

# Trade Diversion Effects and Export Losses Generated by Tariffs for the Chinese and the U.S. Exporting Sectors in the Context of the Trade War

Cristian Inderkumer

Shanghai University  
 inderkumer[at]gmail.com

**Abstract:** *In 2018 the U.S. imposed tariffs on Chinese imports. Immediately, China retaliated. Therefore, a trade war started. In this context, the question investigated is: what are the effects of the tariffs for Chinese and U.S. exporting sectors? The methodology is based on empirics. To assess trade diversion effects and export losses generated by tariffs this paper presents descriptive statistics making use of the Trade Map datasets at the HS2 level from the International Trade Centre. The research compares the trade patterns of the first half of 2019 with the ones of the first half of 2018. In this sense, the results show that a) the effects of tariffs imposed by the U.S. generated trade diversion effects to the detriment of Chinese exporting sectors (US\$ 32 billion losses) and to the advantage of other regions (US\$ 35 billion); and b) the effects of the tariffs imposed by China caused export losses for American exporters (US\$ 25 billion). Some regions benefitted from this situation. However, the decrease of Chinese imports from the U.S. was not followed by additional imports from other regions, but for a big fall (US\$ 19 billion). Therefore, the trade loss was US\$ 44 billion.*

**Keywords:** International Trade; Tariffs; Trade Barriers; Trade Diversion; Trade War.

## 1. Introduction

At the end of 2001 China entered the WTO, opening a new era in international trade. In the last decades, China and the U.S. trade increased rapidly with a marked imbalance in China's favor. According to U.S. Census Bureau Data (n.d.), while in 1990 the U.S. deficit was US\$ 10.4 billion, in 2020 the figure reached US\$ 310.2 billion. Later in time, in 2018, former U.S. President Trump imposed tariffs on Chinese imports. China retaliated also with tariffs on U.S. imports and, therefore, a trade war started. In this sense, both nations' policymakers presented its arguments that resulted in the main causes of the commercial conflict. In addition, this trade confrontation had multiple battles and there was an escalation of tariffs. In this respect, international trade, China – U.S. commercial relations and exporting sectors of both nations have already been damaged. Even though China and the U.S. announced in December 2019 the Phase One Trade Deal with the main aim of finding a solution, the trade war will probably not end soon. The persistence of an ambiguous context is the most valid, i.e., neither war nor peace as stable scenarios, but the entry into a periods of tensions alternating with moments of negotiation. This seems to be the most likely cycle for the U.S. - China trade relations for the next few years.

In relation to the relevance, this paper attempts to shed light on the harmful effects of trade wars on international trade. The history already proved that these kind of conflicts mean a general reduction in world trade and welfare and bring damaging consequences, mainly in the economies and societies involved. In line with Rosenberg (2012), a good example happened in the first half of the twentieth century. The 1930 Smoot-Hawley Act had a significant impact and worsened the Great Depression of the 1930s, leading to a trade confrontation. In line with Husted and Melvin (2013), a country that engages in world trade enjoys benefits both in terms of immediate improvements in standard of living and

in terms of economic growth. In this regard and in agreement with Smith and Cannan (2003), the result of price and trade intervention “can only be to force the trade of a country into a channel much less advantageous than that in which it would naturally run of its own accord.”.

The main objective of this paper is to assess trade diversion effects and export losses generated by trade barriers, specifically tariffs, for both the Chinese and the U.S. exporting sectors. Through scientific concepts and a pertinent methodology, this research explains that tariffs injured the exporting sectors of China and the U.S.. Finally, the study hopes to contribute to the field of study of international trade.

## 2. Literature Survey

In line with Nicita (2019), tariffs raise the prices of foreign goods with the result of reducing demand for imports. In the case of tariffs applied only to specific nations, as in the U.S. - China trade confrontation, this strategy can lead to trade diversion effects as importers can avoid the tariffs by getting the goods from other regions. The various effects of tariffs frequently occur in concert as bilateral tariffs lead to higher prices for consumers, to lower profits for exporting firms, and are accompanied by trade diversion effects that benefit third regions. In this respect, bilateral tariffs make the other side's exporters less competitive and favor the replacement of imports from elsewhere. This is what is normally referred to as trade diversion effects. Nonetheless, as specified by Castillejo and Requena Silvente (2020), trade diversion is often incomplete because a) other countries do not have available productive capacity to meet the new demand; b) trade frictions may make it difficult to find competitive suppliers in other countries; and c) exporters subject to the new tariffs may reduce their prices to retain at least part of the demand.

Volume 11 Issue 5, May 2022

[www.ijsr.net](http://www.ijsr.net)

Licensed Under Creative Commons Attribution CC BY

According to Deng (2021), along the trade war, the U.S. authorities took some forms of restraint against Chinese products, such as imposing high tariffs and implementing technical barriers. These circumstances lowered the cost and increased the competitiveness of products from third regions, putting goods from China at a relative price disadvantage. In consonance with Cerutti et al (2019), trade diversion is one channel through which producers are injured. Aggregated bilateral U.S. data suggests that trade diversion happened, as the decline in imports from China seems to have been offset by an increase in imports from other regions. As reported by Nicita (2019), China’s export losses in the U.S. market resulted in trade diversion effects. American imports from Taiwan Province, Mexico, the EU and Vietnam have all considerably increased because of the U.S. tariffs on China. On the other hand, in accord with Cerutti et al (2019), in the case of soybeans, U.S. exports to China fell dramatically in 2018 after China imposed tariffs. In 2017, the United States was China’s dominant soybean supplier, along with Brazil. However, since the beginning of the trade war, the price of U.S. soybeans fell while that of Brazilian ones rose, as American exports to China dropped to near zero and Brazilian exports to China trended higher. Though prices have since re-converged and U.S. soybeans exports to China resumed to some extent, American soybeans farmers suffered, while the Brazilian ones benefitted from trade diversion.

Nicita (2019), in an outstanding paper, introduces trade diversion effects of U.S. tariffs on China. However, this author does not present trade diversion effects of Chinese tariffs on U.S. This is the main difference with this research, since this paper assesses trade diversion effects generated by tariffs for both Chinese and U.S. exporting sectors. This is an important marginal contribution of this study. Even though Bekkers and Schroeter (2020) introduce trade diversion effects on both China and U.S., there are some comments worth mentioning:

- On trade diversion effects of U.S. tariffs on China, these authors find very similar results as in Nicita (2019). Their figures show that the total decrease in Chinese imports of US\$ 35 billion dollars was compensated by an increase of imports from other regions of US\$ 21 billion dollars. These results are not the same as this paper, probably because they are based on U.S. Census Bureau data and this document collects datasets from the Trade Map from the International Trade Centre.
- On trade diversion effects of Chinese tariffs on U.S., even though these authors presents a very well detailed panels, total results are not observed, i.e., the total amount of the trade diverted to other regions and the total export losses for the U.S.

### 3. Methods

The methodology is based on empirics. In order to identify the trade levels before the trade war this paper gathers data from 2017 to 2020. To assess trade diversion effects and export losses generated by trade barriers, specifically tariffs, for both the Chinese and the U.S. exporting sectors, this research presents a descriptive statistics analysis making use of the Trade Map datasets at the HS2 level from the International Trade Centre. The research compares the trade patterns of the first half of 2019 with the ones of the first half of 2018 and these halves are quarterly divided in order to get the highest possible accuracy. Also, it is worth mentioning that since 2020 global trade and supply chains have been totally distorted by the pandemic and this is why trade diversion effects are analyzed only up to 2019. Two categories are proposed in order to fully assess trade diversion effects and export losses: a) regions and b) economic sectors.

- a) **Regions:** as shown in appendixes 1 and 3, the world is divided as displayed in the following table.

**Table 1:** Categorization by regions

Origins of U.S. imports					Origins of Chinese imports				
Africa	Asia	Europe	Oceania	The Americas	Africa	Asia	Europe	Oceania	The Americas
	China	Germany	Australia	Canada		India	Germany	Australia	Canada
	India	Rest of Europe	New Zealand	Brazil		Indonesia	Rest of Europe	New Zealand	Brazil
	Indonesia		Rest of Oceania	Mexico		Japan		Rest of Oceania	Mexico
	Japan			Rest of the Americas		South Korea			United States
	South Korea					Taiwan Province			Rest of the Americas
	Taiwan Province					Vietnam			
	Vietnam					Rest of Asia			
	Rest of Asia								

Source: own elaboration.

The data is collected from both U.S. and China imports section of the Trade Map, specifically from the totals between both U.S. and China and each of the abovementioned regions. The data is downloaded to Excel and to estimate the trade diversion, as also observed in appendixes 1 and 3, the calculation is as follows:

1) 1<sup>st</sup> quarter of 2018 + 2<sup>nd</sup> quarter of 2018 = First half of 2018.

2) 1<sup>st</sup> quarter of 2019 + 2<sup>nd</sup> quarter of 2019 = First half of 2019.  
 3) First half of 2019 – First half of 2018 = Trade diversion, exports benefits or losses.

- b) **Economic sectors:** The 99 chapters at the HS2 level are divided in 8 different groups as shown in the next table, as well as in appendixes 2 and 4.

Table 2: Categorization by economic sectors

1. Agri food.		2. Apparel, leather and textiles.	
HS code	Product description	HS code	Product description
01	Live animals.	41	Raw hides, skins and leather.
02	Meat and edible meat offal.	42	Articles of leather and others.
03	Fish, crustaceans and others.	43	Furskins.
04	Dairy produce, natural honey and others.	50	Silk.
05	Products of animal origin.	51	Wool and others.
06	Live trees and other plants.	52	Cotton.
07	Edible vegetables.	53	Other vegetable textile fibres.
08	Edible fruits and nuts.	54	Man-made filaments.
09	Coffee, tea and others.	55	Man-made staple fibres.
10	Cereals	56	Wadding, felt and nonwovens.
11	Products of the milling industry.	57	Carpets.
12	Oils seeds, oleaginous fruits, industrial or medicinal plants and others.	58	Special woven fabrics.
13	Lac, gums and resins.	59	Impregnated, coated, covered or laminated textile fabrics.
14	Vegetable plaiting materials.	60	Knitted fabrics.
15	Animal or vegetable fats and oils.	61	Articles of apparel (knitted).
16	Preparations of meat and fish.	62	Articles of apparel (not knitted).
17	Sugars.	63	Other made up textile articles.
18	Cocoa	64	Footwear.
19	Preparations of cereals, flour, starch or milk.	65	Headgear.
20	Preparations of vegetables, fruit and nuts.	66	Umbrellas and others.
21	Miscellaneous edible preparations.	67	Prepared feathers, artificial flowers and articles of human hair.
22	Beverages and vinegar.		
23	Residues from the food industries.		
24	Tobacco.		

3. Chemicals, metals, minerals and ore.		4. Machinery and electrical machinery.	
HS code	Product description	HS code	Product description
25	Salt, Sulphur, earths, stone and others.	84	Machinery, mechanical appliances and nuclear reactors.
26	Ores.	85	Electrical machinery and equipment, sound recorders and reproducers and television image.
27	Mineral fuels and oils.		<b>5. Vehicles.</b>
28	Inorganic chemicals.	HS code	Product description
29	Organic chemicals.	86	Railway and mechanical traffic signaling equipment.
30	Pharmaceutical products.	87	Vehicles other than railway.
31	Fertilisers.	88	Aircraft.
32	Tanning extracts and others.	89	Ships.
33	Essential oils and cosmetic preparations.		<b>6. Wood and paper.</b>
34	Soap, artificial waxes and others.	HS code	Product description
35	Albuminoidal substances and others.	44	Wood and wood charcoal.
36	Explosives and pyrotechnic products.	45	Cork.
37	Photographic and cinematographic goods.	46	Manufactures of straw and basketware.
38	Miscellaneous chemical products.	47	Pulp of wood.
39	Plastics.	48	Paper and paperboard.
40	Rubber.	49	Printed books, newspapers and other products.
68	Articles of stone, cement and others.		<b>7. Other goods.</b>
69	Ceramic products.	HS code	Product description
70	Glass.	90	Optical, cinematographic, measuring and medical instruments.
71	Natural or cultured pearls, precious stones and metals and others.	91	Clocks.
72	Iron and steel.	92	Musical instruments.
73	Articles of iron and steel.	93	Arms and ammunition.
74	Copper.	94	Furniture, bedding, lamps and others.
75	Nickel.	95	Toys and games.
76	Aluminium.	96	Miscellaneous manufactured articles.
78	Lead.	97	Works of art.
79	Zinc.		<b>8. Other commodities.</b>
80	Tin.	HS code	Product description
81	Other base metals.	99 <sup>1</sup>	Commodities not elsewhere specified.

<sup>1</sup> Since January 2014 data on the trade of products of chapter 98 is not reported in China foreign trade. This information is taken into account in the computation of values displayed for chapter 99.

82	Tools, spoons, forks and others.		
83	Miscellaneous articles of base metal.		

Source: own elaboration based on Trade Map (n.d.).

The data is gathered from both U.S. and China imports section of the Trade Map. In order to get deep knowledge of the trade patterns it is necessary that:

- On the U.S. side, to download to Excel the whole datasets of the 99 chapters of U.S. imports originated in China, as well as the ones from Africa, Asia (without China), Europe, Oceania, and The Americas.
- On the Chinese side, to download to Excel the whole datasets of the 99 chapters of Chinese imports originated in U.S., as well as the ones from Africa, Asia, Europe, Oceania and The Americas (without U.S.).

Each dataset needs to be rearranged according to the 8 different groups. Subsequently, it is possible to estimate the trade diversion of each economic sector with every region and with the same calculation as before:

- 1st quarter of 2018 + 2nd quarter of 2018 = First half of 2018.
- 1st quarter of 2019 + 2nd quarter of 2019 = First half of 2019.
- First half of 2019 – First half of 2018 = Trade diversion, exports benefits or losses.

Finally, the results can be transferred to appendixes 2 and 4.

#### 4. Results

The reduction in imports for both China and the U.S. generated by the imposed tariffs is shown in the following table.

**Table 3:** trade between China and the U.S. (2017 – 2019) [Unit : US\$ Dollar thousand]

	U.S. imports from China			Chinese imports from U.S.		
	2017	2018	2019	2017	2018	2019
<b>Import value</b>	525,748,647	562,700,012	470,950,852	154,839,684	156,004,357	123,235,656
<b>% variation</b>		7%	-16%		1%	-21%

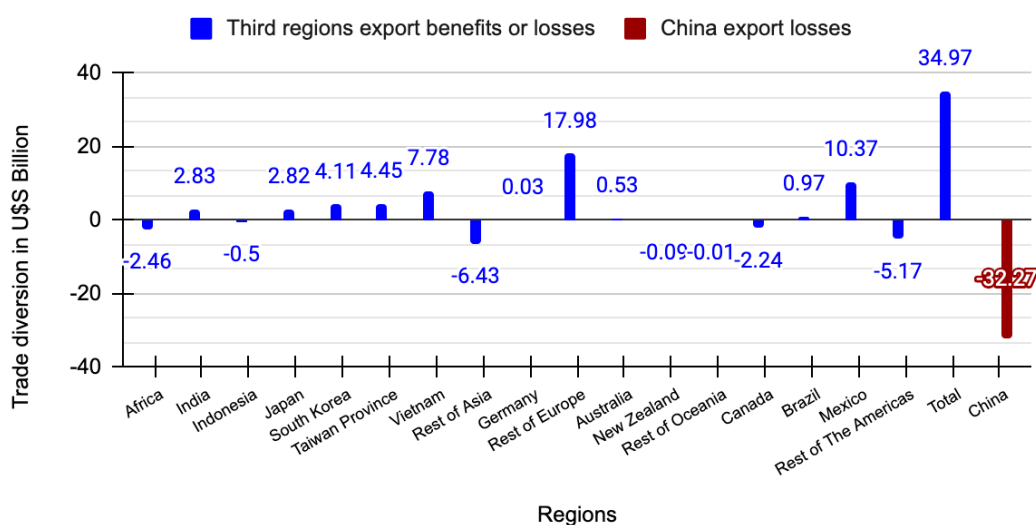
Source: own elaboration based on Trade Map (n.d.).

The above table shows the import values downturn in 2019 generated by the implementation of tariffs. In this year, compared to 2018, the bilateral trade fell dramatically, as U.S. imports from China decreased by 16% and Chinese imports from the U.S. declined 21%. In the next two sections the situation is assessed in details.

#### U.S. imports. Chinese export losses. Third regions and economic sectors.

The effects of the tariffs imposed by the U.S. generated trade diversion effects to the detriment of Chinese exporting sectors and to the advantage of other regions. The overall trade diversion effects presented in the chart below accounts for US\$ 35 billion. U.S. imports that originated in third regions totally replaced China export losses, which reached US\$ 32 billion in the first half of 2019 compared to the first half of 2018.

1st half of 2019 compared to first half of 2018



**Graph 1:** U.S. imports and trade diversion effects by regions [See appendix 1].

Source: own elaboration based on Trade Map (n.d.).

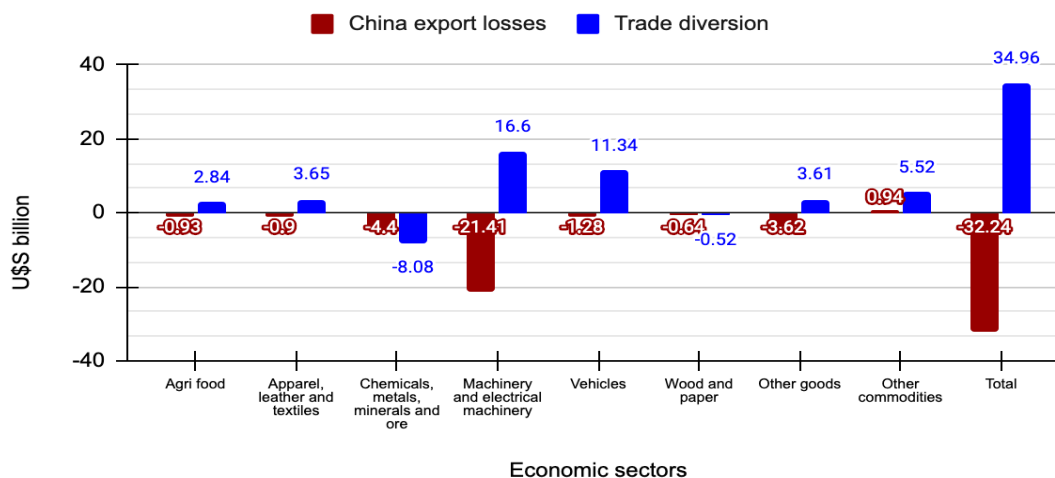
Some regions have been more suitable to replace Chinese exports. In consonance with Nicita (2019), powerful

countries with an important supply capacity and a well-developed trade infrastructure were the ones that took the

lead. Although a few regions did not benefit, most of them took advantage. South Korea (US\$4.11 billion), Taiwan Province (US\$ 4.45 billion), Vietnam (US\$ 7.78 billion), Rest of Europe (US\$ 17.98 billion) and Mexico (US\$ 10.37 billion) were the most benefitted.

In addition, as it can be seen in the next graph, with the exemption of other commodities, all Chinese economic sectors were damaged. On the other hand, most of the economic sectors from the rest of the world increased their flows into U.S.

1st half of 2019 compared to 1st half of 2018.



**Graph 2:** U.S. imports and trade diversion effects by economic sectors [See appendix 2]

*Source:* own elaboration based on Trade Map (n.d.).

- **Agri food:** The rest of the world (US\$ 2.84 billion) fully substituted Chinese export losses (US\$ 0.93 billion). The Americas was a key player in this sector, as it accounted for US\$ 1.84 billion of those US\$ 2.84 billion.
- **Apparel, leather and textiles:** Export losses for China were US\$ 0.9 billion and the rest of the world completely substitute them (US\$ 3.65 billion). The rest of Asia took advantage of the situation as exported more to the U.S. (US\$ 3.04 billion).
- **Chemicals, metals, minerals and ore:** This sector was the most damaged, as both China (US\$ 4.4 billion) and the rest of the world (US\$ 8.08 billion) decreased their exports to the U.S.. The Americas presented the biggest drop (US\$ 8.53 billion) [In this sector, The Americas loss of US\$ 8.53 billion was more than the total trade diversion loss of the rest of the world (US\$ 8.08 billion) because other regions presented positive results. In other words, when we put all the rest of the world's regions together including The Americas the final trade loss was US\$ 8.08 billion].
- **Machinery and electrical machinery:** This economic sector was the most damaged for Chinese exporters, as it losses accounted for US\$ 21.41 billion. Despite the fact that the rest of the world increased their flows into U.S., there was only a partial substitution (US\$ 16.6 billion). The rest of the Asia was the most benefitted, as it exported US\$ 9.96 billion out of those US\$ 16.6 billion.
- **Vehicles:** The rest of the world's exports to U.S. (US\$ 11.34 billion) highly exceeded Chinese export losses (US\$ 1.28 billion). In this regard, The Americas (US\$ 7.58 billion) was the most benefitted region.
- **Wood and paper:** Although it was damaged, this sector showed the lowest losses for Chinese exporters (US\$ 0.64 billion). The rest of the world also slightly decreased its exports to the U.S. (US\$ 0.52 billion). The Americas accounted for the highest losses US\$ 0.93 billion) [In this sector, The Americas loss of US\$ 0.93 billion

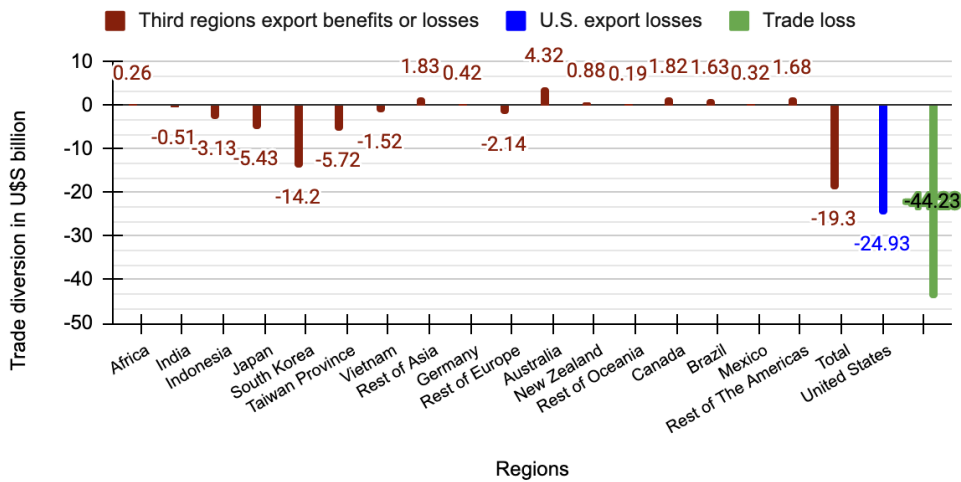
was more than the total trade diversion loss of the rest of the world (US\$ 0.52 billion) because other regions presented positive results. In other words, when we put all the rest of the world's regions together including The Americas the final trade loss was US\$ 0.52 billion].

- **Other goods:** In this sector, the rest of the world exports to U.S. (US\$ 3.61 billion) matched the Chinese exports losses (US\$ 3.62). The rest of Asia was the most benefitted, as it accounted for US\$ 2.11 billion).
- **Other commodities:** This sector was an exemption, as Chinese exports to U.S. increased (US\$ 0.94 billion). The rest of the world also exported more to the U.S. (US\$ 5.52 billion). In this sense, Europe took the lead (US\$ 4.11 billion).

#### Chinese imports. U.S. export losses. Third regions and economic sectors

Comparing the first half of 2019 with the first half of 2018, the U.S. lost US\$ 25 billion. However, in terms of trade diversion effects, the situation here is different. In this regard, as shown in the following chart, although some regions slightly benefitted from the imposition of Chinese tariffs on U.S. goods, the decrease of Chinese imports from the U.S. was not followed by additional imports from other regions, but for a big fall in several cases. Therefore, if the US\$ 25 billion of export losses by the U.S. and the US\$ 19 billion lost by the other regions are added together, the trade loss was US\$ 44 billion. On one hand, some economies, such as Australia (US\$ 4.32% billion) and Brazil (US\$ 1.63 billion), took advantage, mainly the ones related to the agriculture. On the other hand, relevant Asian economies, such as Japan (US\$ -5.43 billion), South Korea (US\$ -14.2 billion) and Taiwan Province (US\$ -5.72 billion), have been exporting significantly less to China and exporting more directly to the U.S.. This context was related to a reorganization of value chains in Asian markets.

1st half of 2019 compared to first half of 2018



**Graph 3:** Chinese imports and trade diversion effects by regions [See appendix 3].

*Source:* own elaboration based on Trade Map (n.d.).

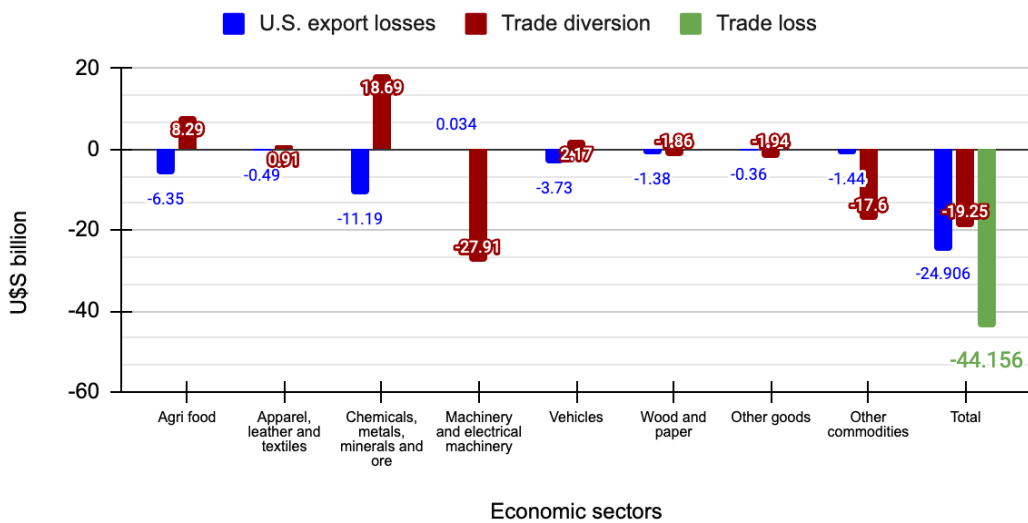
According to Bekkers and Schroeter (2020), two reasons explain the above mentioned situation:

- The growth of the Chinese economy has slowed down in recent years.
- The exports from China to the American market are larger than the imports from the U.S.. This suggests for Chinese imports from other regions that the diversion of trade with regard to other sources is less relevant than the decreased demand of intermediates used for further

processing exports to the United States.

On the other hand, as displayed in the next graph, even though some economic sectors from the rest of the world increased their flows into China, the trade landscape was dominated by sharp drops in other relevant sectors. Furthermore, most of the economic sectors for American exporters were damaged.

1st half of 2019 compared to 1st half of 2018.



**Graph 4:** Chinese imports and trade diversion effects by economic sectors [See appendix 4].

*Source:* own elaboration based on Trade Map (n.d.).

- Agri food: the lower American exports to China (US\$ 6.35 billion) were perfectly matched by the rest of the world (US\$ 8.29 billion). In this sense, classical trade diversion effects occurred, as exports increased from other regions. Furthermore, the rest of The Americas was a key player, as it accounted for US\$ 3.24 billion of those US\$ 8.29 billion.
- Apparel, leather and textiles: despite the small quantities, lower U.S. exports to China (US\$ 0.49 billion) were substituted by the rest of the world (US\$ 0.91 billion). In this regard, again the rest of The Americas (US\$ 0.4

billion) and Europe (US\$ 0.3 billion) took advantage of the situation and exported more to China.

- Chemicals, metals, minerals and ore: this was the most injured sector for American exporters. The fall of US\$ 11.19 billion of U.S. exports to China was followed by exports increases of US\$ 18.69 billion from the rest of the world. In this respect, Europe (US\$ 6.09 billion) and Oceania (US\$ 6.6 billion) were the most benefitted regions.
- Machinery and electrical machinery: as shown in the above graph, this sector was a key player in the trade

landscape and was the main responsible of the sharp drops. Even though there was a slight increase of American exports to China (US\$ 0.34 billion), the huge drop from the rest of the world (US\$ 27.91 billion) is proof of the aforementioned reorganization of value chains with less imports of intermediates into China. This fall mostly came from Asian countries (US\$ 25.89 billion).

- **Vehicles:** the drop of U.S. exports to China (US\$ 3.73 billion) was followed by a partial substitution from the rest of the world (US\$ 2.17 billion). Europe took the lead on this market (US\$ 2.2 billion) [In this sector, the European US\$ 2.2 billion was more than the total trade diversion of the rest of the world (US\$ 2.17 billion) because other regions presented negative figures. In other words, when we put all the rest of the world's regions together including Europe the final result was US\$ 2.17 billion].
- **Wood and paper:** the fall in U.S. exports to China (US\$ 1.38 billion) was also followed by a drop from the rest of the world (US\$ 1.86 billion). The fall in the rest of The Americas (US\$ 0.84 billion) and Asia (US\$ 0.47 billion) represented the biggest losses.
- **Other goods:** both U.S. (US\$ 0.36 billion) and the rest of the world (US\$ 1.94 billion) exports to China fell. In this sector, Asian countries (US\$ 2.3 billion) [In this sector, the Asian loss of US\$ 2.3 billion was more than the total trade diversion loss of the rest of the world (US\$ 1.94 billion) because other regions presented positive results. In other words, when we put all the rest of the world's regions together including Asia the final trade loss was US\$ 1.94 billion] accounted for the greatest trade losses.
- **Other commodities:** while other commodities exported from the U.S. to China slightly dropped US\$ 1.44 billion, the rest of the world showed a large fall of US\$ 17.6 billion. The biggest losses came from Europe, as it accounted for US\$ 9.67 billion.

## 5. Conclusion

In 2018 the trade war started. The several rounds of retaliatory tariffs resulted in the slowdown of international trade and the global economy. In 2019, compared to 2018, the bilateral trade fell dramatically, as U.S. imports from China decreased by 16% and Chinese imports from the U.S. declined 21%. Comparing the trade patterns of the first half of 2019 with the ones of the first half of 2018 it can be said that:

- The effects of the tariffs imposed by the U.S. generated

trade diversion effects to the detriment of Chinese exporting sectors (US\$ 32 billion losses) and to the advantage of other regions (US\$ 35 billion).

- The effects of the tariffs imposed by China caused export losses for American exporters (US\$ 25 billion). Although some regions and economic sectors from the rest of the world benefitted from this situation, the decrease of Chinese imports from the U.S. was not followed by additional imports from other regions, but for a big fall (US\$ 19 billion). Therefore, there was a trade loss of US\$ 44 billion.

## References

- [1] Bekkers, E.; Schroeter, S. (2020). An Economic Analysis of the US-China trade conflict. WTO. [https://www.wto.org/english/res\\_e/reser\\_e/ersd202004\\_e.pdf](https://www.wto.org/english/res_e/reser_e/ersd202004_e.pdf)
- [2] Castillejo, J.; Requena Silvente, F. (2020). The 2018-2019 trade war and its economic consequences. ICE. <http://www.revistasice.com/index.php/ICE/article/view/6986/7005>
- [3] Cerutti, E.; Gopinath, G.; Mohommad, A. (2019). The Impact of U.S. China Trade Tensions. IMF. <https://blogs.imf.org/2019/05/23/the-impact-of-us-china-trade-tensions/>
- [4] Deng, C. (2021). Analysis of Trade Diversion Effect Under Sino-us Trade Friction - Taking Developing Countries and Developed Countries As Examples. China Jiliang University. [https://www.e3s-conferences.org/articles/e3sconf/pdf/2021/51/e3sconf\\_eilcd2021\\_01031.pdf](https://www.e3s-conferences.org/articles/e3sconf/pdf/2021/51/e3sconf_eilcd2021_01031.pdf)
- [5] Husted, S.; Melvin, M. (2013). International Economics. Pearson. Ninth Edition.
- [6] Nicita, A. (2019). Trade and trade diversion effects of the United States tariffs on China. UNCTAD. [https://unctad.org/system/files/official-document/ser-rp-2019d9\\_en.pdf](https://unctad.org/system/files/official-document/ser-rp-2019d9_en.pdf)
- [7] Rosenberg, J. (2012). The Concise Encyclopedia of the Great Recession 2007-2012. The Scarecrow Press Inc.
- [8] Smith, A., Cannan, E. (2003). The Wealth of Nations. New York, N.Y: Bantam Classic. 18th ed.
- [9] Trade Map (n.d.). International Trade Centre. <https://www.trademap.org/Index.aspx?AspxAutoDetectCookieSupport=1>
- [10] U.S. Census Bureau Data (n.d.). <https://www.census.gov/data.html>

## Appendixes

**Appendix 1:** trade diversion effects generated by U.S. tariffs on Chinese products by regions<sup>2</sup>.

	1st q 2018	2nd q 2018	First half 2018	1st q 2019	2nd q 2019	First half 2019	Trade diversion
<b>Africa</b>	9,056,488	9,802,277	18,858,765	7,231,599	9,163,117	16,394,716	<b>-2,464,049</b>
<b>Asia</b>	274,373,975	288,698,136	563,072,111	269,262,090	276,618,883	545,880,973	<b>-17,191,138</b>
China	128,059,348	132,371,176	260,430,524	110,530,884	117,625,259	228,156,143	<b>-32,274,381</b>
India	13,228,760	14,593,942	27,822,702	15,234,179	15,422,212	30,656,391	<b>2,833,689</b>
Indonesia	5,434,739	5,495,335	10,930,074	5,267,627	5,156,656	10,424,283	<b>-505,791</b>
Japan	35,751,172	36,059,312	71,810,484	36,891,584	37,745,504	74,637,088	<b>2,826,604</b>
South Korea	17,235,613	19,077,971	36,313,584	20,516,530	19,911,981	40,428,511	<b>4,114,927</b>

<sup>2</sup> Unit: US\$ Dollar thousand.

Taiwan Province	10,793,642	11,563,532	22,357,174	13,049,977	13,765,940	26,815,917	<b>4,458,743</b>
Vietnam	11,852,475	11,922,366	23,774,841	16,526,120	15,037,637	31,563,757	<b>7,788,916</b>
Rest of Asia	52,018,226	57,614,502	109,632,728	51,245,189	51,953,694	103,198,883	<b>-6,433,845</b>
<b>Europe</b>	135,051,776	144,773,970	279,825,746	142,207,882	155,638,794	297,846,676	<b>18,020,930</b>
Germany	31,237,494	32,250,978	63,488,472	31,593,540	31,928,684	63,522,224	<b>33,752</b>
Rest of Europe	103,814,282	112,522,992	216,337,274	110,614,342	123,710,110	234,324,452	<b>17,987,178</b>
<b>Oceania</b>	3,605,616	3,943,537	7,549,153	3,735,810	4,234,376	7,970,186	<b>421,033</b>
Australia	2,350,592	2,599,469	4,950,061	2,620,029	2,862,214	5,482,243	<b>532,182</b>
New Zealand	1,129,540	1,221,922	2,351,462	987,008	1,266,657	2,253,665	<b>-97,797</b>
Rest of Oceania	125,484	122,146	247,630	128,773	105,505	234,278	<b>-13,352</b>
<b>The Americas</b>	192,659,238	203,113,294	395,772,532	191,992,678	207,706,735	399,699,413	<b>3,926,881</b>
Canada	78,891,393	84,529,832	163,421,225	75,764,321	85,411,179	161,175,500	<b>-2,245,725</b>
Brazil	7,373,036	7,866,939	15,239,975	7,711,194	8,504,047	16,215,241	<b>975,266</b>
Mexico	82,309,162	87,470,865	169,780,027	86,985,057	93,165,776	180,150,833	<b>10,370,806</b>
Rest of the Americas	24,085,647	23,245,658	47,331,305	21,532,106	20,625,733	42,157,839	<b>-5,173,466</b>
<b>Total</b>							<b>2,713,657</b>
<b>Total rest of the world (total - China)</b>							<b>34,988,038</b>

Source: own elaboration based on Trade Map (n.d.).

**Appendix 2:** trade diversion effects generated by U.S. tariffs on Chinese products by main economic sectors and continents + China<sup>3</sup>.

	Africa	Asia (without China)	Europe	Oceania	The Americas	Total rest of the world	China	Total (total rest of the world + China)
Agri food	-79,272	-20,154	1,008,825	97,953	1,841,886	<b>2,849,238</b>	<b>-937,236</b>	
Apparel, leather and textiles	166,215	3,044,358	281,914	7,947	151,105	<b>3,651,539</b>	<b>-905,325</b>	
Chemicals, metals, minerals and ore	-2,448,044	-3,118,580	5,858,756	152,258	-8,530,223	<b>-8,085,833</b>	<b>-4,409,236</b>	
Machinery and electrical machinery	-13,551	9,968,453	4,370,801	-17,668	2,300,739	<b>16,608,774</b>	<b>-21,411,704</b>	
Vehicles	-278,146	2,237,260	1,783,668	14,800	7,584,271	<b>11,341,853</b>	<b>-1,289,269</b>	
Wood and paper	476	366,339	40,049	7,899	-939,486	<b>-524,723</b>	<b>-642,096</b>	
Other goods	95,729	2,116,519	565,487	11,762	830,330	<b>3,619,827</b>	<b>-3,626,574</b>	
Other commodities	92,577	489,072	4,111,459	146,066	688,261	<b>5,527,435</b>	<b>947,049</b>	
<b>Total</b>	<b>-2,464,016</b>	<b>15,083,267</b>	<b>18,020,959</b>	<b>421,017</b>	<b>3,926,883</b>	<b>34,988,110</b>	<b>-32,274,391</b>	<b>2,713,719</b>

Source: own elaboration based on Trade Map (n.d.).

**Appendix 3:** trade diversion effects generated by Chinese tariffs on U.S. products by regions<sup>4</sup>.

	1st q 2018	2nd q 2018	First half 2018	1st q 2019	2nd q 2019	First half 2019	Trade diversion
<b>Africa</b>	2,37,34,078	2,47,69,345	4,85,03,423	2,36,19,783	2,51,43,400	4,87,63,183	<b>2,59,760</b>
<b>Asia</b>	27,27,67,028	29,56,61,561	56,84,28,589	25,71,89,692	28,24,94,369	53,96,84,061	<b>-2,87,44,528</b>
India	45,83,732	48,97,655	94,81,387	44,57,242	44,72,386	89,29,628	<b>-5,51,759</b>
Indonesia	56,60,097	55,93,467	1,12,53,564	38,25,069	42,95,941	81,21,010	<b>-31,32,554</b>
Japan	4,12,80,529	4,57,97,530	8,70,78,059	3,89,20,664	4,27,18,712	8,16,39,376	<b>-54,38,683</b>
South Korea	4,72,47,896	5,16,70,899	9,89,18,795	4,09,67,286	4,37,45,840	8,47,13,126	<b>-1,42,05,669</b>
Taiwan Province	4,01,62,548	4,45,78,015	8,47,40,563	3,79,75,906	4,10,43,002	7,90,18,908	<b>-57,21,655</b>
Vietnam	1,42,49,586	1,26,11,992	2,68,61,578	1,18,29,403	1,35,06,212	2,53,35,615	<b>-15,25,963</b>
Rest of Asia	11,95,82,640	13,05,12,003	25,00,94,643	11,92,14,122	13,27,12,276	25,19,26,398	<b>18,31,755</b>
<b>Europe</b>	8,99,25,934	9,43,52,166	18,42,78,100	8,70,75,668	9,54,82,671	18,25,58,339	<b>-17,19,761</b>
Germany	2,51,90,736	2,62,14,634	5,14,05,370	2,48,75,876	2,69,59,038	5,18,34,914	<b>4,29,544</b>
Rest of Europe	6,47,35,198	6,81,37,532	13,28,72,730	6,21,99,792	6,85,23,633	13,07,23,425	<b>-21,49,305</b>
<b>Oceania</b>	2,94,89,938	3,04,95,540	5,99,85,478	3,12,62,295	3,41,25,734	6,53,88,029	<b>54,02,551</b>
Australia	2,55,26,004	2,65,79,743	5,21,05,747	2,69,12,693	2,95,14,306	5,64,26,999	<b>43,21,252</b>
New Zealand	29,83,631	27,47,923	57,31,554	31,44,497	34,76,534	66,21,031	<b>8,89,477</b>
Rest of Oceania	9,80,303	11,67,874	21,48,177	12,05,105	11,34,894	23,39,999	<b>1,91,822</b>
<b>The Americas</b>	8,13,08,108	9,02,65,423	17,15,73,531	7,60,23,468	7,60,85,094	15,21,08,562	<b>-1,94,64,969</b>

<sup>3</sup> Ibid 11.

<sup>4</sup> Ibid 11.



Canada	59,94,475	74,58,857	1,34,53,332	76,05,024	76,71,060	1,52,76,084	<b>18,22,752</b>
Brazil	1,40,85,566	2,05,89,870	3,46,75,436	1,77,14,231	1,86,00,174	3,63,14,405	<b>16,38,969</b>
Mexico	31,21,770	32,12,852	63,34,622	33,02,448	33,59,807	66,62,255	<b>3,27,633</b>
United States	4,18,83,171	4,25,15,320	8,43,98,491	2,87,02,709	3,07,58,893	5,94,61,602	<b>-2,49,36,889</b>
Rest of The Americas	1,62,23,126	1,64,88,524	3,27,11,650	1,86,99,056	1,56,95,160	3,43,94,216	<b>16,82,566</b>
<b>Total trade loss</b>							<b>-4,42,66,947</b>
<b>Total rest of the world (total - U.S.)</b>							<b>-1,93,30,058</b>

*Source: own elaboration based on Trade Map (n.d.).*

**Appendix 4:** trade diversion effects generated by Chinese tariffs on U.S. products by main economic sectors and continents + U.S.<sup>5</sup>.

	Africa	Asia	Europe	Oceania	The Americas (without U.S.)	Total rest of the world	U.S.	Total trade loss (total rest of the world + U.S.)
Agri food	250,289	2,190,897	1,338,810	1,269,609	3,241,972	<b>8,291,577</b>	<b>-6353969</b>	
Apparel, leather and textiles	7,122	106,278	307,462	87,203	409,418	<b>917,483</b>	<b>-495302</b>	
Chemicals, metals, minerals and ore	2,010,783	679,168	609,8491	6,604,132	3,300,472	<b>18,693,046</b>	<b>-11196234</b>	
Machinery and electrical machinery	-16,690	-25,894,036	-1,974,608	-53,608	26,474	<b>-27,912,468</b>	<b>34352</b>	
Vehicles	25,242	-12,295	2,203,446	-2,097	-43,757	<b>2,170,539</b>	<b>-3733225</b>	
Wood and paper	-237,900	-476,653	-217,319	-87,848	-843,983	<b>-1,863,703</b>	<b>-1384920</b>	
Other goods	3,390	-2,307,894	195,490	-4,433	163,527	<b>-1,949,920</b>	<b>-366349</b>	
Other commodities	-1,782,441	-3,029,994	-9,671,557	-2,410,423	-713,512	<b>-17,607,927</b>	<b>-1441245</b>	
<b>Total</b>	<b>259,795</b>	<b>-28,744,529</b>	<b>-1,719,785</b>	<b>5,402,535</b>	<b>5,540,611</b>	<b>-19261373</b>	<b>-24936892</b>	<b>-44,198,265</b>

*Source: own elaboration based on Trade Map (n.d.).*

<sup>5</sup> Ibid 11.