearer tendencies. Both for codes 7605 and 7606 (Figures 16 and 17), a fall in real imports is evident although the decrease for 7605 was more delayed than for 7606. However, products like 7606 exhibit a sharp fall in imports just after the imposition of tariffs showing a clear reaction to changes in trade policy.



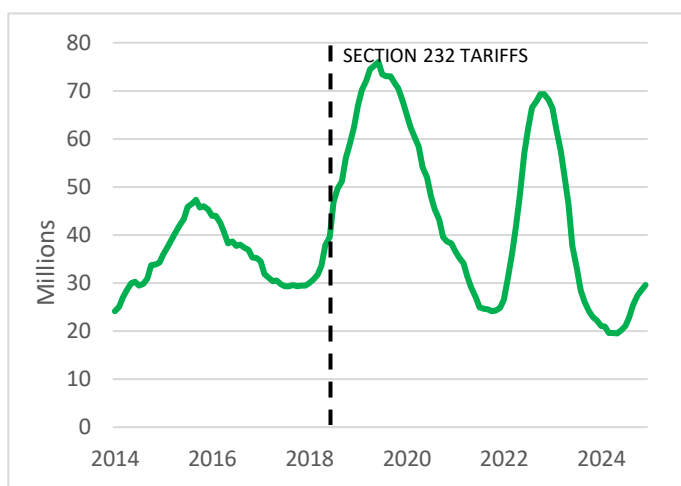
When compared with the EU, these trends gain more ground for interpretation. For steel (Figures 18 and 19), the relation between European and American demand for Chinese products is lacking and thus substitution between trade partners is less plausible. In the period of 2018-2019, fluctuations in trade with China were not as obvious as for the US as it stayed relatively moderate before and after the imposition of tariffs except after 2021 where for both 7213 and 7216 codes the demand increased.



On the other hand, some tariffed aluminum (Figures 20 and 21) shows a conspicuous similarity in demand fluctuations. Both 7605 and 7606 aluminum codes indicate a clear increase in demand for aluminum starting 2018. This coincides with the fall in 7605 and 7606 demand from the US (Figure 17) which could indicate trade diversion that substituted the American market for the European one.

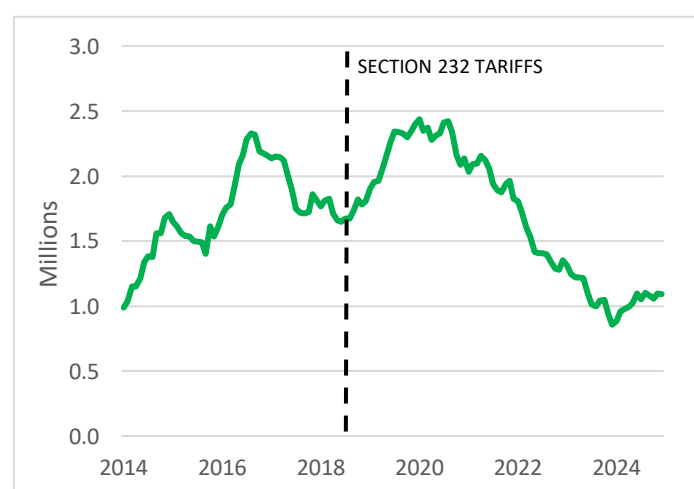
**Figure 20. Real EU Imports of 7605 Aluminum from China**

Source: Authors' calculations, Eurostat

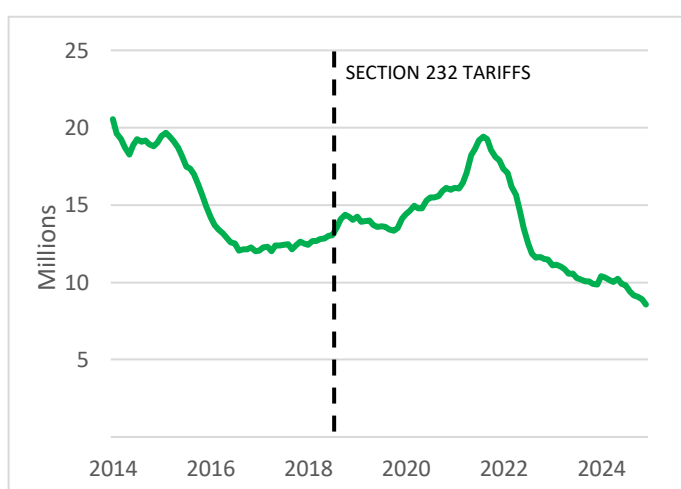
**Figure 21. Real EU Imports of 7606 Aluminum from China**

Source: Authors' calculations, Eurostat

The possible trade diversion could be verified by looking at the Chinese side of demand for European goods. In fact, Eurostat data for exports to China shows that, with similar fluctuations of the same goods like 7605 (Figure 22), there is an increase in demand for the aforementioned European aluminum products. However, goods such as 7606 aluminum (Figure 23) show more moderate increases compared to the import side of the EU (Figure 21). Nevertheless, we can still conclude that increased two-sided trade between the EU and China and decreased demand for Chinese goods from the American side hint at partial trade diversion following the imposition of tariffs on steel and aluminum imports.

**Figure 22. Real EU Exports of 7605 Aluminum to China**

Source: Authors' calculations, Eurostat

**Figure 23. Real EU Exports of 7606 Aluminum to China**

Source: Authors' calculations, Eurostat

## Trade Elasticity Proxies

The aforementioned fluctuations and plausible substitution between trading partners may be better explained with trade elasticities that play a significant role in product demand tendencies. The estimation of these variables requires the same datasets utilized in the previous part of analysis as well as the same division of the timeline into three distinct sections. A more detailed explanation of trade elasticity proxies' estimation can be found in the [Appendix](#) of this note. However, it should be noted that the elasticities estimated here reflect historical correlations between price and quantity movements during observed periods and do not fully isolate exogenous tariff-induced price shocks. While not causal in the strict econometric sense, these estimates are consistent with the direction and magnitude found in the literature and serve as practical parameters for scenario analysis.

In general, these estimates reaffirm that the relation between American and European imports of Chinese steel is virtually negligible. Tables 1 and 2 for American and European import elasticities respectively show that even though

American steel imports had a relatively elastic demand to price increases (i.e. it is larger than one in absolute value) confirming a moderation if not decrease in imports of steel from China, the case for European steel trade reveals that a reaction to changes in market price for steel was small given trade elasticity values less than 1 in absolute terms.

At the same time, the trade elasticity proxies for aluminum products indicate once again a relation between European and American aluminum trade patterns with China. Despite 7605 aluminum products being volatile over time, its import elasticity for the US was substantial while the European one was positive and over one. Admittedly, the same tendency is seen for the 7606 aluminum. Thus, it may indicate that despite price increases in both countries the two economies had differing reactions.

**Table 2. American Trade Elasticities**

| American Elasticities of Chinese Imports |       |          |       |
|------------------------------------------|-------|----------|-------|
| Steel                                    |       | Aluminum |       |
| 7212                                     | 7216  | 7605     | 7606  |
| -1,08                                    | -1,87 | -13,63   | -2,37 |

Source: Authors' calculations, US Census Bureau

**Table 3. EU Trade Elasticities**

| European Elasticities of Chinese Imports |       |          |       |
|------------------------------------------|-------|----------|-------|
| Steel                                    |       | Aluminum |       |
| 7213                                     | 7216  | 7605     | 7606  |
| -0,41                                    | -0,24 | 1,33     | 78,71 |

Source: Authors' calculations, Eurostat

On the one hand, Americans reduced imports of Chinese goods whereas Europeans had their aluminum imports from China increased. This reaffirms the possibility that in the light of increased tariffs the Chinese started diverting some of the tariffed goods like aluminum from the US to Europe. Greater trade relations are additionally supported by previously highlighted data showing increased exports from the EU to China underlining two-sided trade development.

Hence, we could conclude that the events of the trade tensions of 2018 illustrate varying impacts of import duty increases. When imposed on specific goods, the effects on an aggregate level are less obvious whereas on a micro-level the effects are rather ambiguous. Some products such as those of steel are less reactive to changes in tariffs. However, import duties on aluminum products show that implications of tariffs transcend national borders and can contribute to trade diversion like in the case with the US, the EU, and its commerce relations with China.

## 5. What if War? Empirical Estimations

### Basis of the Assessment

Having considered an historical precedent of 2018, we can derive our findings about new trade war repercussions both with the help of the latter as well as one relevant paper by Gnocato et al. (2025). Their paper discusses potential impacts of an increase in tariffs for European imports. They provide results for the effects of different trade war scenarios by utilizing a two-region multi-sector estimation with international production networks in order to examine the theoretical transmission channels of a differentiated tariff shock on both aggregate and micro levels.

Gnocato et al. test three scenarios of no retaliation vis-à-vis tariffs, full retaliation and retaliation only on imports of final goods with a 20-percentage point increase of tariffs on foreign exports. Table 4 presents an overview of the results of their estimations. It is worth noting that in the case of no retaliation, exports fall persistently while imports decrease only by a little whereas with full retaliation the impact on import starts to become noticeable. This may entail that only retaliatory import duties could affect imports significantly. Macro-level values such as GDP are also affected which once again suggest important effects of a potential trade war that need scrutiny in our assessment.

**Table 4. Impact of a Tariff Shock in Different Scenarios**

| EU RESPONSE<br><br>VARIABLES |                    | NO RETALIATION                                                                            | FULL RETALIATION                                                                                                      |                                                                         | REVENUE-EQUIVALENT<br>RETALIATION ONLY ON FINAL<br>GOODS                                                           |                                                                                   |
|------------------------------|--------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                              |                    |                                                                                           | General                                                                                                               | Lower<br>substitutability                                               | General                                                                                                            | Lower<br>substitutability                                                         |
| DOMESTIC GDP                 |                    | Dips modestly (~0.1%)                                                                     | Falls more than twice than under no retaliation (~0.2%) with further decline in following years (~0.25%)              | Declines more (~0.22%) with more dramatic fall in year 2 and 3 (~0.32%) | Shrinks less than in full retaliation (~0.15%) but falls more in year 2 and 3 (~0.25%)                             | Falls even more (~0.2%) at first but more pronounced in sequential years (~0.35%) |
| DOMESTIC CPI INFLATION       |                    | Jumps a little in year 1 (~0.9 p.p.)<br>Settles at a slightly positive level (~0.05 p.p.) | Climbs on impact more than under no retaliation (~0.23 p.p.)<br>Settles at a persistently positive level (~0.08 p.p.) |                                                                         | Ticks up initially (~0.2 p.p.), but eventually falls back to target even without monetary authority's intervention |                                                                                   |
| TRADE                        | Exports            | Fall persistently by one percent across time                                              | Fall consistently across time (~1.6%)                                                                                 | Decline is less pronounced (~1.4%)                                      | Fall a bit more than in full retaliation (~1.9%)                                                                   | Decrease more moderately (~1.5%)                                                  |
|                              | Imports            | Fall by a little (~0.2%) initially, but in following years comes back to initial levels   | Decrease persistently over time (~1.8%)                                                                               | Fall by less (~1.2%) and consistently across time                       | Plunge much more than in full retaliation (~2.9%)                                                                  | Decline is significantly less pronounced (~1.7%)                                  |
|                              | Real exchange rate | Depreciates across time (~0.6%) due to production cost increase                           | Appreciates (~0.18%) and offsets import costs increase                                                                |                                                                         | Pushed up further than in full retaliation (~0.6%)                                                                 |                                                                                   |

Source: Authors' summary, CEPR

In the estimation, we will seek to find the impact of specifically American import duties in two of the three scenarios including no retaliation and full retaliation as they seem to be the two most contrasting cases to each other. Thus, they would provide valuable insights into two extreme cases of how the war could unfold. Throughout our assessment, we assume that the impact of tariffs from the American side solely affect the exports of the EU while European import duties impact only its imports. The tariff rate imposed by the US is assumed to be **30%**. Given uncertainty about tariff pass-through rates, we take three different scenarios that fall within the interval of possible rates given by Hayakawa & Ito (2015): **30%**, **50%**, and **70%**. Finally, trade elasticity proxies are calculated with Eurostat data the same way they were estimated in Section 4, but now we use elasticities for the period 2020-2024 as they present the most recent trade tendencies.

Taking everything into account, we can calculate the changes in quantity by combining the formulas provided in Section 3:

$$\% \Delta Q = \% \Delta P \times \varepsilon = \% \Delta \tau \times \varphi \times \varepsilon ;$$

where  $\% \Delta Q$  represents percentage change in quantity demanded,  $\% \Delta P$  depicts percentage change in price levels that are further dissected into  $\% \Delta \tau$  which is percentage change in tariff rate whereas  $\varphi$  is the pass-through rate and  $\varepsilon$  is the trade elasticity proxy of the good analyzed.

With quantity estimated, we can find out the overall change in export or import value following price and quantity fluctuations:

$$\% \Delta X = \% \Delta M = (1 + \% \Delta Q) \times (1 + \% \Delta P) ;$$

where  $\% \Delta X$  and  $\% \Delta M$  represent percentage change in exports or imports respectively. The transformation in either of the trade values can be utilized to weigh these changes with respect to macro-level variables such as the GDP that can also be an approximation for change in GDP following a tariff shock:

$$\% \Delta GDP_t = \frac{\Delta X_t}{GDP_t} ;$$

where  $\% \Delta GDP_t$  is for percentage change in GDP at time  $t$  when  $\Delta X_t$  depicts nominal change in exports at time  $t$  given we assume that the latter plays a larger role in affecting GDP and not imports. An example of how the aforementioned expressions aid in calculating effects can be found in the [Appendix](#). The estimations' results are thus presented in the following parts of this Section.

## No Retaliation: Impact on Exports

Before finding out the effect of trade elasticities, it is key to discern the values at which prices could increase. Table 5 presents changes in price levels in three different tariff pass-through scenarios. Intuitively, with increase in pass-through of tariffs onto retail prices, the overall price rise becomes greater.

**Table 5. Price Level Increase Conditional on Tariff Pass-Through Size**

| Impact on Trade with the USA- All Scenarios |                          |
|---------------------------------------------|--------------------------|
| Tariff Pass-Through Rate                    | Potential Price Increase |
| 30%                                         | 9,0%                     |
| 50%                                         | 15,0%                    |
| 70%                                         | 21,0%                    |

Source: Authors' calculations, Eurostat

Given this, we can now consider varying individual trade elasticity proxy values of the same steel and aluminum goods we used in Section 4 for European imports from China. The elasticities are calculated for the past period, which are found in the *Appendix*. The estimates are quite peculiar as, in most cases, they affect demand negatively, but positive impact is also sometimes present. Table 6 gives an overview of the effect of these trade elasticities on export quantity in no retaliation case that is also valid for the full retaliation scenario given we assume minor effects on exports in the case of the latter. Table 7 supports the findings by providing changes in overall import or export value after considering quantity and price level fluctuations.

In general, the transformation in goods' demand is ambiguous. For example, although quantities of some steel products like 7213 seem to have fallen by up to **28%**, the decrease for goods such as 7216 is rather small, dipping only by **2,8%** in the extreme scenario. For 7605 aluminum, unlike the 7606 one, the demand has even increased after tariff imposition by up to **21%** which suggests that despite price level increases, the good may be fundamental for some of the US's manufacturing and other sectors that find it as a crucial raw material for final goods' production. Applying these changes to trade value fluctuations, the results are generally as expected given the volumes decrease. The only exception is 7216 steel which had its trade value increase that can be explained as the price level increasing by more than the demand decrease.

**Table 6. Tariffed Product Export Demand Change Conditional on Tariff Pass-Through Size**

| Impact on Exports to the USA- No Retaliation |                                 |       |       |        |
|----------------------------------------------|---------------------------------|-------|-------|--------|
| Tariff Pass-Through Rate                     | Potential Change in Exports (%) |       |       |        |
|                                              | 7213                            | 7216  | 7605  | 7606   |
| 30%                                          | -12,0%                          | -2,4% | 9,0%  | -12,5% |
| 50%                                          | -20,0%                          | -4,0% | 15,0% | -20,8% |
| 70%                                          | -28,0%                          | -5,6% | 21,0% | -29,2% |

Source: Authors' calculations, Eurostat

**Table 7. Tariffed Product Export Value Change Conditional on Tariff Pass-Through Size**

| Impact on Exports to the USA- No Retaliation |                                      |       |       |        |
|----------------------------------------------|--------------------------------------|-------|-------|--------|
| Tariff Pass-Through Rate                     | Potential Change in Export Value (%) |       |       |        |
|                                              | 7213                                 | 7216  | 7605  | 7606   |
| 30%                                          | -4,1%                                | 6,4%  | 18,8% | -4,6%  |
| 50%                                          | -8,0%                                | 10,4% | 32,3% | -9,0%  |
| 70%                                          | -12,9%                               | 14,2% | 46,4% | -14,3% |

Source: Authors' calculations, Eurostat

## Full Retaliation: Effect on Imports

In addition to the analyzed impact, a full retaliation case would also have repercussions for European imports. Tables 7 and 8 show the potential results of a retaliatory **30%** increase of tariffs on American exports to the EU that are estimated in the same manner as impact on exports to the US. Overall, the demand for American aluminum would be expected to fall by up to **93%** reflecting high trade elasticities and large tariff pass-through rates.

On the other hand, the effects on American steel are more moderate and, in the case for 7213 steel, even positive as an increase in import duties may be followed by a jump in demand by up to **25,6%**. This once again suggests that a good may be too significant for some sectors like those of manufacturing which rely on raw materials such as steel and demand for it may not fall and continue to increase despite the trade war. While trade values of both aluminum goods fall with increased pass-through by up to **91,5%**, both steel products tend to grow in this parameter by almost **52%** given 7213 has increased quantities whereas 7216's fall in quantity is smaller than the increase in price levels.

**Table 8. Tariffed Product Import Demand Change Conditional on Tariff Pass-Through Size**

| Impact on Imports from the USA- Full Retaliation |                                 |       |        |        |
|--------------------------------------------------|---------------------------------|-------|--------|--------|
| Tariff Pass-Through Rate                         | Potential Change in Imports (%) |       |        |        |
|                                                  | 7213                            | 7216  | 7605   | 7606   |
| 30%                                              | 11,0%                           | -1,2% | -15,0% | -39,8% |
| 50%                                              | 18,3%                           | -2,0% | -25,1% | -66,4% |
| 70%                                              | 25,6%                           | -2,8% | -35,1% | -93,0% |

Source: Authors' calculations, Eurostat

**Table 9. Tariffed Product Import Value Change Conditional on Tariff Pass-Through Size**

| Impact on Imports from the USA- Full Retaliation |                                      |       |        |        |
|--------------------------------------------------|--------------------------------------|-------|--------|--------|
| Tariff Pass-Through Rate                         | Potential Change in Import Value (%) |       |        |        |
|                                                  | 7213                                 | 7216  | 7605   | 7606   |
| 30%                                              | 21,0%                                | 7,7%  | -7,4%  | -34,4% |
| 50%                                              | 36,0%                                | 12,7% | -13,8% | -61,4% |
| 70%                                              | 52,0%                                | 17,6% | -21,4% | -91,5% |

Source: Authors' calculations, Eurostat

## Macro-Level Predictions

It is plausible that a new trade war may entail repercussions on all traded goods if the imposed tariffs include every single product. That is why it is key to find potential effects on aggregate exports as well as imports and their impact on the Gross Domestic Product. After estimating aggregate trade elasticity proxies of goods and applying them to three different pass-through rates the same way we did with micro-level data, we get an approximate fall in demand and subsequently the change in trade values. From that and by assuming that exports play the most important role in composing GDP compared to imports, we also derive potential changes in the Gross Domestic Product.

The estimates are depicted in Table 10 that summarizes these transformations not only in aggregate good values but also in GDP. Overall, it seems that in a case with no retaliation, exports could fall somewhere in the range between **0,7%** up to **4,2%**. Given aggregate imports are exposed to a higher trade elasticity, they would be expected to fall more anywhere from **5,7%** up to **17%**. Taking export nominal changes into account and measuring it as a share of annual GDP, the fall of the latter could be **0,021%** if the pass-through rate is **30%**, but it could decrease by **0,124%** in a **70%** tariff pass-through case. This corresponds closely to the findings of Gnecato et al. that do find a decrease of GDP by around **0,1%** in the case where only exports are taken into account in the GDP fluctuations.

**Table 10. Aggregate Value Change Conditional on Tariff Pass-Through Size**

| Aggregate Impact on the EU Economy |                       |               |              |
|------------------------------------|-----------------------|---------------|--------------|
| Tariff Pass-Through Rate           | Potential Changes (%) |               |              |
|                                    | Import Volume         | Export Volume | GDP (Annual) |
| 30%                                | -5,7%                 | -0,7%         | -0,021%      |
| 50%                                | -10,8%                | -2,1%         | -0,062%      |
| 70%                                | -17,0%                | -4,2%         | -0,124%      |

Source: Authors' calculations, Eurostat

## Limitations

While the analysis presented offers useful insights into the potential impact of new US tariffs on the European economy, several limitations could be acknowledged. First, the macroeconomic estimates assume that only exports contribute to GDP fluctuations, while imports do not. This simplification may understate the impact of trade shocks on GDP, particularly in the case of full retaliation, where both exports and imports are affected. In reality, import contractions can also influence domestic production costs, investment decisions, and consumer prices, and thereby indirectly affect GDP.

Additionally, the elasticity estimates are derived from observed historical data and may capture broader economic shocks beyond tariff changes. As such, they are best interpreted as reduced-form approximations and proxies for use in indicative simulations rather than precise structural parameters.

Furthermore, these elasticities are assumed to remain stable over time, yet parameters can shift depending on broader market dynamics, firm behavior, or geopolitical context. Elasticities estimated using data from 2020 to 2024 may not fully capture structural changes in supply chains or demand responsiveness in the face of a new shock in 2025.

Also, the assessment assumes homogeneous pass-through rates across all tariffed goods, applying values of **30%**, **50%**, and **70%** across products. In practice, pass-through rates vary significantly by product type, market structure, and contractual arrangements. Uniform assumptions may therefore mask heterogeneous price responses and under- or overestimate real impacts on trade volumes.

Lastly, while the assessment captures direct trade effects, it does not consider some spillovers such as currency adjustments or policy responses. These secondary effects could amplify or dampen the primary trade impacts estimated here. Despite these limitations, the framework provides a structured way to quantify possible outcomes under various scenarios, offering a useful benchmark for policymakers evaluating the economic risks of renewed trade tensions.

## 6. Concluding Remarks

In conclusion, this note has examined the potential consequences of new American tariffs imposed on European imports and repercussions on exports in case of full retaliation, drawing on historical precedent and empirical evidence to inform scenario analysis. Motivated by the significant trade tensions witnessed during the 2018 US–China trade tensions, the analysis has focused on understanding how tariff-induced price increases could translate into changes in European trade volumes and broader economic impacts, particularly given Europe’s deep trade linkages with both the United States and China.

The core empirical findings rest on the calculation of trade elasticity proxies for specific commodities, namely aluminum and steel, based on historical price and quantity changes observed in EU imports from China. These elasticities provide crucial parameters for simulating the responsiveness of European trade volumes to hypothetical price shocks induced by American tariffs. Notably, the calculations reveal differing sensitivity of import and export quantities to price changes, suggesting that new tariffs could nevertheless disrupt trade flows in some sectors.

However, the magnitude of such impacts depends critically on tariff pass-through rates, which remain uncertain. In this analysis, three pass-through scenarios—**30%**, **50%**, and **70%**—are employed to capture the range of possible outcomes, acknowledging that exporters might absorb some portion of the tariff costs rather than fully transmitting them into higher import prices. The combination of estimated elasticity proxies and varying pass-through rates illustrates how even the same tariff policy could produce significantly different effects on European trade volumes and, by extension, economic performance.

From a policy perspective, these findings underline the possibility to consider diversifying trade flows in some traded products such as aluminum to mitigate vulnerability to US trade policy shifts. As suggested by De Lucia and Rouimi (2025), strengthening economic ties with partners such as countries in the Global South like Brazil and India could offer more flexibility, alternative markets, and sources of demand and supply, reducing exposure to US-driven trade risks.

Future research could further improve these estimates by incorporating, for example, firm-level trade data, exploring potential differences in elasticity and pass-through across more detailed product categories, and considering dynamic adjustments in global supply chains. Finding out potential effects of import fluctuations in the case of aggregate fluctuations could prove useful in estimating a more accurate value of import, export, and GDP changes. Finally, investigating potential impacts on investment decisions, employment, and broader macroeconomic variables would enrich the understanding of tariff-related risks for the European economy.

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## Appendix

### Example of Trade Elasticity Proxy Estimation in Section 4

For example, we want to estimate the elasticity of import demand in the EU for any steel or aluminum product. Using the Eurostat dataset we first calculate the monthly unit price of goods as we only have aggregate quantities and values of all individual goods:

$$P_m = \frac{M_m}{Q_m} ;$$

where  $P_m$  is for unit price at month  $m$ ,  $M_m$  represents total import value at month  $m$  and  $Q_m$  depicts total quantity imported at month  $m$ . Then, we can calculate both average quantities and historical price levels of each of the three periods discussed in Section 4:

$$P_{Historical} = \frac{\sum_1^n M_m}{n} ; Q_{Historical} = \frac{\sum_1^n Q_m}{n} ;$$

where, apart from the already explained variables,  $n$  represents the number of months in a period. Finally, having these variables lets us estimate the trade elasticity for period 2018-2019 with respect to the past period of 2014-2017:

$$\varepsilon_{2018-2019} = \frac{\frac{Q_{2018-2019} - Q_{2014-2017}}{Q_{2014-2017}}}{\frac{P_{2018-2019} - P_{2014-2017}}{P_{2014-2017}}} ;$$

Where  $Q$  with time subscript represents the average quantity during the referenced period while  $P$  with a subscript depicts historical (average) price levels of the period in the subscript. The very same steps are taken to estimate elasticities for other goods as well.

### Example of Tariff Impact Estimation in Section 5

Say, we want to estimate the impact on steel and aluminum imports and exports. With the help of Eurostat data we first calculate the trade elasticity proxies for every good in the same manner we did in Section 4 except this time we look at the period between 2020 and 2024:

$$\varepsilon_{2020-2024} = \frac{\frac{Q_{2020-2024} - Q_{2018-2019}}{Q_{2018-2019}}}{\frac{P_{2020-2024} - P_{2018-2019}}{P_{2018-2019}}} ;$$

where both  $Q$  and  $P$  values represent historical averages of respective periods. The calculated values of these elasticities are shown in this Appendix just after this subsection. Then, given we have three different tariff pass-through values and a distinct tariff rate of **30%**, we can approximate a price level change:

$$\% \Delta P = \% \Delta \tau \times \varphi = 0,3 \times \varphi ;$$

where  $\varphi$  in the final equation, just as in the one in Section 3, depicts pass-through rates that are either **30%**, **50%**, or **70%**. With this, we can derive an estimate for quantity changes:

$$\% \Delta Q = \% \Delta P \times \varepsilon = 0,3 \times \varphi \times \varepsilon_{2020-2024} ;$$

where we plug in the value of our 2020-2024 trade elasticities, pass-through and tariff rates. Trade value changes are then estimated by taking both quantity and price level transformations in the discussed period. Say, we get that 7606 aluminum demand for exports falls by **12,5%** whereas price increases by **9%** given we assume a **30%** tariff pass-through rate. The change in export value is thus:

$$\% \Delta X = [(1 + \% \Delta Q) \times (1 + \% \Delta P)] - 1 = [0,875 \times 1,09] - 1 = -0,046 = -4,6\% ;$$

which is the value represented in Table 7 for good 7606 and which entails a 4,6% fall in trade value of the latter aluminum product.

The elasticities, price, quantity, and trade value changes are estimated in the same way both for individual goods as well as aggregate variables together with GDP fluctuations. As for the latter, for instance, if we take the latest 2023 estimates for European GDP of approximately **17 trillion euros** and multiply the change in aggregate export value by total export value in 2023 while assuming a **30%** pass-through, calculating the possible effect of decreased annual exports is straightforward:

$$\% \Delta GDP_t = \frac{\Delta X_t}{GDP_t} = \frac{0,5038 \times 0,007}{17} = -0,00021 = -0,021\% ;$$

Which is the exact value we have in Table 10 indicating a **0,021%** fall in the case of **30%** pass-through and trade elasticities of Table 13 present in the following subsection of the Appendix.

## Elasticity Proxies Found in Section 5 for Impact Estimation

**Table 11. EU Elasticities of American Imports**

| European Elasticities of American Imports |       |          |       |
|-------------------------------------------|-------|----------|-------|
| Steel                                     |       | Aluminum |       |
| 7212                                      | 7216  | 7605     | 7606  |
| 1,22                                      | -0,13 | -1,67    | -4,43 |

Source: Authors' calculations, Eurostat

**Table 12. American Elasticities of EU Imports**

| American Elasticities of European Imports |       |          |       |
|-------------------------------------------|-------|----------|-------|
| Steel                                     |       | Aluminum |       |
| 7212                                      | 7216  | 7605     | 7606  |
| -1,33                                     | -0,27 | 1,00     | -1,39 |

Source: Authors' calculations, Eurostat

**Table 13. Aggregate EU Trade Elasticities**

| Aggregate Elasticities of European Trade |         |
|------------------------------------------|---------|
| Imports                                  | Exports |
| -1,33                                    | -0,27   |

Source: Authors' calculations, Eurostat

*Note: all trade elasticity proxies in Tables 11-13 are estimated in the same way as in Section 4.*