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Beggar-thy-Neighbor or Favor-thy-Industry? An Empirical Review of Transatlantic Tariff Retaliation*

Abstract

Since 2018, the U.S. and the EU have been erecting additional tariff barriers against each other. This study takes stock of existing transatlantic retaliatory tariffs and examines three different motives that explain how products are chosen to qualify for tariff retaliation. These channels are: shifting the tariff incidence abroad according to optimal tariff theory, concentrating losses abroad in politically sensitive regions or industries, and rent-seeking by domestic lobbyists. I find striking evidence for the presence of all three channels. Moreover, this study performs an ex-post impact evaluation of EU tariffs implemented in response to U.S. steel and aluminum tariffs: within one year, imports of treated products from the U.S. fell by 36 percent. Trade diversion can only partially offset this decline in imports. Finally, this study outlines a concept for a transparent protocol which could be applied to the selection of products for retaliation purposes.

JEL Code: F13, F14, F53
Keywords: Retaliatory tariffs, countervailing duties, optimal tariff theory, Beggar-thy-Neighbor, EU–US trade, GATT

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"The US now leaves us with no choice but to proceed with a WTO dispute settlement case and with the imposition of additional duties on a number of imports from the US."

Jean-Claude Juncker[a]

"The World Trade Organization finds that the European Union subsidies to Airbus has adversely impacted the United States, which will now put Tariffs on $11 Billion of EU products!"

Donald J. Trump[b]

[a]European Commission – Press Release, May 31, 2018, accessed on June 13, 2019.
[b]Tweet from President Trump's official Twitter Account, April 9, 2019, accessed on June 13, 2019.

1 Introduction

Acknowledging the lack of a supra-national authority, which is both willing and able to assert international trading rules, the World Trade Organization (WTO) provisions are designed as a self-enforcing system. Member States have the right to self-compensate in response to trade restrictions that are—legally or illegally—undertaken by another Member State. According to the General Agreement on Tariffs and Trade (GATT), this compensation is conducted by withdrawing "substantially equivalent concessions". The idea of self-compensation constitutes a mechanism that provides a stable equilibrium and internalizes terms-of-trade externalities (Bagwell and Staiger, 1999).[1] In case of trade disputes, Member States notify the WTO Dispute Settlement Body (DSB) and request authorization for their retaliatory measures. This study examines on which bases products are selected for tariff retaliation in the ongoing EU–U.S. trade disputes.

There are several reasons why countries impose retaliatory tariffs. Countermeasures to compensate for unlawful foreign subsidies, or rebalancing tariffs in response to safeguard measures are just two examples. For the sake of brevity, and in the context of this analysis, the term retaliatory tariff captures both and is used synonymously with counter-tariffs. In contrast to anti-dumping duties, the common feature of the two aforementioned examples of retaliatory tariffs is that they can be applied to any imported product. Thus, the selection of product lines on which tariffs are levied, is the outcome of a political process and has distributional as well as welfare implications. In light of ongoing global trade tensions that have triggered multiple rounds of tariffs and counter-tariffs, a sound understanding of the product selection for tariff retaliation is of great interest not just for academics but also for policy makers. For this purpose, the following study analyzes four rounds of tariff retaliation[2] between the EU and the U.S. between 2018 and 2020.

In principle, all imported products are potentially eligible for tariff retaliation. The total amount of the tariff retaliation measures should equivalently compensate for the initial economic loss suffered by the retaliating party. In June 2018, EU counter-tariffs on U.S. steel and aluminum tariffson products worth 2.8 bn EUR annually were imposed.[3] In April 2019, two decisions of the WTO Appellate Body lead the EU and the U.S. to impose countervailing duties on each other: ironically enough, within two weeks, the Appellate Body decided that both the EU and the U.S. had violated international trading rules by subsidizing Airbus and Boeing, respectively, in a way that was harmful to the respective competitor. Instead of solving this dispute by reaching a zero-subsidy agreement, both parties requested retaliatory tariffs to compensate for their economic damages. The U.S. Trade Representative (USTR) published a list of additional duties on imports from the

[1] The economic theory of GATT is even more comprehensive outlined in Bagwell and Staiger (2004).
[2] These tariffs are either effective, or are threatened to be imposed.
[3] EU Commission – Press Release, June 20, 2018, accessed on June 15, 2019.

EU worth 11 bn USD (10 bn EUR)[4], and was authorized to apply countermeasures on EU imports amounting to 7.5 bn USD annually.[5] Ultimately, the USTR imposed tariffs of only 10 and 25 percent on these imports.[6]

The EU Directorate-General (DG) Trade, for its part, gave notice about additional tariffs on imports from the U.S. worth 20 bn EUR for which it has requested authorization by the WTO.[7] At the time of writing this study, the WTO was still in the process of determining the amount of authorized countermeasures. Due to an allegedly discriminatory French Digital Services Tax, the USTR considers additional tariffs on imports from France worth 2.4 bn USD. Because the total amount of these four tariff rounds is still relatively small compared to the annual trade volume between the EU and the U.S., namely 669 bn EUR in 2018[8], both sides enjoyed high degrees of freedom when choosing their targeted products. This study sheds light on which deliberation the product selection was grounded. Three distinctly different motives are under investigation: beggar-thy-neighbor-type tariffs, politico-economic tariffs, and tariffs that favor-thy-industry.

The following analysis is an attempt to explain four rounds of EU–U.S. retaliatory tariffs based on these three motives. The remainder is structured as follows: Section 2 summarizes the relevant literature and provides additional details on the background of tariff retaliation, Section 3 outlines theoretical arguments for the selection of retaliatory tariffs. Section 4 introduces the data sources that are employed. Section 5 presents the results of the empirical analysis, and Section 6 sketches policy recommendations for more effective and transparent modes of tariff retaliation. Finally, Section 7 summarizes and concludes.

2 Background and Literature

A large body of literature has evolved around welfare implications of trade policy as well as trade defense measures. With respect to the latter, Bown (2010) takes stock of all temporary trade barriers[9] that existed worldwide between 1990 and 2009, and finds that developing countries have used such measures on a much larger scale than advanced economies. In contrast to this observation, a rethinking of U.S. foreign trade policy by the Trump administration lead to new and severe trade restrictions for several of the U.S.' major trading partners after 2017. The imposition of additional duties on steel and aluminum in 2018 marked a turning point for the world trading system: the EU considers

[4]USTR – Press Release, April 8, 2019, accessed on June 13, 2019.
[5]For more details on Case No. DS316, cf. WTO Disputes, accessed on January 18, 2020.
[6]In doing so, the U.S. did not make full use of the countermeasures which could otherwise have materialized in 100 percent tariff rates. Later, in February 2020, 10 percent tariffs on aircraft imports were announced to increase to 15 percent, a decision that ultimately was suspended.
[7]EU Commission – Press Release, April 17, 2019, accessed on June 13, 2019.
[8]Source: Comext, 2019.
[9]Bown (2010) uses this term to account for Anti-Dumping, Countervailing, and Safeguard Duties.

these U.S. duties not primarily a national security concern (Article XXI GATT) but rather a standard safeguard measure (Article XIX GATT). The U.S., by contrast, takes the view that national security issues "are not susceptible to review or capable of resolution by WTO dispute settlement".[10] Even though this case and its final legal assessment by the DSB is still pending, the EU has imposed retaliatory measures against the U.S. that became effective in June 2018. By accepting the national security argument proposed by the U.S., the DSB would open the floodgates for protectionism of any kind justified by national security concerns.

However, the two 2019 tariff waves under investigation differ from the aforementioned case in two major aspects: first, they are countervailing actions to illegal subsidies and therefore independent of this tit-for-tat erection of tariff barriers. Second, these tariff waves are in accordance with a WTO-compliant procedure. For the purpose of this analysis, they provide very recent examples for the selection of retaliatory tariffs.

A further list containing additional tariffs is related to the French Digital Services Tax (DST) which is considered discriminatory by U.S. officials. The U.S. has not officially filed a complaint against France at the WTO but threatens to impose new tariffs following a so-called Section 301 Investigation.[11] This is an example for a situation in which tariffs are used not only as a means of retaliation *after* an adverse economic effect was proven but to prevent the implementation of such a policy *in advance*. In this case, the implementation of tariffs, or the threat thereof, serves as a deterrence tool.

Trade disputes and diametrically opposed views between the EU and the U.S. regarding the interpretation of WTO legislation are as old as the WTO itself. The Banana Case[12] as well as the Hormone Beef Case[13] constitute two shining examples for transatlantic trade controversies that were discussed for decades. These cases are also particularly relevant also for an assessment of the effectiveness of retaliation: the announcement of U.S. "carousel retaliation" caused by violations of WTO rules by the EU lead to severe tensions in the early 2000s. In a report for the U.S. Congress, Sek (2002) describes the U.S. approach at that time as follows: in response to protectionist measures for bananas by the EU (which were designed to benefit former EU colonies and oversea territories), the U.S. retaliated. Retaliatory tariffs of 100 percent on certain products were implemented to explicitly target only two EU Member States, namely France and the UK, who were jointly politically accountable for this protectionist action. This is clear evidence for tariff retaliation aiming for a change of foreign trade legislation. However, France and the UK initiated compensatory subsidies for the targeted industries, thereby undermining the intention of the U.S. to increase political pressure by means of the tariffs. Subsequently, the

[10]Under WTO Case No. DS548: A Panel was composed on January 25, 2019. For more details, cf. *WTO Disputes.*, accessed on July 26, 2019.
[11]For more details on this investigation, cf. *USTR*, accessed on February 27, 2020.
[12]For more details on Case No. DS16 and DS27, cf. *WTO Disputes*, accessed on July 26, 2019.
[13]For more details on Case No. DS26 and DS48, cf. *WTO Disputes*, accessed on July 26, 2019.

USTR announced so-called carousel-type retaliation: accordingly, the selection of product lines for retaliation purposes should be revised and adapted after 120 days. This would cause even greater damage, as uncertainty is added to the tariffs. In addition, short notices leave European governments only little time to react which makes compensation difficult, if not impossible. In the view of DG Trade, carousel retaliation is overly punitive and therefore incompatible with the WTO Dispute Settlement Understanding (DSU).[14] After all, "carousel retaliation" has never been invoked in WTO contexts but, eventually, the threat thereof helped reaching settlements.

In the early 2000s, also the EU initiated non-compliance cases against the U.S. Thereby, it successfully challenged U.S. tax rules that enabled offshore Foreign Sales Corporations (FSC), a legal scheme that basically exempted extra-territorial income from taxation.[15] The EU also joined a successful Chinese complaint against U.S. safeguard measures for steel by the Bush administration.[16] Given these notable escalations in international trade relations, the questions was raised, whether the system of self-compensation and retaliation—initially meant to curb protectionism—in fact facilitates protectionism (Lawrence, 2003).[17] It would appear that the recent transatlantic trade tensions and their quid-pro-quo responses echo previous disputes.

The economic consequences of President Trump's trade policy are at the core of several recent studies. Fajgelbaum et al. (2020) analyze welfare effects of the 2018 tariff war. By estimating import-demand and export-supply elasticities, they find a complete tariff pass-through on U.S. consumers. Consequently, this trade policy translates into negative welfare effects for the U.S. even in the absence of foreign retaliation. Estimated based on a general equilibrium model, show that tariffs and counter-tariffs jointly cause aggregate welfare losses of 0.04 percent of GDP. Moreover, they find that "workers in very Republican counties bore the brunt of the costs of the trade war" as retaliatory tariffs have mainly targeted the agricultural sector, i.e. rural regions with a high Republican vote share. This can be interpreted as evidence of politically motivated tariff retaliation. Similarly, Amiti et al. (2019) find no measurable terms-of-trade improvement for the U.S. due to newly imposed tariffs and a resulting complete pass-through on U.S. consumers, too. They quantify the monthly welfare loss for the U.S. economy at 1.4 bn USD. Zoller-Rydzek and Felbermayr (2018), on the other hand, suggest that Chinese exporters bear the lion's share of U.S. tariffs by reducing their export prices. U.S. consumers pay only 25 percent of the tariff burden. Leaving retaliation aside, the U.S. economy generates a net welfare gain of 18.4 bn USD annually. The model they calibrate is fed with trade elasticities from Kee et al. (2008) and Broda et al. (2008).

[14]EU Commission, Press Release, January 15, 2009, accessed on July 26, 2019.
[15]For more details on Case No. DS108, cf. *WTO Disputes* , accessed on July 30, 2019.
[16]Case Number DS 252, accessed on July 30, 2019.
[17]Instead of withdrawing substantially equivalent concessions, monetary penalties for violators, e.g. annual fines, were suggested (Meltzer et al., 2000, Mikesell, 2001).

The topic of tariff incidence has been debated for a long time. The term "beggar-thy-neighbor" traces back to Smith (1776) who employs it to describe mercantilist trade policies.[18] Modern economists relate to gains from protection that occur due to terms-of-trade improvements as beggar-thy-neighbor gains. Bickerdike (1906) formulates a condition when the tariff burden lies on foreign producers: "That, in the case of incipient import taxes, the tendency to advantage is greater the more elastic the demand of the taxing country for the articles taxed." Felbermayr et al. (2013) provide the theoretical framework for tariff wars between non-cooperating welfare-maximizing governments in a two-country heterogeneous firms Melitz (2003) model. They can rationalize strictly positive optimal tariffs.[19]

In an influential contribution building on Krugman (1980), Ossa (2011) rationalizes optimal tariffs greater than zero based on sector reallocation effects. Tariffs that make domestic production more profitable lead to "business stealing", an externality that the system of GATT/WTO tries to internalize. Ossa (2012) shows that the same mechanism applies even when only profit shifting arguments are taken into account. Irwin (2014) investigates tariff incidence of U.S. sugar duties between 1890 and 1930 and identifies asymmetric effects: although tariff reductions have been fully passed through to consumers, they only had to bear 40 percent of an increase in tariffs. Hence, both theoretical as well as empirical strands of the literature suggest the existence of some sort of beggar-thy-neighbor-type tariff incidence, a key premise for testing two of my three hypotheses regarding retaliatory tariffs.

Grounded on the pioneering theory developed by Grossman and Helpman (1994), a large strand of literature empirically examines whether "protection is for sale" (Blanga et al., 2020, Bombardini, 2008, Bown et al., 2020, Gawande and Bandyopadhyay, 2000). For the purpose of this analysis, retaliatory tariffs are at the heart of a field experiment to empirically evaluate whether industry lobbyism determines product selection in the event of tariff retaliation.

There is a widespread consensus among researchers that Nash-bargaining over tariffs requires the threat to retaliate. This rules out unilateral protectionism as a dominant strategy.[20] However, to the best of my knowledge, the question *how* this retaliation should practically be implemented has received only little scientific attention so far. The following analysis attempts to close this gap and adds aspects concerning the rationale behind and optimal choice of product targeting for tariff retaliation from the perspective

[18]For access to the relevant part (Book IV, Chapter III, Part II), click *here*.

[19]In their framework not only conventional terms-of-trade considerations but also Melitz (2003) type mark-ups and market-entry costs lead to optimal tariffs greater than zero.

[20]Bagwell and Staiger (1999) show that Nash-bargaining over tariffs is inefficient and that cooperative solutions are welfare improving. They also describe the importance of reciprocity as a key principle of GATT: this principle moderates the withdrawal of substantially equivalent concessions that follow in response that a country's deviates from concessions it has committed to. Thus, reciprocity is equivalent to some sort of limited retaliation.

of political economy.

3 Theory

When examining the motivation for selecting products for tariff retaliation, three distinct considerations (and an interplay of them) are at the core of the following analysis. These are:

Beggar-thy-Neighbor Tariffs Products can be selected based on optimal tariff theory. It suggests that in a static world, a tariff whose incidence is borne by the foreign producer, is welfare-improving and would therefore be the optimal choice for tariff retaliation. Aside from tariff incidence considerations, terms-of-trade improvements that lead to lower import prices can result from retaliatory tariffs. Setting such tariffs requires some sort of terms-of-trade power. This is particularly interesting in the case of the EU and the U.S. as these are the two largest economies of the world.[21] Beggar-thy-neighbor-type tariffs in a broader sense also involve business stealing arguments. However, this aspect is negligible for the purpose of this analysis. Sector reallocation is particularly important for long-term oriented trade policy. Retaliatory tariffs are designed to be removed again shortly after the underlying trade dispute is resolved and therefore do not qualify to attract production. In this paper, the term beggar-thy-neighbor tariff is used to refer to tariffs whose incidence is borne by the foreign economy. For the sake of convenience, they are also called Type 1 tariffs.

I employ the Soderbery (2018) model framework to empirically test whether retaliatory tariffs are set optimally: the utility function is given by the consumption of fixed shares of imported and domestically produced goods separated by a Cobb-Douglas parameter. The sub-utility derived from the composite imported goods is CES-aggregated across imported varieties. Elasticities of substitution σ_k^i are good-importer specific. The export supply curve is upward-sloping and characterized by a constant elasticity following Feenstra (1994). Soderbery (2018) extends the supply structure by allowing for importer-exporter-good-specific elasticities. ϵ_k^{ij} denote export supply elasticities. Similarly as in Broda and Weinstein (2006) and Broda et al. (2008), the welfare maximizing tariff is an inverse function of the export supply elasticity:

$$t_k^{ij*} = \frac{1}{\epsilon_k^{ij}} \tag{1}$$

where ϵ_k^{ij} is strictly positive. This is the case when country i discriminates perfectly across varieties and trading partners. In practice, this is generally ruled out by the most

[21] A decrease in world market prices due to a reduction of domestic import demand requires market power, e.g. in the situation of a monopsony. The EU and the U.S. jointly account for approximately half of the global demand.

favored nation principle, a restriction in the WTO legislation that prohibits discrimination across trading partners. However, for the purpose of setting retaliatory tariffs—which are discriminatory by default—heterogeneous export supply is a nice theoretical feature.

The optimal tariff is independent of the slope of the demand curve since its objective is to generate tariff revenue at the expense of foreign producer rents. This is the strict definition of beggar-thy-neighbor-type tariff setting. The steepness of import demand, however, is worth a closer examination, too: the elasticity of import demand has consequences for the amount of tariff revenues and for the degree to which markets are distorted by tariffs. Choosing products characterized by a completely inelastic import demand would minimize the consumer deadweight loss and maximize tariff revenues.

Politico-Economic Tariffs Tariffs can be chosen in such that certain foreign industries and/or regions are subject to counter-tariffs. The idea behind this politically motivated retaliation is to concentrate losses in such a way that public in the target country takes notice. The goal is to draw attention to the initial trade restrictions that caused countermeasures in the hope that local politicians or industry interest groups will lobby for their removal. This type of retaliation is short-term oriented with the objective to change foreign trade policy even at the cost of a sub-optimal level of domestic welfare.[22] These tariffs, however, come at the risk of increasing the likelihood of trade compensation measures by the foreign government. Consequently, the effectiveness of politico-economic tariff retaliation may be determined by the view that "many pinpricks" are more preferable than a "few hammer strokes"- as the effect of the latter can be offset more easily. This is essential when examining the distribution of trade volume of targeted products. For the sake of convenience, this type of tariff is called Type 2 tariff.

Favor-thy-Industry Tariffs Retaliatory tariffs can be the result of lobbying activities. Since trade authorities are free to choose any product for retaliation purposes, announcing to imposition of retaliatory tariffs is likely to function as a playground for lobbyists. The reasons are high economic stakes—monopoly rents "at best"—that could potentially be divided between producers, lobbyists, politicians, and bureaucrats. Therefore, private rent-seeking or industry policy considerations[23] are important drivers for the selection of retaliatory tariffs. In case of the EU, the distribution of rents across Member States might come on top of these considerations. For the sake of convenience, this type of tariff is called Type 3 tariff.

Setting Type 1 and Type 2 tariffs is neither necessarily a trade-off, nor mutually exclusive. With respect to Type 2 tariffs, a sufficient degree of beggar-thy-neighbor-type

[22]Politico-economic tariffs can be welfare-maximizing when assessing welfare dynamically. This is the case, if tariff retaliation fulfills its purpose, e.g. full settlement of the underlying trade dispute.
[23]If tariff authorities simply decide to let some industries benefit from the imposition of retaliatory tariffs.

tariff selection would even be a prerequisite, as it ensures that economic costs are borne by the foreign economy. Therefore, it represents a sub-case of Type 1 tariffs. On the contrary, welfare implications of Type 3 tariffs are obviously negative for the domestic economy: while beggar-thy-neighbor tariffs, at best, do not affect domestic consumer prices at all, favor-thy-industry tariffs are designed by construction to raise domestic prices such that higher producer surpluses materialize. Therefore, Type 3 tariffs are strongly at odds with the aforementioned welfare and politico-economic considerations.

4 Data Description

Trade data from the year prior to the coming into effect of retaliatory tariffs serve as undistorted baseline to calculate the trade volume affected by the additional tariffs. European import data on the 8-digit product level for the years 2017 and 2018 are taken from Comext. Data on 2018 U.S. imports stem from the USITC.[24] Applied or announced product list chosen for retaliation by the EU and U.S. are taken from official sources.[25] Novel import demand and export supply elasticities at the 6-digit product level are taken from Soderbery (2018) whose estimations are based on bilateral trade data from the period 1991 to 2007.[26] For the sake of notation: let σ_k^i denote the import demand elasticity for importer i and good k, and let ϵ_k^{ij} be the export supply elasticity for importer i, exporter j, and good k. Data on most favored nation (MFN) tariffs and tariff elimination schedules for the EU are taken from the World Trading Organization. Information on U.S. tariffs are accessed via USITC.

5 Discussion of Results

This section discusses both stylized facts about the selection of retaliatory tariffs as well as the results of the empirical analysis that tests the aforementioned hypotheses. As

[24]Please note that methodological differences apply to the different data sources. Trade data are internationally harmonized up to the 6-digit level. Products on the 8-digit level (EU CN8 and U.S. HTS8) are therefore not directly comparable. Comext data are denoted *CIF* (including cost, insurance, freight), whereas the U.S. records customs values. These differences, however, do not matter for the purpose of this analysis as EU and U.S. retaliatory measures are analyzed separately.

[25]U.S. Steel and Aluminum tariffs following the Section 232 investigation are described in detail here (*Steel* and *Aluminum*). U.S. Countervailing Duties following the Section 301 investigation on Airbus can be accessed here (*Longlist* and *Shortlist*). U.S. Countervailing Duties following the Section 301 investigation on the French Digital Service Tax can be accessed here (*Shortlist*). EU tariffs in response to U.S. steel and aluminum Tariffs (Juncker List) can be accessed here (*Shortlist*, a longlist that circulated before May 18, 2018, is not available online anymore). EU countervailing duties in response to illegal U.S. subsidies for Boeing can be accessed here (*Longlist*, a shortlist is not yet available as the WTO has not made a final decision on the amount of retaliation to which the EU is entitled.

[26]Soderbery (2018) structurally estimates elasticities in the absence of an instrumental variable. The advancement of this estimation compared to Feenstra (1994), Broda and Weinstein (2006) and Broda et al. (2008) is the implementation of heterogeneous export supply elasticities, which provide an interesting source of variation for empirical applications.

the four waves of tariff retaliation under investigation differ with respect to timing, cause, amount and affected partner country affected, this section follows a case-by-case structure. Sections 5.1 and 5.2 examine tariffs imposed or intended by the EU, while Sections 5.3 and 5.4 investigate U.S. tariffs.

5.1 EU 2018 Retaliatory Tariffs (Steel and Aluminum)

In response to U.S. steel and aluminum tariffs, the EU imposed retaliating measures on U.S. imports worth 2,846 mn EUR in June 2018. The choice of measures is a symmetric response to the U.S. action: the total amount exactly mirrors the volume of EU exports, on which the U.S. Administration has levied tariffs. Also, the duty rate, namely 25 percent on 2,728 mn EUR and 10 percent on 117 mn EUR, meets the U.S. action. In total, 182 8-digit products are affected. These 182 products represent 2.2 percent of imported product lines, and account for 1.1 percent of import volumes. Interestingly, the 2017 trade volume for 5 of these products equals zero.[27] Generally, non-traded products on the list are of great interest as they could indicate lobbyism. See Section 5.3 for a detailed discussion.

The trade volume affected by retaliation varies greatly across product lines: the top 10 product lines account for more than half of the total trade volume. Top products are whiskey (4 product lines, 561 mn EUR), cosmetics (3 product lines, 336 mn EUR), motorcycles (166 mn EUR), motorboats (154 mn EUR), maize (131 mn EUR), and playing cards (117 mn EUR). For 152 product lines, annual EU imports are below 20 mn EUR. It is questionable whether tariffs on these 152 product lines qualify as Type 2 retaliation since media coverage and political impact should positively depend on economic significance. Anecdotal evidence suggests that the treatment of iconic products such as whiskey, which predominantly harms the U.S. State of Tennessee, a politically important state for the Republican Party, and large motorcycles, which effectively only hits Harley Davidson, received a lot of attention in both the U.S and the EU. Harley Davidson finally announced to fully bear the tariff cost such that European consumers would not face higher prices until production is shifted to Thailand in order to circumvent tariffs.[28] Hence, the latter is, at least temporarily, an optimal tariff.

Exposure by EU Member State In the particular case of a customs union, such as the EU, a common good problem arises when selecting products for tariff retaliation: each individual Member State benefits from retaliating as a whole—assuming that retaliation is the dominant strategy in trade disputes and terms-of-trade improvements materialize for every member—but would like to minimize its own share of affected imports. Welfare

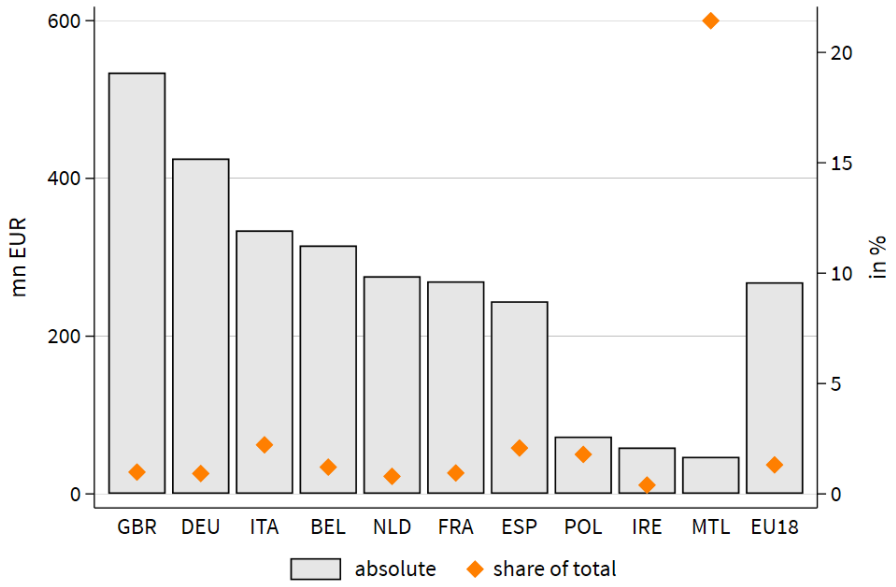
[27]Some of these non-traded products belong to the same 6-digit product line as other treated products with strictly positive import volume. Treating them with tariffs could indicate that tariff evasion due to misclassification is taken into consideration.

[28]This case received particular media coverage, cf. *here*, accessed on February 27, 2020..

implications in the EU are as follows: tariff revenues go into the EU budget[29] but shrinking consumer surpluses are borne by the respective Member State. Hence, in order to ensure political support by its Member States, a balanced distribution of costs due to retaliation might be an implicit objective for the EU when selecting products for tariff retaliation.

Figure 1 plots the affected imports in absolute values and relative to total imports from the U.S. For most EU Member States, retaliatory tariffs affect 1 percent or less of total U.S. imports. Italy, Poland, and Spain face slightly higher import exposures. Most notably, Malta appears to be affected the most with 22 percent of its transatlantic imports being subject to retaliatory tariffs. The reason for this are tariffs on motorboats: Malta imports U.S. motorboats worth 45 mn EUR, almost one third of the Union's total imports in this product line. This exception apart, costs of retaliation seem to be fairly balanced across EU Member States.

Figure 1: EU Steel Retaliation: Trade Volumes Affected, mn EUR and %



Source: EU Commission, 2019. Comext, 2019. Own illustration.

Note: The figure displays the largest trade volumes affected by 2018 retaliatory tariffs for selected EU Member States. Imports refer to 2017 annualized values. Absolute values are denoted in million EUR (left axis) and shares of total import volumes are denoted in percent (right axis). EU18 comprises all EU Member States unless indicated separately.

Product Selection – Beggar-thy-Neighbor Evaluating whether or not the tariff incidence is borne by domestic consumers or foreign producers requires an examination of the underlying trade elasticities. As argued in Section 3, a product is optimally chosen for tariff retaliation if its export supply elasticity is sufficiently low. In case of EU imports from the U.S., for 90 percent of imported product lines the optimal tariff is below 10

[29]The collecting Member State retains only a portion of 20 percent to cover cost of collection.

percent (and close to zero in most cases). Hence, I suspect that the probability for product k being selected for retaliation decreases in ϵ_k^{ij}, where i denotes the importing, and j the exporting country. The regression equation for a linear probability model that estimates the probability for country i to impose a retaliatory tariff τ on product k yields

$$Pr(\tau_k^i = 1) = \beta_0 + \beta_1 \epsilon_k^{ij} + \beta_2 \sigma_k^i + u_k^i \tag{2}$$

where the sign of the regression coefficient β_1 is of particular interest. Including σ_k^i provides information whether retaliatory tariffs are chosen such that the government maximizes tariff revenues. Some specifications include i or j-fixed effects.

Table 1 shows estimation results for the model specified in Equation 2. Coefficients point in the expected direction; however, they are statistically indistinguishable from zero. Thus, no empirical evidence can be established that trade elasticities might have influenced the selection process of this tariff round.

Table 1: Trade Elasticities and the Selection of Tariffs 1/4

	Pr(τ=1)					
	(1)	(2)	(3)	(4)	(5)	(6)
Export Supply Elasticity	-0.001		-0.001	-0.002		-0.002
	(-0.59)		(-0.58)	(-0.61)		(-0.61)
Import Demand Elasticitiy		0.005	0.005		0.005	0.005
		(0.59)	(0.59)		(0.59)	(0.59)
Importer FE				✔	✔	✔
Observations	57,861	57,861	57,861	57,861	57,861	57,861

Source: EU Commission, 2019. Comext, 2019. Soderbery (2018). Own calculations.

Note: Ordinary least square estimates, coefficients display standardized beta-coefficients, t-statistics in parentheses. Standard errors are clustered at the importer level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

Product Selection – Favor-thy-Industry As stressed above, industry protection might be an objective for policy makers when selecting products for retaliation. Determining industries whose protection seems politically desirable is not straight-forward. Protection that is already in place can serve as a reasonable proxy. EU MFN tariffs of 2017 were set prior to recent EU–U.S. trade disputes. These tariffs vary across products and are arguably exogenous to retaliatory tariffs against the U.S. as they apply not only to the U.S. but to all Member States of the WTO. For some products, instead of an ad-valorem, a specific tariff (or a combination of the two) is applied.[30] Oftentimes, these tariff lines refer to commodity or agri-food products. I also exploit other measures of EU

[30]For example, the specific EU tariff for product 02.01.1000 (Frozen Bovine Carcases) yields "12.8 % + 176.8 EUR/100 g". Such a tariff is also called "compound tariff".

industry protection, such as import quotas. One of the EU's most comprehensive trade agreements is with Canada (CETA). Even in this framework, some products remain excluded from liberalization, others receive a preferential tariff rate only after several years according to the tariff elimination schedule. Thus, I combine information on EU quotas and those products that are protected by CETA in order to obtain a third measure for industry protection.

Testing whether industry protection plays a role for the selection of retaliatory tariffs, I estimate a linear probability model according to the following regression equation:

$$Pr(\tau_k = 1) = \beta_0 + \beta_1 MFN_k + \beta_2 Specific + \beta_3 Protection_k + u_k \tag{3}$$

where MFN is the k-specific ad-valorem tariff rate in percent, $Specific$ and $Protection$ are binary variables that take the value 1 if product k is subject to specific tariffs or enjoys other forms of protection, respectively. Since tariffs, quotas, and other trade policy measures do not differ across EU Member States, this estimation has no importer i dimension. Some specifications include industry-fixed effects which refer to the HS-2-digit product level.

Table 2 depicts the estimation results: first, the applied MFN tariff is positively associated with the probability of a product being included in the retaliation list. The mean MFN tariff rate of treated products is 5.6 percent, 1.2 percentage points higher than for non-treated products. The effect of specific tariffs is ambiguous depending on the specification. Products that enjoy other forms of protection are less likely to be chosen for retaliation purposes. None of the effects is statistically significant. Therefore, given these measures of industry protection, no evidence can be established that such considerations determine the selection of products for retaliation.

Table 2: Industry Protection and the Selection of Tariffs 1/4

	Pr(τ=1)					
	(1)	(2)	(3)	(4)	(5)	(6)
MFN Tariff Rate (%)	0.001		0.001	0.003		0.003
	(0.49)		(0.52)	(1.10)		(1.19)
Specific Tariff		0.021	0.022		-0.003	0.006
		(0.71)	(0.73)		(-0.09)	(0.21)
Other Protection		-0.017	-0.024		-0.013	-0.021
		(-1.09)	(-1.27)		(-0.49)	(-0.77)
Industry FE				✔	✔	✔
Observations	8,404	8,404	8,404	8,404	8,404	8,404

Source: EU Commission, 2019. WTO, 2020. Own calculations.
Note: Ordinary least square estimates, coefficients display standardized beta-coefficients, t-statistics in parentheses. Standard errors are clustered at the industry level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

Brief Impact Evaluation Quantifying potential gains from trade diversion entails a comparison of consumer price and production data in order to calculate changes in producer surpluses. Feeding a general equilibrium (GE) consistent model with this data allows for a comprehensive welfare analysis. Such an attempt is constrained by the fact that prices and production data are not available at the same resolution as trade and tariff statistics. However, given the relatively small share of affected trade, GE effects are likely to be minor. Thus, a partial equilibrium analysis can provide a meaningful approximation. In this context, the equation of a standard diff-in-diff linear estimation model takes the following form:

$$\Delta Y_{ck}^{ij} = \beta_0 + \beta_1 \tau_k^{25} + \beta_2 \tau_k^{10} + u_{ck}^{ij} \tag{4}$$

where ΔY_{ck}^{ij} denotes first differences in imports of product k by country i from country j. Let the superscript c of the dependent variable Y account for the logarithm of either import volumes, or import quantities, or import prices, respectively. The treatment is defined as EU retaliatory tariffs τ, which equal an ad-valorem duty rate of either 10 or 25 percent. The pre-treatment period is defined as the first half year 2018, the post-treatment is the first half of 2019. Some specifications include importer i-fixed effects, or industry-fixed effects at the HS-2-digit-level. Please note that the author is aware of endogeneity concerns that do not allow a casual interpretation of regression results in this setting.

To account for the fact that trade diversion effects for the U.S. are expected to work in the opposite direction as for intra-EU exports and exports from the rest of the world, I interact the treatment indicator with a dummy variable that takes the value 1 if the exporter is the U.S. The equation of this triple-diff estimation reads:

$$\Delta Y_{ck}^{ij} = \beta_0 + \beta_1 \tau_k^{25} + \beta_2 \tau_k^{25} + \beta_3 US + \beta_4 \tau_k^{25} \times US + \beta_5 \tau_k^{10} \times US + u_{ck}^{ij} \tag{5}$$

Reaction of U.S. Exports Table 3 shows the estimation results for trade effects of the EU retaliation disentangled by price and quantity adjustments according to Equation 5. The following observations are noteworthy: first, retaliatory tariffs entail slightly decreased product prices.[31] The effect is statistically significant only for high tariffs and relatively small in size. Nevertheless, it could indicate a kind of terms-of-trade improvement for the EU. However, prices of treated U.S. products do not significantly differ from the overall price increase of U.S. imports by 8 percent. Second, import quantities from the U.S. fall by 7 percent on average. Import volumes and quantities of treated products from the U.S. decline sharply. Import quantities from the U.S. treated with a 25 percent tariff fall by 38 percent. This is additional to 8 percent lower imports for non-treated

[31] Measured in unit values and *CIF* (including cost of transportation).

imports from the U.S. Measured in value terms, the import of treated products declines by 36 percent. Import volumes from EU suppliers and the rest of the world treated with a 25 percent tariff do not react significantly, although coefficients are positive. In terms of quantity, imports increase by 2 percent. Third, import quantities of products treated with a 10 percent tariff from non-U.S. suppliers increase by 28 to 32 percent. This increase is offset by price drops such that the overall trade volume does not react significantly.

In absolute numbers, the total import volume (half year base) of treated products from the U.S. fell from 1.5 bn EUR to 900 mn EUR within one year. At the extensive margin, the number of non-traded products increased to 12 out of 182 in 2019. Conclusively, the welfare loss due to a shrinking number of varieties available in the EU is subordinate compared with the drastic decline in the intensive trade margin. Table 11 in the Appendix shows estimation results for simple diff-in-diff estimations according to Equation 4 exclusively for imports from the U.S. The results support the findings illustrated in Table 3 qualitatively and quantitatively .

Table 3: EU Steel Retaliation: Trade Effects, Triple-Diff

	Δ Prices		Δ Quantities		Δ Volumes	
	(1)	(2)	(3)	(4)	(5)	(6)
US	0.08	0.08	-0.06	-0.07	0.01	0.01
	(11.62)***	(12.56)***	(-6.19)***	(-6.76)***	(1.09)	(1.09)
25 Percent Tariff	-0.01	-0.01	0.02	0.02	0.01	0.01
	(-2.48)**	(-2.62)**	(1.94)*	(1.83)*	(0.92)	(0.92)
25 Percent Tariff × US	0.04	0.04	-0.48	-0.48	-0.44	-0.44
	(1.72)*	(1.67)	(-8.17)***	(-8.18)***	(-9.65)***	(-9.65)***
10 Percent Tariff	-0.13	-0.11	0.28	0.25	0.14	0.14
	(-1.94)*	(-1.61)	(3.03)***	(2.88)***	(1.68)	(1.68)
10 Percent Tariff × US	0.20	0.20	-0.32	-0.31	-0.11	-0.11
	(1.54)	(1.54)	(-1.15)	(-1.13)	(-0.50)	(-0.50)
Importer FE		✔		✔		✔
Industry FE		✔		✔		✔
Observations	1,812,207	1,812,207	1,812,207	1,812,207	1,812,207	1,812,207

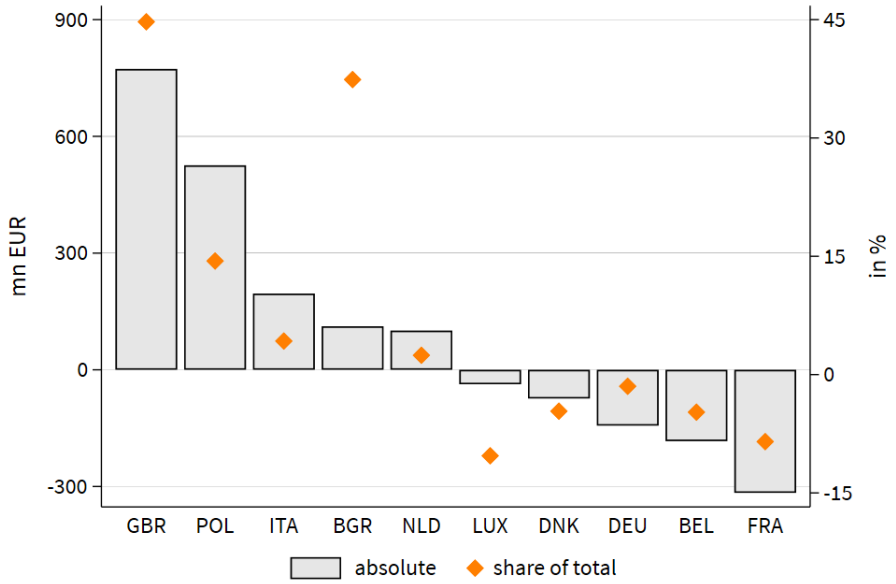
Source: EU Commission, 2019. Comext, 2019. Own calculations.

Note: Ordinary least square estimates, dependent variables are log-transformed and differentiated, t-statistics in parentheses. Change of dependent variable is $(e^{\beta} - 1) \times 100\%$. Standard errors are clustered at the country level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

Reaction of intra-EU Exports According to standard trade models, imports should not only divert away from the exporter that is harmed by new trade barriers; a substitution effect should ensure the replacement of U.S. imports with imports from other suppliers. This can either occur due to an expansion of domestic production or by means of imports from third countries. This paragraph focuses on domestic adjustments, i.e. intra-EU

trade. Intra-EU trade of treated products increased by 3.2 percent, compared to 2.3 percent for non-treated products. In absolute terms, the increase of the former amounts to 1.5 bn EUR on a half yearly basis. Increases vary greatly across EU Member States. Figure 2 depicts the five Member States with the largest increases and decreases in exports of treated products, respectively. Both in absolute and relative terms, the UK's exports increased the most: within one year, British exports increased by 45 percent, or 773 mn EUR.[32] Poland follows in absolute terms (+526 mn EUR), and Bulgaria in relative changes (+37 percent). French sales of treated products, on the other hand, declined by 317 mn EUR, or 8 percent. In relative terms, Luxembourg is the country that is most negatively affected, with exports decreasing by 10 percent. The reduction of intra-EU exports in some EU Member States may point to increased domestic absorption triggered by declining imports from the U.S.

Figure 2: EU Steel Retaliation: Change in intra-EU Exports, mn EUR



Source: EU Commission, 2019. Comext, 2019. Own illustration.

Note: The figure displays the change in intra-EU exports of products treated with retaliatory tariffs. Changes reflect differences of exports between 2018 (first half-year) and 2019 (first half-year). Absolute values are denoted in million EUR. Selected Member States are among the top 5 with the largest increases and the top 5 with the largest decreases.

Table 12 in the Appendix shows the estimation results for intra-EU trade effects of the retaliatory tariffs estimated according to Equation 4. The estimation follows the above described diff-in-diff framework. 25 percent tariffs have no statistically significantly impact prices, quantities, or trade volumes. Exports of products treated with a 10 percent tariff, by contrast, increased by 31 to 35 percent in terms of quantities. Prices drop by 12 to

[32]This increase is almost entirely driven by sales of motorboats, which increased from 152 to 948 mn EUR.

15 percent. These two effects work in opposite directions so that volume effects are not statistically significant despite positive point estimators. This is evidence for the absence of substantial trade diversion effects.

Reaction of Third Country Exports Former EU imports from the U.S. can be substituted by imports from third countries. The estimated trade effects according to Equation 4 for imports from the rest of the world are shown in Table 13 in the Appendix. Import trade volume of treated products does not change significantly. It appears that import prices of products treated with a 10 percent tariff increase by 19 to 22 percent. Interestingly, the 25 percent tariff treatment does not lead to higher import prices. Quantities do not adjust significantly in specifications that include fixed effects. This is additional evidence that there are no measurable trade diversion effects.

5.2 EU 2019/2020 Countervailing Duties (Boeing)

EU countervailing duties are not yet in place but a longlist was announced in April 2019. The EU is currently seeking approval from the WTO to compensate for the unlawful subsidization of Boeing. The list contains 390 8-digit products, 11 of which were not traded in 2018.[33] See Section 5.3 for a detailed discussion of non-traded products. Corresponding imports amount to 25.7 bn EUR or 9.6 percent of total imports from the U.S. in 2018.[34] Products of 33 HS-2-digit industries could be subject to retaliatory tariffs; 4.7 percent of traded product lines are affected. The intensive trade margin is affected twice as much as the extensive trade margin, which is entirely outlier-driven: the U.S. aircraft industry is affected by tariffs on three product lines whose export volume to the EU amounts to 16 bn EUR.[35] Other targeted industries are mining (tariffs on coal, 2 products worth 1.5 bn EUR of imports) and machinery (7 products worth 1.3 bn EUR of imports). Thus, EU countervailing duties are first and foremost directed to U.S. aircraft exports whose subsidies are the bone of contention in this trade dispute. The average import volume of treated non-aircraft products is very low, namely 25 mn EUR. Hence, the observed pattern is similar as described in Section 5.1. The EU seems to target the extensive trade margin in particular, i.e. many products with low import volumes.

Exposure by EU Member State Figure 3 shows the import volume affected by Member State, both in absolute terms as well as relative to total imports from the U.S. Ireland is by far the most severely affected EU Member State: 52 percent of the country's

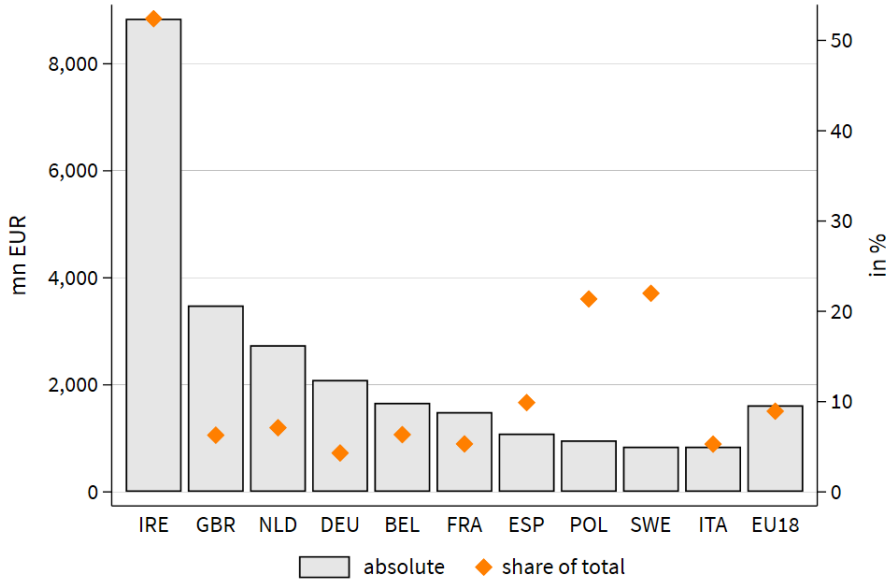
[33] A few of these non-traded products belong to the same 6-digit product line as other treated products with strictly positive import volume. Their treatment might could indicate that tariff evasion due to misclassification should be avoided.

[34] Please note that retaliatory tariffs described in Section 5.1 are still in place and would add to these CVDs.

[35] The lion's share of this, more than 15 bn EUR, is the export of large aerplanes.

imports from the U.S. could be subject to EU tariffs in near future. In absolute terms, Irish imports of 8.8 bn EUR are at stake- That amounts to more than twice as much as British imports (3.5 bn EUR) and four times as much as German imports (2.1 bn EUR), making Germany the least affected economy in relative terms (4.3 percent). France and Italy (both 5.3 percent) show little exposure, too, whereas Polish (21 percent) and Swedish (22 percent) exposure is much higher. In contrast to retaliatory tariffs described in Section 5.1, the distribution of potential cost due to countervailing duties regarding Boeing subsidies is strikingly unbalanced across EU Member States. Apparently, other reasons than balancing import exposure must be at the core of this selection process.

Figure 3: EU Boeing Retaliation: Trade Volumes Affected, mn EUR and %



Source: EU Commission, 2019. Comext, 2019. Own illustration.

Note: The figure displays the trade volumes affected by 2019 EU retaliatory tariffs for selected EU Member States. Imports refer to 2018 annualized values. Absolute values are stated in million EUR (left axis), and their shares of the total import volumes are stated in percent (right axis). EU18 comprises all EU Member States unless indicated separately.

Product Selection – Beggar-thy-Neighbor With respect to the elasticity approach outlined in Section 3, estimation results specified by Equation 2 are depicted in Table 4. Coefficients for export supply elasticities point in the expected direction but are insignificant. Interestingly, import demand elasticities are significantly negatively correlated with the probability of a tariff being selected for retaliation. This effect is not particularly sizeable but remains robust across specifications. Hence, tariff revenue maximization might be one motive for the selection of tariffs.

Table 4: Trade Elasticities and the Selection of Tariffs 2/4

	Pr(τ=1)					
	(1)	(2)	(3)	(4)	(5)	(6)
Export Supply Elasticity	-0.002		-0.002	-0.002		-0.002
	(-0.87)		(-0.87)	(-0.77)		(-0.77)
Import Demand Elasticitiy		-0.005	-0.005		-0.005	-0.005
		(-5.48)***	(-5.48)***		(-5.66)***	(-5.66)***
Importer FE				✔	✔	✔
Observations	57,825	57,825	57,825	57,825	57,825	57,825

Source: EU Commission, 2019. Comext, 2019. Soderbery (2018). Own calculations.
Note: Ordinary least square estimates, coefficients display standardized beta-coefficients, t-statistics in parentheses. Standard errors are clustered at the importer level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

Product Selection – Favor-thy-Industry Examining whether industry protection plays a role in the selection of EU retaliation in the Boeing case, I employ the same linear probability estimation as defined in Equation 3. Results are shown in Table 5. An MFN tariff increase by 1 percentage point increases the probability for product k being selected for retaliation by 0.2 to 0.3 percentage points. Interestingly, this effect reverses when including industry-fixed effects. In this c ase, a tariff increase by 1 percentage point makes a selection by 0.4 percentage points less likely. This implies that products from industries with tariffs higher than average are chosen. Within industries, however, products are chosen whose tariffs are relatively lower. Expressed in absolute numbers, the MFN tariff of selected products equals 5.5 percent, 1.2 percentage points higher than MFN rates of non-treated products. Specific tariffs make the selection for retaliation by 9.5 to 9.6 percent more likely. This effect diminishes after including industry-fixed effects as specific tariffs are only applied to products in a small subset of HS-2-digit industries. A negative coefficient for other protection measures is statistically insignificant. These results indicate that already protected industries benefit from additional protection by retaliatory tariffs.

Table 5: Industry Protection and the Selection of Tariffs 2/4

	Pr(τ=1)					
	(1)	(2)	(3)	(4)	(5)	(6)
MFN Tariff Rate (%)	0.002		0.003	-0.004		-0.004
	(2.00)**		(2.28)**	(-2.67)***		(-2.54)**
Specific Tariff		0.095	0.096		0.020	0.007
		(1.93)*	(1.97)*		(0.47)	(0.16)
Other Protection		-0.032	-0.045		-0.079	-0.066
		(-0.91)	(-1.34)		(-1.65)	(-1.53)
Industry FE				✔	✔	✔
Observations	8,278	8,278	8,278	8,278	8,278	8,278

Source: EU Commission, 2019. WTO, 2020. Own calculations.
Note: Ordinary least square estimates, t-statistics in parentheses. Standard errors are clustered at the industry level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

5.3 U.S. 2019 Countervailing Duties (Airbus)

Following the initial announcement in April 2019, U.S. CVDs in response to illegal Airbus subsidies took effect on October 18, 2019. Differences between the preliminary tariff list (hereinafter referred to as the longlist) and the final list are striking: the longlist contains 308 8-digit products, the final list includes 158 products, which are sub-headings of 19 HS-2-digit sectors. This reduction was necessary since the WTO granted retaliatory measures of only 7.5 bn USD, while the U.S. had requested authorization for retaliatory measures of 11 bn USD. This number was reflected by the longlist. For reasons of credibility and transparency, the final list is expected to be a strict subset of the longlist. This is not the case: only 106 products are identical implying that the final list contains 52 "new" products.

The U.S. concentrate their retaliatory measures not only on imports from countries who are directly or indirectly shareholders of Airbus[36] but expand them also on all other EU Member States. The final list includes 15 sections defining distinct groups of affected Member States. According to 2018 trade data, 28 products from the list were not imported at all. This is all the more interesting, as some sections of the tariff list are aimed at one specific country only. In particular when selecting products that are relevant only to single countries—in this case these are Germany and the UK—, strictly positive import volumes are to be expected. Obviously, Type 1 and Type 2 tariffs fall short to explain this selection, particular as some of these products are unique within their HS-6-digit subheading. Hence, it is unlikely that these products are on the list only to avoid potential tariff evasion by misclassification. On the one hand, some of these 28 products may have been included in the longlist "by mistake". However, it is questionable how 8 of these

[36]These are France, Germany, Spain, and the United Kingdom.

product lines were not originally part of the longlist but were eventually included in the final list. On the other hand, rent-seeking could provide the cause: even without current import competition, industries might lobby for protection in anticipation of future import competition. The 28 products are mainly dairy products and certain types of cheese.

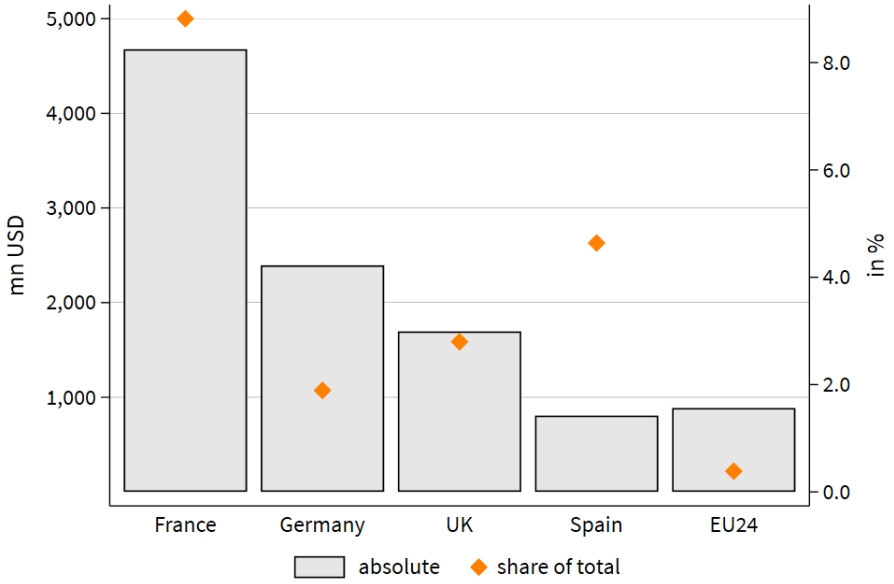
Exposure by EU Member State Figure 4 depicts the affected trade volumes and the relative exposure to U.S. CVDs for the four Airbus shareholder countries and the rest of the EU. The total volume of exports that is affected by additional tariffs amounts to 10.5 bn USD. A duty of 10 percent is levied on new airplanes (not included are parts thereof), whereas all other products (5.4 bn USD) are subject to 25 percent ad-valorem tariff. The total amount exceeds the 7.5 bn USD granted by the WTO; this is because one 8-digit product line is only partially covered by the tariff list.[37] France is affected the most, both in relative as well as in absolute terms. French exports of 4.7 bn USD, or more than 8.8 percent of total exports to the U.S. are affected by retaliatory tariffs. Germany ranks second in absolute terms but is, in relative terms, the least affected Airbus shareholder nation (1.9 percent of total exports). Other EU Member States' exports worth 870 mn USD (0.4 percent of their total exports) are subject to U.S. CVDs. Malta, Croatia, and Slovakia are not affected at all.

Table 10 in the Appendix shows the number of affected product lines per country. At the extensive margin, countries are affected differently by U.S. CVDs: the numbers for Germany (59), the UK (54), and Spain (44) are fairly proportionate to the affected trade volume. The mean trade volume per product line is between 18 (Spain) and 41 (Germany) mn USD. For France, by contrast, CVDs apply to only two product lines: airplanes and (bottled) wine.[38] The import of French wine alone amounts to 1.2 bn USD in 2018 and is now subject to an additional 25 percent tariff rate.

Potential Trade Deflection There are two reasons why the U.S. focuses its retaliation measures so heavily on the French wine industry. First, France and the U.S. are involved in another politically sensitive trade dispute over a French Digital Services Tax (see Section 5.4). Second, wine (as many other processed food products) is well-suited to avoid trade deflection. Trade deflection is a sort of tariff evasion that exploits tariff differentials in triangular trade relationships. Without the application of rules of origin (RoO), trade deflection would be most profitable the higher the tariff differential and the lower the additional transportation cost (Felbermayr et al., 2019). With respect to U.S. CVDs, these conditions hold true: The EU constitutes a customs union that does not require RoO. This makes it difficult for the U.S. to sustain a tariff scheme that discriminates between EU Member States. Affected products from one Member State could easily be

[37]This refers to the HTS Code 8802.40.00 (airplanes), of which only a portion of sub-headings is to be covered by CVDs. Of imports worth 5.1 bn USD, only 2.1 bn USD are effectively treated with CVDs.
[38]HTS Codes 8802.40.00 and 2204.21.50.

Figure 4: U.S. Airbus Retaliation: Trade Volumes Affected, mn USD and %



Source: USITC, 2020. USTR, 2020. Own illustration.

Note: The figure displays trade volumes affected by U.S. 2019 CVDs for Airbus shareholders and other EU Member States. Imports refer to U.S. 2018 annualized values. Absolute values are denoted in million USD (left axis), and their shares of the total import volumes are denoted in percent (right axis). EU24 comprises all EU Member States unless indicated separately.

shipped to another Member State that is exempt from retaliation. Moreover, costs of shipment between EU Member States are relatively low compared to a 25 percent ad-valorem tariff.

Out of 158 selected products, the U.S. has chosen only 51 product lines, for which no EU Member States is exempted. Thus, trade deflection is theoretically possible for 107 product lines. Once post-treatment U.S. import data are available, evaluating the effect of trade deflection could be the subject of further research. However, trade deflection affects the set-up of a list with retaliatory tariffs: selecting products with protected designations of origin or other geographical indications avoids trade deflection. With tongue in cheek: French wine does not become Polish wine if it is shipped to Poland for export to the U.S. And if producers were to relabel French wine as Polish wine, they would lose much of their value; this procedure is therefore not qualified to effectively circumvent CVDs. Taking into consideration the entire U.S. retaliatory tariff list, it is striking that the U.S. predominantly targets products that lack the character of a commodity and are therefore less prone for trade deflection.

Product Selection – Beggar-thy-Neighbor Please note that for EU Member States' exports to the U.S., only 7 percent of product lines meet an optimal tariff rate of more than 10 percent according to the optimality condition defined by Equation 1 (cf. Section

3). Table 6 presents estimation results for U.S. retaliatory tariffs based on the linear probability model outlined in Equation 2. Two observations are particularly striking: the more inelastic the supply curve, the higher the probability that a certain product is chosen for retaliation. This effect is robust when controlling for exporter-fixed effects. In terms of magnitude, however, it is relatively small.[39] On the contrary, demand-side elasticity considerations have no statistically significant effect on the product selection process. Nevertheless, these results provide evidence for the presence of beggar-thy-neighbor-type tariffs.

Table 6: Trade Elasticities and the Selection of Tariffs 3/4

	Pr(τ=1)					
	(1)	(2)	(3)	(4)	(5)	(6)
Export Supply Elasticity	-0.002		-0.002	-0.002		-0.002
	(-5.01)***		(-5.01)***	(-9.67)***		(-9.66)***
Import Demand Elasticitiy		0.001	0.001		0.000	0.000
		(0.34)	(0.34)		(0.25)	(0.25)
Exporter FE				✔	✔	✔
Observations	68,457	68,457	68,457	68,457	68,457	68,457

Source: USITC, 2020. USTR, 2020. WITS, 2020. Soderbery (2018). Own calculations.
Note: Ordinary least square estimates, coefficients display standardized beta-coefficients, t-statistics in parentheses. Standard errors are clustered at the country level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

Product Selection – Favor-thy-Industry Table 7 shows estimation results for the linear probability estimation according to Equation 3. The ad-valorem MFN tariff rate in place has no measurable effect on the probability of a product being selected. The average tariff rate for treated products is 4.6 percent, 0.5 percentage points higher than for non-treated products. In fact, products that are subject to specific tariffs have a 4.4 percentage points higher probability to become part of the U.S. retaliation list. This effect diminishes when including industry-fixed effects. This is additional evidence for some sort of industry protection: not certain products, but industries which are generally more protected—specific tariffs apply only to a subset of industries—are likely to benefit more from additional protection through retaliatory tariffs. In terms of magnitude, however, this effect is relatively small.

[39] Coefficients in Table 6 are displayed as standard beta-coefficients. Accordingly, a one standard deviation increase of the dependent variable leads to a change of the independent variable by $\beta\times$ the standard deviation of the independent variable.

Table 7: Industry Protection and the Selection of Tariffs 3/4

	Pr(τ=1)					
	(1)	(2)	(3)	(4)	(5)	(6)
MFN Tariff Rate (%)	0.000		-0.000	-0.000		-0.000
	(0.48)		(-0.25)	(-0.17)		(-0.19)
Specific Tariff		0.044	0.044		0.005	0.005
		(2.27)**	(2.35)**		(0.30)	(0.30)
Industry FE				✔	✔	✔
Observations	9,574	9,574	9,574	9,573	9,573	9,573

Source: USITC, 2020. USTR, 2020. Own calculations.
Note: Ordinary least square estimates, t-statistics in parentheses. Standard errors are clustered at the industry level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

Towards Carousel Retaliation On March 18, 2020, the U.S. revises its countermeasures against EU Member States and the United Kingdom.[40] Tariffs on civil aircraft and aircraft parts should be raised from 10 to 15 percent ad-valorem.[41] Non-aircraft tariffs remain at 25 percent and are subject to only one change: prune juice is removed from the list and replaced by butchers' knives. Interestingly, European prune juice exports were not affected by the initial retaliatory tariffs. It belongs to Section 14 of the tariff list, which targets all EU Member States except France. However, the only positive export volumes come from France. Tariffs on butchers' knives are limited to imports from Germany and France. The total volume amounts to 13k USD per year. This slight modification points to several open questions: what are the reasons for imposing a tariff on zero trade flows by exempting the only exporter? And why, instead of revoking this exemption, is the relevant product replaced by another product whose export volume is entirely irrelevant?

5.4 U.S. 2019/2020 Retaliatory Tariffs (French DST)

The U.S. and France are involved in another dispute over a French "digital services tax" (DST), which is—according to U.S. officials—discriminatory against U.S. tech giants.[42] In December 2019, the USTR published a list including 63 8-digit products that can be subject to 100 percent ad-valorem tariffs in the event that the DST issue is not resolved in the near future. The WTO is not involved in this dispute. On the one hand, the tariff list specifies the compensation for expected losses due to the French DST and serves to discourage potential imitators. On the other hand, it can be argued that the list raises the escalation level to resolve another trade conflict between the U.S. and France, namely the liberalization of European agricultural and food markets within the framework of a

[40] On February 15, 2020, the USTR notified about modifications of their measures due to illegal Airbus subsidies. The revised tariff list can be accessed here (*Modified Shortlist*).
[41] At the time of writing this study, the tariff rate increase has been suspended.
[42] The U.S. initiated a Section 301 investigation in 2019.

transatlantic free trade agreement.

The selected products represent 2.4 bn USD or 4.4 percent of U.S. imports from France in 2018. Two products from the list were not imported in 2018.[43] The selection of products resembles the pattern discussed before (cf. Section 5.3). Relevant trade volumes are only affected in three industries: cosmetics (5 product lines, 918 mn USD), sparkling wine (1 product line, 707 mn USD), and handbags (10 product lines, 408 mn USD). These are, again, products with strong brand attachment which makes them less prone to trade deflection.

Product Selection – Beggar-thy-Neighbor Table 8 displays estimations results according to Equation 2. Apparently, neither import demand nor export supply elasticities are statistically significantly correlated with the probability of a product being selected for retaliation.

Table 8: Trade Elasticities and the Selection of Tariffs 4/4

	Pr(τ=1)					
	(1)	(2)	(3)	(4)	(5)	(6)
Export Supply Elasticity	0.003		0.003	0.004		0.004
	(0.90)		(0.90)	(1.89)*		(1.89)*
Import Demand Elasticitiy		-0.002	-0.002		0.000	0.000
		(-0.90)	(-0.90)		(0.09)	(0.09)
Industry FE				✔	✔	✔
Observations	6,190	6,190	6,190	6,190	6,190	6,190

Source: USITC, 2020. USTR, 2020. WITS, 2020. Soderbery (2018). Own calculations.

Note: Ordinary least square estimates, coefficients display standardized beta-coefficients, t-statistics in parentheses. Standard errors are robust heteroskedasticity. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

Product Selection – Favor-thy-Industry In case of retaliatory tariffs on French products, industry protection arguments cannot be substantiated. Estimation results based on Equation 3 are shown in Table 9. Despite the fact that MFN tariffs of treated products amount to 6.9 percent compared to 4.1 percent of non-treated products, a positive relationship between MFN tariffs and the probability of tariff selection cannot be established. Point estimates are positive. With respect to specific tariffs, point estimates are positive without industry-fixed effects and change sign when including the latter. These coefficients are not statistically distinguishable from zero.

[43] HTS Codes 0406.30.48 and 0406.10.84 refer to Edam/Gouda cheese and fresh cheese, respectively. The likely reason for including these products might be to avoid tariff evasion by misclassification.

Table 9: Industry Protection and the Selection of Tariffs 4/4

	Pr(τ=1)					
	(1)	(2)	(3)	(4)	(5)	(6)
MFN Tariff Rate (%)	0.001		0.001	0.001		0.001
	(1.17)		(1.07)	(1.17)		(1.22)
Specific Tariff		0.015	0.013		-0.011	-0.012
		(0.82)	(0.68)		(-0.92)	(-1.02)
Industry FE				✔	✔	✔
Observations	6,384	6,384	6,384	6,384	6,384	6,384

Source: USITC, 2020. USTR, 2020. Own calculations.
Note: Ordinary least square estimates, t-statistics in parentheses. Standard errors are clustered at the industry level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

6 Towards a Transparent Protocol for Retaliation

Retaliation by tariff barriers is designed to compensate for unilateral protectionism. Moreover, if the threat to retaliate is credible, retaliatory tariffs should prevent unilateral protectionism ex ante. This optimistic view might turn out to be wrong as such tariffs actually enter into effect. However, recent developments in international trade relations show that, once tariffs are in place, political negotiations on their simultaneous reduction are initiated. It is yet too early to finally assess the effectiveness of this power-based trade policy approach. However, retaliation, i.e. the withdrawal of substantially equivalent of concessions, is not just a form of power-projection but in fact highly relevant for the functioning of the rules-based trading system. This is why policy makers should increase their efforts to evaluate the effectiveness of tariff retaliation. Additionally, to avoid giving the impression that "protection is for sale", governments could define protocols that define the product selection in the event of trade conflicts. For this purpose, I propose the following guidelines:

1. **Transparency** could serve as commitment device to avoid succumbing to industry lobbyists at the expense of domestic consumers. Policy makers would have to justify their decisions and could be held politically accountable for non-transparent procedures.

2. **Tariff incidence** should be shifted towards the counterparty to the greatest possible extent. This would require a commitment from policy makers to an elasticity approach. In this way, the proposed procedure would continue to allow tariff selection to be motivated by political considerations, i.e. concentrating losses to certain industries or regions. This objective function could actually be maximized under to constraint of a maximum level of domestic welfare.

3. **Non-traded products** should only be subject to retaliatory tariffs if tariff evasion due to misclassification is likely. Otherwise, the only reasons for these tariffs would be arguments of industry protection which are not justified by the very purpose of retaliatory tariffs.

4. **Uncertainty** for the counterparty should be maintained in a sense that the selection of products for retaliation cannot be fully anticipated. Otherwise, under perfect foresight, trade compensation measures could be implemented already in advance rendering politico-economic tariffs ineffective. Hence, random samples could be drawn from a longlist defined by an elasticity approach as described in Point (2).

5. **Carousel retaliation** could be applied in order to increase uncertainty and to avoid compensating measures by the foreign government. It is also unclear, whether foreign producers would perceive carousel-type relation as overly punitive as it limits individual losses and distributes costs borne by the economy more evenly. A prerequisite for its deployment should be, however, WTO-compliance. It would be desirable if the WTO provides legal certainty on this sort of retaliation.

6. **In case of the EU,** adverse effects on Member States could be compensated by redistribution but should not play a role in the selection of products for retaliation. Choosing products other than those defined as "optimal" by Point (2) comes at the cost of domestic welfare.

7. **In case of the U.S.,** the possibility of trade deflection has to be taken into consideration. Applying an asymmetric tariff scheme to member states of customs union is unstable and will lead to unintended side-effects. In order to avoid trade deflection it would either be necessary to impose symmetric measures against all EU Member States or to select products with strong brand attachment or geographical indications. The latter, of course, is limited to the number of traded products belonging to this category.

Obviously, an elasticity approach that defines a welfare maximizing selection of products has steep data requirements on reliable import demand and export supply elasticities. The lack of the same is a well-known obstacle for researchers; but solid data could—as this study tries to emphasize—is of utmost importance for applied trade policy. Hence, all institutions in charge should increase their efforts to improve the quality of international trade data. Such a protocol as a first-best solution requires strong commitment by the relevant institutions as well as reliable trade elasticity data. Both could limit its implementation in practice. Thus, also a second-best procedure should be taken into consideration. Acknowledging the fact that protection is to some extent for sale, and that lobbyism cannot be ignored, the question arises: why not make protection for sale?

Producers, e.g. individual firms or industry associations, could bid for levying tariffs on certain product lines. Products receiving the highest bids (e.g., per million of affected import value) could be chosen until the total targeted import volume reaches the amount intended for retaliation. A second-price auction would encourage firms to reveal their true willingness-to-pay. Such an auction for tariffs would largely extract protection rents and revenues could easily be redistributed. In contrast to lobbyism , the proposed approach constitutes a transparent procedure that prevents the privatization of protection rents by producers.

7 Concluding Remarks

This study contributes by providing a brief history of the idea and the use of retaliation in the field of international trade. Moreover, this study gives an overview of recent transatlantic trade disputes and categorizes different types of retaliatory tariffs according to GATT. Section 3 outlines three motives that can explain the product selection for retaliation: shifting the tariff incidence abroad according to optimal tariff theory, concentrating losses abroad in politically sensitive regions or industries, and rent-seeking by domestic lobbyists. I find evidence that for the U.S. tariff selection is motivated by a beggar-thy-neighbor approach. With respect to the EU, some evidence points in the direction that tariff revenue maximizing might be objective when choosing products for retaliatory tariffs. Political motives, by contrast, seem to play a more important role: targeting certain relevant industries in the foreign country, e.g. French wine producers, is presumably better suited to induce a policy change than imposing tariffs on a variety of product lines that are traded at low values. However, this observation is based on anecdotal evidence and needs to be further elaborated.

This paper also argues that trade deflection is a severe issue for the U.S.—as it would be for any other trade opponent of the EU—when retaliating against only specific Member States of the EU. Most likely, asymmetric tariffs on members of a customs union cannot be sustained for a longer period of time. Therefore, the U.S. has selected products with strong brand attachment and geographical indications which are less prone to trade deflection. These are novel insights that have not been discussed in the literature. Both the EU and the U.S. have treated products with retaliatory tariffs even in the absence of positive trade volumes. In some cases, this could prevent tariff evasion through misclassification; but in other cases, domestic lobbyism is the most probable cause. This study also performs a brief impact evaluation of EU tariff retaliation in response to U.S. steel and aluminum tariffs in 2018. Imports of treated products from the U.S. fall by 36 percents; the decline occurred mainly in the intensive trade margin. U.S. suppliers, however, do not react by lowering their export prices. Moreover, there is little evidence that the EU also hase some terms-of-trade power resulting in lower import prices from third countries.

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Appendix

Table 10: U.S. 2019 CVDs (Airbus): Products and Trade Volume Affected, mn USD and %

	Number of products affected	Import value affected	Imports value total	Share affected %
France	2	4,677	53,037	8.8
Germany	59	2,394	126,536	1.9
UK	54	1,696	60,595	2.8
Spain	44	806	17,377	4.7
EU24	64	886	228,857	0.4

Source: USITC, 2020. USTR, 2020. Own calculations.

Note: The table lists the number product lines (Column 1) and trade volumes (Column 2) affected by U.S. 2019 CVDs for Airbus shareholders and other EU Member States. Column (3) displays the total import volume in 2018. Column (4) displays the share of imports in % that is affected by U.S. 2019 CVDs. EU24 comprises all EU Member States unless indicated separately.

Table 11: EU Steel Retaliation: Trade Effects U.S.

	Δ Prices		Δ Quantities		Δ Volumes	
	(1)	(2)	(3)	(4)	(5)	(6)
25 Percent Tariff	0.03	0.01	-0.43	-0.42	-0.46	-0.43
	(1.44)	(0.28)	(-9.71)***	(-8.93)***	(-8.25)***	(-6.45)***
10 Percent Tariff	0.07	0.07	0.03	0.01	-0.04	-0.06
	(0.63)	(0.61)	(0.13)	(0.03)	(-0.16)	(-0.21)
Importer FE		✔		✔		✔
Industry FE		✔		✔		✔
Observations	77,777	77,777	77,777	77,777	77,777	77,777

Source: EU Commission, 2019. Comext, 2019. Own calculations.

Note: Ordinary least square estimates, dependent variables are log-transformed and differentiated, t-statistics in parentheses. Change of dependent variable is $(e^{\beta} - 1) \times 100\%$. Standard errors are clustered at the country level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

Table 12: EU Steel Retaliation: Trade Effects intra-EU

	Δ Prices		Δ Quantities		Δ Volumes	
	(1)	(2)	(3)	(4)	(5)	(6)
25 Percent Tariff	-0.01	-0.01	0.01	0.01	0.01	0.01
	(-1.42)	(-1.91)*	(1.44)	(1.27)	(0.78)	(0.64)
10 Percent Tariff	-0.16	-0.13	0.30	0.27	0.15	0.14
	(-3.15)***	(-1.79)*	(3.26)***	(2.77)**	(1.81)*	(1.50)
Importer FE		✔		✔		✔
Industry FE		✔		✔		✔
Observations	1,587,487	1,587,487	1,587,487	1,587,487	1,587,487	1,587,487

Source: EU Commission, 2019. Comext, 2019. Own calculations.

Note: Ordinary least square estimates, dependent variables are log-transformed and differentiated, t-statistics in parentheses. Change of dependent variable is $(e^{\beta}-1)\times 100\%$. Standard errors are clustered at the country level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.

Table 13: EU Steel Retaliation: Trade Effects Third Countries

	Δ Prices		Δ Quantities		Δ Volumes	
	(1)	(2)	(3)	(4)	(5)	(6)
25 Percent Tariff	-0.03	-0.02	0.05	0.04	0.03	0.02
	(-1.79)*	(-1.04)	(2.59)**	(1.48)	(1.63)	(1.01)
10 Percent Tariff	0.20	0.17	-0.07	-0.01	0.13	0.16
	(2.36)**	(2.05)*	(-0.63)	(-0.07)	(0.88)	(1.05)
Importer FE		✔		✔		✔
Industry FE		✔		✔		✔
Observations	146,943	146,943	146,943	146,943	146,943	146,943

Source: EU Commission, 2019. Comext, 2019. Own calculations.

Note: Ordinary least square estimates, dependent variables are log-transformed and differentiated, t-statistics in parentheses. Change of dependent variable is $(e^{\beta}-1)\times 100\%$. Standard errors are clustered at the country level. ***, ** and * indicate statistical significance levels for p-val. < 0.01, p-val. < 0.05, and p-val.< 0.1.