



ECONOMIC CONSEQUENCES OF THE CURRENT U.S. TRADE POLICY

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Abstract

This thesis analyzes current United States Trade Policy in order to review and understand recent events in the world trade system. The content of the 2018 US Trade Policy Agenda having led to greater uncertainty, this analysis shows different possible future scenarios in response to US threats of trade barriers. In order to do so, one must differentiate between short-term and long-term costs for the United States in pursuing a protectionist approach to trade, as well as emphasize the importance of trade regulations with the World Trade Organization and explain that trade wars are the only possible outcome if countries decide to pursue self-interest policies with a view to maximizing national social welfare.

Keywords: Tariffs, Trade Wars, Uncertainty, Social Welfare, Game Theory

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Introduction

On 20 January 2017, President-Elect Donald Trump took over the presidency of the United States of America. No later than three days after becoming President, he made his first political decision concerning Trade Policy. With the withdrawal of the U.S. from the Trans-Pacific Partnership (TPP)¹, President Trump made his position clear: henceforth, the emphasis would be on “the commitment of the United States to free and fair trade”.² However, more recent events seem to run counter to this statement. Given the new tariff measures on steel and aluminum, with which the United States is threatening the rest of the world, and a list of import tariffs on Chinese goods, people are increasingly doubting United States Trade Policy to be effectively defending free trade.

The US trade deficit is a great concern for the US economy. Having scored a deficit of 504.8 billion US\$ in 2016 for net trade in goods and services³, the US looks heavily dependent on international trade. Henceforth, the determination to reduce the country’s balance-of-trade deficit is a major point in President Trump’s Agenda and it seems that the country has no

¹ The *Trans-Pacific Partnership* (TPP) is a free trade agreement (FTA) between 12 Pacific-rim countries: New Zealand, Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, Peru, Singapore, the United States and Viet Nam. This agreement was put in place in order to lower non-tariff measures and other trade barriers in order to liberalize trade and investment between these countries. However, the United States disengaged from the deal on 23 January 2017. Without the US, the remaining countries proceeded to form a new FTA which became the *Comprehensive and Progressive Agreement for Trans-Pacific Partnership* (CPTPP) on March 2018.

² <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2017/january/US-Withdraws-From-TPP> (accessed on 13 March 2018)

³ <https://data.worldbank.org/indicator/BN.GSR.GNFS.CD?locations=US> accessed on 1 May 2018

second thoughts about pursuing what is best for the domestic economy. In actual fact, however, the current approach to trade policy threatens to reduce U.S. trade in general. By enforcing more protectionist policies, the United States professes to seek to protect the national labor market and to reinforce the domestic economy according to President Trump's slogan "Make America Great Again". The endeavour to rebuild a "greater" America is to be done from the inside, with aggressive tax reforms, and by "protecting" the economy from outside competition by improving and recalibrating the principal trade agreements which the U.S. is part of. In fact, the US Trade Policy Agenda is based on five major pillars and suggests a threatening approach to trade subjects in the near future. The five pillars, which we will present in the first Chapter of this work, are proof that President Trump is eager to pursue a more protectionist approach in order to shield his economy against competition from China and other countries that conduct "unfair" trade practices. Indeed, if the Agenda is pursued as is, major changes can be expected in the future concerning trade agreements and, more generally, in how the world will perceive the trading system.

The goal of this thesis is to understand the circumstances under which the current US trade policy measures take place and to look at the rising concerns and theoretical consequences for the domestic US markets as well as the rest of the world.

The Specific Factors Model⁴ by Jacob Viner, a variant of the Ricardian model of international trade theory, concludes that trade creates both winners and losers. In fact, a country exports a good, in which it is comparatively more productive, to an importing country of this same good. Generally, this is called having a comparative advantage and translates into a relative increase in pricing of the good which the exporting country specializes in. Typically, the losers of trade are mostly characterized by immobile workers who temporarily lose their jobs in the industries in which the country starts importing at a reasonably lower price than in autarky. These industries suffer because of higher competition from the outside. In this case, we define workers as immobile, since they cannot be seen as perfectly mobile factors of production in the labor market. In fact, "bakers cannot immediately become butchers at any cost and a factory needs refurbishing to be turned in an office building"⁵. The standard outcome of trade is a temporary loss of income and/or jobs in the importing country due to price and wage effects, while the gains from trade result in relatively lower prices of goods and a larger variety of

⁴ <http://internationalecon.com/Trade/Tch70/T70-20.php>, (accessed 19 May 2018)

⁵ https://moodleucl.uclouvain.be/pluginfile.php/1725330/mod_resource/content/1/Slides%20IT%20-%20Lecture%204.pdf – Vannoorenberghe G., Slides UCL, International trade, (accessed 19 May 2018)

goods for domestic consumers⁶. Even though the US have put in place the Trade Adjustment Assistance Program⁷ in order to tackle the problem of workers negatively affected by trade, it remains the workers' job to prove so. In order to reduce trade pressure in the industries presumably suffering from international trade, the current US approach establishes trade barriers (i.e. import tariffs) in order to protect domestic workers and industries. At this point, we can say that in the short term, a protectionist approach is most likely the fastest way to protect local markets by increasing trade barriers and relieving national industries from international competition. Nevertheless, less competition implies less incentive for domestic firms and businesses to innovate and raise productivity in the long term. In fact, the thesis will aim to explain how the current US trade policies could end up being detrimental to the United States in the medium to long term, if maintained.

In support of this theory, one could mention the recent literature on the *China Syndrome* (Autor et al., 2013) which explains how the rising Chinese import competition affects local US labor markets. David H. Autor and the co-authors claim that “rising imports cause higher unemployment, lower labor force participation, and reduced wages in local labor markets”. From this paper, we learn that the US is touched by a rising Chinese import penetration of their local markets, mainly driven by internal conditions in China and changes in trade policy from and towards the People's Republic. Rising productivity, high investments in labor-intensive export goods, and the lowering of barriers to trade constitute the main internal conditions for the increasing import competition from China in the United States. Even though theory suggests that rising trade with China generates gains for the US economy, the study of Autor et al. focuses on the “distributional consequences of trade”.

Paradoxically, one thing we can be certain of is that a crucial result of the major political changes since President Trump is a rise in *uncertainty*⁸. Since the Agenda suggests that new policies will be implemented, uncertainty is created for the consequences these policies will generate in the future. The recent threats of tariffs on steel and aluminum⁹ call for a potential trade war between the U.S. and other major economies, which could be detrimental and have a negative outcome for other main trade partners as for trade in general. Moreover, the US tariffs on China also fuels a lot of tension and uncertainty, not only between both parties but also for the rest of the world. Furthermore, not only do the policies themselves create

⁶ Schneider-Petsinger, M. (2017), “*Trade Policy Under President Trump - Implications for the US and the World*” <https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2017-11-03-trade-policy-trump-schneider-petsinger-final.pdf>, (accessed 13 March 2018)

⁷ <https://www.doleta.gov/tradeact/>, (accessed 19 May 2018)

⁸ <https://www.cfosurvey.org/2016q3/Q3-2016-US-KeyNumbers.pdf>

⁹ Chad P. Bown, 17-21 Steel, Aluminum, Lumber, Solar: Trump's Stealth Trade Protection, June 2017

uncertainty about their outcome, but President Trump adds to uncertainty in his turn. Uncertainty and credibility issues regarding trade, policy and trade policy are stated, which actually translates into insecure and unstable relations and could result in a loss of credibility for the United States' firms and businesses. Throughout the thesis, we shall develop the idea of trade uncertainty which appears to be a major problem ever since Donald Trump took over the presidency, as well as the consequences this uncertainty will lead to, in the short and long terms.

The purpose of the thesis is to explain the current approach to trade in the United States by stating the Trade Policy Agenda of The Trump Administration so as to elucidate the context of the recent threats to the trading system. To do so, we will mainly focus on economic trade theory and provide a theoretical assessment of the US trade policy. To summarize, this thesis is dedicated to analyzing the economic consequences of President Trump's political perspectives on trade and the rising uncertainty generated by the Trump Administration's approach to trade policy. We will also be analyzing the possible outcome of the current US trade policy on the rest of the world and the potential reprisal of the main trade partners, which may or may not lead to a trade war.

While the first chapter of this thesis offers a descriptive analysis and takes a contextual approach, the main scope of this work is an analytical-literature review of the current U.S. trade policy. The main objective is to produce a wide yet concise economic synthesis of the most recent happenings and explain the economic repercussions of these events for the U.S. as well as for other countries.

The first chapter outlines the most recent trade policy of the U.S. by outlining the five major pillars of the current Trade Agenda. We will also be explaining "Trump tariffs" and its consequences as well as other possible ramifications for the US economy. Chapter 2 will attempt a review of uncertainty in trade relations in the past and seek to contextualize the particular case of the United States and President Trump. In the course of this chapter we will analyze the consequences of trade uncertainty and its theoretical economic cost for firms and businesses. A subsequent aim of this chapter is to study the uncertainty of these consequences. In Chapter 3, we are then going to trace how the Rest of the world (ROW) is likely to respond to the increasingly protectionist stance of the United States. We shall clarify trade war theory and the outcome of the potential trade war between China and the U.S., with a focus on WTO law and Game theory. Finally, Chapter 4 will essentially consist of economic policymaking

recommendations for the U.S. and, more precisely, the USTR¹⁰ and a critical economic assessment of the recent happenings before concluding the thesis.

¹⁰ The Office of the U.S. Trade Representative (USTR) is responsible for developing and coordinating U.S. international trade, commodity, and direct investment policy, and overseeing negotiations with other countries. The head of USTR is the U.S. Trade Representative, a Cabinet member who serves as the president's principal trade advisor, negotiator, and spokesperson on trade issues.

Chapter 1

Protectionist measures – Focus on Tariffs

1.1 US President Trump's Trade Policy Agenda¹¹

To introduce this chapter, and before focusing on the potential impact of the tariffs that the US is threatening to implement, let us look at the Trade Policy Agenda of The Trump Administration so as to gauge the approach of the United States regarding international trade.

The determination to support fairer and freer trade is a lofty goal but the current approach of the U.S. to fulfilling that goal could be detrimental to international trade in general. What exactly the approach consists of, and the main objectives of the current trade policy of the U.S. are about to be explained by way of describing the most recent Policy Agenda of the United States. More particularly, we shall proceed to describe the five main aspects of the USTR press release of February 2018, in which the U.S. Trade Representative Robert Lighthizer announces the determination of The Trump Administration to promote free, fair and reciprocal trade as well as enforce U.S. trade laws. The fact sheet issued by the USTR proclaims that “President Trump has launched a new era in American trade policy”. President Trump, having alleged many times during his presidential campaign that American workers were being treated unfairly and were negatively affected by trade liberalization, thus initiated a new trade policy

¹¹ 2018 Trade Policy Agenda of the President of the United States (2018), Office of the United States Trade Representative

trend which follows five major pillars in order to restore the damage and strengthen American workers' situation.

The first pillar of this policy consists of *Supporting National Security* and preserving national sovereignty. The U.S. is seeking to defend its national interests against hostile policies from countries such as China or Russia. In the report, the U.S. claim explicitly that unfair trading practices against the United States will not be tolerated and that all available tools shall be deployed to discourage unfair and unequal treatment.

The second pillar is devoted to fulfilling the desire to *strengthen domestic U.S. Economy*. With the most significant tax reform in 30 years, the desire to reinforce competitiveness of U.S. businesses and workers was made, loud and clear. The *Tax Cuts and Jobs Act (TCJA)* induces a significant tax cut for businesses, hence allowing businesses to be more competitive on the global market and reinforcing U.S. position in international trade.

The third major pillar relates to *Negotiating Better Trade Deals*. One of the primary goals of the Administration is the renegotiation of the North American Free Trade Agreement (NAFTA)¹² as a means of cutting a better deal for the United States and its workers, the ultimate goal being to improve the U.S. trade balance. Since the NAFTA has been in place for more than 20 years, President Trump declared the update of the agreement with modern provisions to be a priority for Trade Policy. The same goes for the renegotiation of the trade agreement between the Republic of Korea and the United States (KORUS),¹³ where the priority was to lie on rebalancing the commitments to trade and eliminating non-tariff barriers when exporting to the US.¹⁴ The Administration is also seeking to reach other trade agreements and new bilateral negotiations so as to promote American prosperity and support domestic workers.

In order to do so, President Trump's Trade Policy is taking an aggressive stance on *enforcing U.S. Trade Laws*, which happens to be the fourth pillar. In response to unfair trade practices against the United States, the Administration profess to up the ante to defend their rights before the World Trade Organization (WTO)¹⁵ and promote fairer and freer trade. This is done by

¹² The North American Free Trade Agreement, also called NAFTA, is a FTA between Canada, Mexico and the United States. It is one of the world's largest free trade zones and came into effect in 1994 <http://www.naftanow.org>

¹³ KORUS, the US-Korea free trade agreement was signed in 2007 and entered into force on March 15, 2012

¹⁴ These non-tariff measures essentially cover US-made motor vehicles and motor vehicle parts

¹⁵ The World Trade Organization (WTO) "is the only global international organization dealing with the rules of trade between nations. [...] The goal is to ensure that trade flows as smoothly, predictably and freely as possible." https://www.wto.org/english/thewto_e/thewto_e.htm, consulted on 20/04/2018

setting up dispute settlements against China and other WTO members, by whom the United States feels treated unfairly.

The last pillar of the current U.S. Trade policy is the reform of the above-mentioned WTO. To all intents and purposes, the U.S. points out the very important role the organization plays in regulating international trade. However, there are rising concerns that the organization is “undermining the country’s ability to act in its national interest”. Moreover, the WTO is criticized for its increasing inability to reach agreements in a modern global economy.

These then are the five pillars the current U.S. Trade Policy is following. Throughout these pages, we will take some of these pillars under review. In fact, the US expect to strengthen the domestic economy by reinforcing and remodeling trade agreements in a way that is believed to be more beneficial to the United States. In this context, we will therefore examine the World Trade Organization and the regulation of dispute settlements in greater detail.

On the surface of it, this policy suggests that the United States is looking for a more protectionist approach in order to reinforce their economy and to rebuild their trade balance deficit. Nonetheless, this aggressive approach raises questions as to the maintenance of this policy and it most definitely raises uncertainty issues. The main question we infer from this is that of whether such a policy is enduring and what the main economic consequences will be in theory.

In the following sections, we shall analyze the type of goods to which the tariffs will be applied, and the repercussion on the US national economy by covering the theoretical aftermath for the industries that will be affected by the tariff implementation. We will finish off this chapter by looking at the consequences of these tariffs in terms of trade, specifically for Mexico and China.

1.2 Trump Tariffs, Contrasting Consequences for the US Economy

Tariffs are put in place as a form of tax on imported goods and services by increasing the fee on imports and generating a form of government revenue. They can also be put in place in order to reduce the incentive to trade with certain countries, i.e. as a trade barrier. In this part, we try to understand the reason behind raising tariffs and the main consequences for the current liberalized trade system to which the U.S. contributes so significantly.

Since 1789 and the Hamilton Tariff ¹⁶, the US have implemented a series of Tariff Acts, the most recent being the Trump tariffs in 2018. These tariffs have been enacted since the beginning of 2018 and include tariffs on solar panels and washing machines. Later, in March 2018, President Trump also enforced a 25 percent tariff on steel and a 10 percent tariff on aluminum imports¹⁷, both tariffs drawing extensive criticism. However, some countries like Canada, Mexico, Brazil, Argentina, Australia and the European Union were exempt from the tariffs at first with the exemptions for Canada and Mexico being described as temporary and dependent on the renegotiation of NAFTA¹⁸. However, during the exemption period, the US administration officials declared that these aluminum- and steel-exports to the US were subject to quotas.¹⁹ In other words, all countries except those mentioned above would be subject to steel and aluminum tariffs. Moreover, on April 3, 2018, an investigation under section 301 of the Trade Act of 1974, led to an announcement on the part of USTR that tariffs were to be imposed on a list of Chinese import goods amounting to \$50 billion.²⁰

The legal basis under which President Trump orders the implementation of the so-called Trump tariffs is Section 232 of the Trade Expansion Act of 1962. The latter authorizes the president to impose tariffs based on the endorsement of the U.S. Secretary of Commerce. If the Secretary of Commerce pursues an investigation and concludes that national security in its final report, which is provided to the President, that national security is threatened or impaired, the President is allowed to take the actions he deems necessary.²¹

¹⁶ The Hamilton Tariff, also known under the Tariff Act of 1789 was the first major Act put in place under the present Constitution of the U.S. in order to raise revenues for the government and encourage domestic production. <http://www.u-s-history.com/pages/h393.html> (accessed on 20 May 2018)

¹⁷ Scott Horsley, “Trump Formally Orders Tariffs on Steel, Aluminum Imports, *All Things Considered*”, <https://www.npr.org/2018/03/08/591744195/trump-expected-to-formally-order-tariffs-on-steel-aluminum-imports> (accessed on 20 March 2018)

¹⁸ Chad P. Bown, “What We Do and Don’t Know After Trump’s Tariff Announcement” <https://hbr.org/2018/03/what-we-do-and-dont-know-after-trumps-tariff-announcement> (accessed on 20 May 2018)

¹⁹ <https://www.reuters.com/article/us-usa-trade-metals/trump-delays-metal-tariffs-on-canada-eu-mexico-exempts-some-others-idUSKBN1I1164> (accessed on 10 July 2018)

²⁰ <https://www.whitehouse.gov/briefings-statements/statement-president-donald-j-trump-additional-proposed-section-301-remedies/> (accessed on 12 June 2018)

²¹ The Department of Commerce (DoC) of the United States claim that Aluminum is essential for the national security and safety requirements for the U.S. Department of Defense (DoD) and the construction of armor plate for armored vehicles as in aircraft and other structural components. https://www.commerce.gov/sites/commerce.gov/files/the_effect_of_imports_of_steel_on_the_national_security_-_with_redactions_-_20180111.pdf

In the case of a large importer like the United States, imposing a tariff can be welfare-improving²² as noted by Robert Torrens in 1844. Even though consumer surplus (CS) decreases because of higher prices paid in the domestic country for the imported good, the producer surplus (PS) will increase. Theory suggests that the increase of the PS will generally not be sufficient to compensate for the loss of CS. However, by imposing a tariff, tariff revenue (TR) is created. This generates an income source for the government, and hence an improvement of domestic welfare, as long as the tariff imposed does not exceed a certain threshold. This threshold once exceeded, it would no longer be beneficial for consumers and firms to import the good, as the costs would prove prohibitive to the extent where no tariff revenue would be created. In this case, the country would not trade and fall into autarky.

In order to understand these effects more deeply we need to look at the terms of trade effects on a large importer. First and foremost, the terms of trade (TOT) of a country is an index of the ratio of the country's export prices and import prices. To phrase it more simply, the TOT of a country represents the quantity of imports one can buy with a certain amount of exports. A rise in the terms of trade translates into a higher index and means that one unit of export can now buy more imports. On the other hand, if the TOT deteriorates from 100 to 98, this means that one unit of exports can now buy 2 percent fewer imports than before. Theory states that a large open country like the United States can influence the terms of trade with the imposition of a tariff. In fact, when a large importer country imposes tariffs, it is very likely to improve the terms of trade.²³ If the US imposes tariff barriers on a trade partner for a certain good, we must analyze the reciprocal demand functions of both countries for the good in order to determine the magnitude of the improvement of the terms of trade. In the case of non-retaliation for the exporting country, the US can ameliorate the TOT by imposing a tariff. The second effect, in the case of non-retaliation is a reduction of the total quantity traded between both countries. The reasoning behind this theory considers that the large-importing country (U.S.) has diminished its domestic demand for a good by imposing a tariff, since the good becomes relatively more expensive.

On aggregate, the world demand is potentially lowered since the US accounts for a large part of this demand. Consequently, a lower world demand means less demand for trade, leading to

The DoC also claim that Steel is important to the national security as it serves to sustain critical infrastructure for the United States, as the transportation systems, electric power grid, water systems and energy generation systems. https://www.commerce.gov/sites/commerce.gov/files/the_effect_of_imports_of_aluminum_on_the_national_security_-_with_redactions_-_20180117.pdf

²² <http://internationalecon.com/Trade/Tch90/T90-9.php>

²³ <http://www.economicdiscussion.net/tariffs/effects-of-tariffs-on-terms-of-trade-international-economics/30922> (accessed on 10 July 2018)

less trade between countries. In this case, we can say that the United States has monopsony power in trade. This means that a large importer can gain from imposing a tariff and reducing its home demand for a product to induce a price reduction.²⁴ However, the strong assumption of non-retaliation of the foreign country is unrealistic. We will examine the consequences on the TOT in the case of retaliation in the third chapter as we analyze the reaction of the Rest of the world to the restrictions the United States is putting in place.

The pass-through of tariffs onto prices depends on the competitiveness of the market and the substitutability of the respective goods. If we have only one US manufacturer of a specific good and the United States increases import tariffs on this good, the producer will have less difficulty in increasing the domestic price of the final good sold in the domestic market. However, if we have a highly competitive market with numerous producers of the same good, increasing the price of the good will lead to a lower demand since products are more substitutable. In order to analyze the potential price effects of import tariffs, one must analyze the market structure. The less competition and the less substitutability between competitor's products will lead to higher prices when imposing import tariffs.

Having stated the economic theory of tariffs, we will now describe and analyze the different tariffs imposed by the United States since the beginning of 2018 and explain the direct and indirect economic consequences. We will be following the chronological sequence of the imposition of the tariffs starting with tariffs on solar panels and washing machines before turning to the steel and aluminum tariffs and the consequences on the overall domestic US economy. To finish off the chapter, we are going to analyze other tariffs that may yet be implemented under Donald Trump's presidency. Finally, we are going to estimate the direct impact these tariff measures will have on countries like China, Canada and Mexico and the possible effects on the renegotiation of NAFTA.

1.2.1 Tariffs on Solar Panels and Washing Machines

Sensing a threat from cheap Chinese goods, in this case solar panels or, more particularly, solar cells and solar modules²⁵, the Trump Administration decided to put on a digressive tariff

²⁴ https://saylordotorg.github.io/text_international-trade-theory-and-policy/s10-04-import-tariffs-large-country-p.html (accessed on 10 July 2018)

²⁵ Solar cells are the individual components of solar panels which convert light into electricity and solar modules are a group of cells.

scheme for the next four years as pictured in **Table 1.1**. Starting with a tariff rate of 30% in the first year, the United States wants to protect the domestic solar panel industry since the domestic market has been floated by cheaper cells and modules from China. In this case, tariff rates are eventually reduced prior to arriving at a 15% after 4 years. Until then, the American solar panel industry should have scope to get more productive and a better competitor on the international stage.

Safeguard Tariffson Imported Solar Celsand Modules				
	Year 1	Year 2	Year 3	Year 4
Tariff increase	30%	25%	20%	15%
*first 2.5 gigawatt of imported cells are excluded from the additional tariff.				

Table 1.1 The gradually decreasing tariff on Solar Cells and Modules for the next 4 years [USTR, January 2018]²⁶

However, by putting a tariff on solar cells and modules, the United States raises the price of solar panels, hence decreasing the demand of the final good, namely solar panels and solar energy. Since the market of solar cells is not highly competitive (low number of producers because of high initial investment costs), we can think of a scenario where the pass-through of tariffs onto prices is likely to be high. Not only consumers will have to pay a higher price for the final good but also other manufacturers may very well be affected by these tariffs. In fact, “U.S. companies that make frames for solar panels, equipment to convert electric currents and trackers that allow arrays to follow the sun throughout the day” (Ross Hopper, CNBC, 23 Jan 2018) could themselves be victims. In the short term, losses cannot be circumvented by imposing a tariff of 30% and other manufacturers in the sector would suffer. However, given the determination to reduce the tariff rate by 5% every year, we could be looking at a policy trying to protect the domestic industry by blocking out trade in the first period, while simultaneously wanting to achieve the optimal tariff rate and create tariff revenues for the government to maximize welfare (cf. Robert Torrens, 1844). In this case, less uncertainty is created by the tariff in the near future, as long as the first mandate of Trump’s presidency goes, because we know the exact path of the tariff rate for the next four years. Markets will be

²⁶ [USTR, January 18] United States Trade Representative, *President Trump Approves Relief for U.S. Washing Machine and Solar Cell Manufacturers*, press release January 2018; <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/january/president-trump-approves-relief-us>

prepared for the annual 5% tariff cut on solar cells and modules, remaining largely calm as the policy outcome is predictable.

Turning to the tariffs on washing machines which were imposed at the same time as solar panel tariffs, we can observe a steady increase in imports of washing machines in the U.S. from 2012 to 2016 according to the U.S. International Trade Commission (ITC) investigation²⁷. The USITC and the US Trade Representative both recommend implementing tariffs on imports of *Large Residential Washers*. As they found the domestic manufacturers of washing machines were being harmed by foreign trade and competition²⁸, President Trump approved the proposed Tariff Rate Quotas on *Large Residential Washers* of the USITC. In this domain, the tariffs are found to be even more aggressive than the solar cells and modules tariffs. **Table 1.2** provides us with a summary of the tariff pattern. In the first year, the tariff starts at a 20 percent rate for the first 1.2 million units of imported finished washer to the United States. All subsequent imports will be taxed at a 50 percent rate. Even though the tariff rate is diminishing over the next three years, we finish off the third year with a 16 percent tariff on the first 1.2 units imported, and a 40 percent rate for all subsequent imports. However, the market structure of washers seems to be more competitive than for solar panels or solar cells. For this household good, more producers exist that produce the same kind of good. Washers being highly substitutable and the market being more competitive, we can imagine the pass-through of the tariffs onto prices to be less pronounced than for solar panels. US producers of washing machines will not be able to afford to raise the price of their output good by the exact amount of tariffs their good is to be faced while imported. Hence, consumers will not have to face very high prices in return to the import tariffs and we expect the elasticity from tariff to price to be less than one, meaning that an increase of 1 percent in tariff will translate into a rise of less than 1 percent in prices.

²⁷ https://www.usitc.gov/trade_remedy/731_ad_701_cvd/investigations/pub4745.pdf (accessed on 22 May 2018)

²⁸ [USTR, January 2018] United States Trade Representative, *President Trump Approves Relief for U.S. Washing Machine and Solar Cell Manufacturers*, press release January 2018; <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/january/president-trump-approves-relief-us>

Tariff Rate Quotas on Washers			
	Year 1	Year 2	Year 3
First 1.2 million units of imported finished washers	20%	18%	16%
All subsequent imports of finished washers	50%	45%	40%
Tariff of covered parts	50%	45%	40%
Covered parts excluded from tariff	50 000 units	70 000 units	90 000 units

Table 1.2 Tariff Rate Quotas on Washers—tariff composition [USTR, January 2018] ²⁹

China being the largest washing machine exporter to the US with \$425 million worth of washers in 2016³⁰, countries like Mexico and South Korea are in the top 3 with respective exports to the US of \$240 and \$130 million. With tariffs being substantially high, the US trade policy approach is not to allow the domestic market to be overflowed by foreign washers. However, with a lower tariff being admitted for the first 1.2 million units, we can conclude that the U.S. market will still be competing with foreign brands such as Samsung and LG, which are among the top washer exporters to the US. With this tariff scheme, the United States is going to limit the number of imports into the country, hence protecting the national manufacturers. However, consumers are likely to pay slightly higher prices and having less choice when purchasing washing machines. Indeed, not only free international trade leads to lower prices, but also gives the domestic consumers a greater variety of goods. This can be a substantial asset to improve consumer surplus, as consumers “love variety”. In fact, it is welfare improving if consumers have three rather than just one variety to choose from.³¹ Nevertheless, in the case of diminishing returns, too much variety can create less welfare for the consumer as they are overwhelmed with choice and not able to make a right decision when it comes to buying a good.

We observe in this subsection that not every tariff has the same consequences. For instance, if we have a tariff implemented on a product that is used as an input for production (i.e. cells and modules) to produce intermediate or final goods/services (i.e. solar panels or solar electricity), the outcome will not be the same as for a tariff on a finished good. On the one hand, we expect the main consequences for the producer to be surplus in the short term, whereas, in the long term, consequences will arise in the consumer sphere. As tariffs are imposed, the price of the

²⁹ Ibid

³⁰ https://www.usitc.gov/trade_remedy/731_ad_701_cvd/investigations/pub4745.pdf (accessed on 22 May 2018)

³¹ Krugman, Paul R. (1980), “Scale Economies, Product Differentiation, and the Pattern of Trade”, *American Economic Review* vol. 70 (5)

input is synthetically raised. As imports get more expensive, domestic producers can increase prices in order to catch most of the consumer surplus if the market structure allows to. National firms and manufacturers will therefore enjoy higher profits which they will use in order to be more productive in the next term to be able to catch up with the international competition as tariffs will be reduced year by year. The indirect consequence of a rise in the price of inputs is the rise of the price of the output good. Therefore, we can expect not only solar cells and modules to be more expensive in the near future, but also solar panels as finished goods and, eventually, solar energy, which is the service that solar panels provide once installed.

On the other hand, we have a tariff on a finished good, namely *Large Residential Washers*. In this case, it is the competition in the market of the final good that is in play. By synthetically increasing the price of the final foreign goods, the consumer will have to pay more if he wishes to buy a Samsung or LG product coming from abroad. Domestic manufacturers will have a direct advantage on prices as they will be able to sell their production at a lower price than the imported product plus tariff rate. In addition, we expect domestic manufacturers to raise their prices in order to capture most of the consumer surplus, however increasing the prices less than the increase in tariffs. The market structure is bound to change as there will be less variety for the consumer to choose from, the final foreign good being much less present in the market. Domestic consumers will therefore have more incentive to buy domestic goods which are being sold at a slightly higher price than without tariffs on the importation of the same good.

Moreover, the price effect is likely not to be the same in both cases. Depending on the market structure and substitutability of the goods, the price effect of the tariff is different for each product.

The likely conclusion for solar panels and washing machines is that we look set to have inflated prices for solar panels and, eventually, solar energy in the near future. In the case of washing machines, the US consumers will suffer from a shortage of variety, but less inflated prices on nationally manufactured washing machines.

1.2.2 Tariffs on Steel and Aluminum

The report of the Secretary of Commerce states that the United States has excessively imported foreign aluminum and steel goods, which has weakened the domestic economy. As the domestic steel and aluminum industry have been dealt blows by the competition of cheaper import materials, the United States feels their national security threatened. The Secretary of Commerce claims that it is important to have a strong interior production of aluminum and steel in order to be able to produce all the necessary goods as infrastructure and other defense

requirements so as to assure national security. On the other hand, as both industries have been weakened due to foreign competition, negative welfare effects can be observed for the domestic economy, to wit loss of skills, decrease in government revenues and unemployment generated from the displacement of domestic production.³²

Even though, The Trump Administration made severe allegations as to the excessive importation of steel and aluminum, a survey by Global Markets at the University of Chicago³³ showed a consensus between leading economists and states that the Trump tariffs on aluminum and steel will not improve the welfare of the American people. From the theory we revisited at the beginning of the chapter, we can infer that the tariff that President Trump wants to impose is likely too high to improve welfare (exceeding the threshold) and would therefore cause no tariff revenue that would compensate for the loss of consumer surplus.

Steel and aluminum are input materials which are used to produce other finished goods such as cars, planes, or even steel girders for bridges or skyscrapers. When a tariff is imposed on the input good, all the manufacturers relying on steel or aluminum to produce their finish good will suffer, as they will have to pay a higher price for the purchase of the input. Moreover, firms relying on steel and aluminum represent a much larger share of the U.S. economy than steel and aluminum producers. Hence, the gains from the steel and aluminum industry are unlikely to compensate for the losses of all industries relying on the inputs. Lydia Cox (Harvard) and Kadee Russ (University of California, Davis) also claim that “the number of jobs in U.S. industries that use steel or inputs made of steel outnumber the number of jobs involved in the production of steel by roughly 80 to 1”.³⁴ At this point, we can forecast the main problem that the US will be facing due to tariffs on steel: as steel is an input for a substantial number of goods, a trade-off is likely to happen between jobs saved in the steel industry against losses in the steel-using industries. Since President Trump’s first reason to impose tariffs is considered to be the protection of domestic workers, theory does not suggest that these tariffs will have the desired effect. Other studies³⁵ have shown that due to productivity and technological advancements, the number of workers in the steel industry has

³² Scott Horsley, “Trump Formally Orders Tariffs on Steel, Aluminum Imports,” *All Things Considered*, <https://www.npr.org/2018/03/08/591744195/trump-expected-to-formally-order-tariffs-on-steel-aluminum-imports> (accessed on 20 March 2018)

³³ ChicagoBooth, IGMForum, Survey on Steel and Aluminum Tariffs, Imposing new US tariffs on steel and aluminum will improve Americans’ welfare, <http://www.igmchicago.org/surveys/steel-and-aluminum-tariffs>

³⁴ L. Cox, K. Russ, *Will Steel Tariffs put U.S. Jobs at Risk?*, February 26, 2018, <http://econofact.org/will-steel-tariffs-put-u-s-jobs-at-risk>, (accessed on 23 May 2018)

³⁵ De Loecker J. and Collard-Wexler A. (2016), “The productivity impact of new technology: evidence from the US steel industry” <http://microeconomicinsights.org/productivity-impact-new-technology-evidence-us-steel-industry/> (accessed on 23 May 2018)

been diminishing over time. Between 1962 and 2005, three quarters of the jobs in the steel industry were discarded, while output per worker quintupled in that same period. Between 2006 and 2016, employment in the steel industry fell by more than 10 percent, while output per worker increased by more than 20 percent³⁶. Therefore, even if we expect a rise in the production of domestic steel, a rise in employment in this sector is less likely as it has been on a downward trend since technological advancements were made in the sector. Compared to the 140,000 workers in the steel industry, there are about 2 million jobs in steel-intensive industries. By steel-intensive industries, we mean industries and manufacturers that intensively use steel as an input for their production. These industries may be at risk for job losses due to tariffs if they are imposed for a period long enough to let the economic effects take place. Looking from this angle, the main objective of the US, which was to promote domestic workers, might not work out the way The Trump Administration expected.

Generally, the short-term consequences of a protectionist approach to trade are a fall in imports and a rising domestic production and investment. On the other hand, goods become more expensive for the final consumer, which will lead to a fall in domestic consumption, hence generating a cost for the domestic economy. Douglas Irwin, in his 2017 paper, describes what he calls “The False Promise of Protectionism”, and how it could cause the current US trade policy to backfire. The paper claims that the implications of trade policy are large. In fact, when imposing an import restriction helping upstream producers to raise the prices of the goods they sell, that same policy will negatively affect downstream producers that use those goods as inputs for their own production. In the case of steel and aluminum, we can conclude that the negative effect is likely to outweigh the positive effect on the upstream industries. In the short term, we can expect a positive effect on investment, production, and eventually employment in the steel- and aluminum-producing industries, yet which will for all not be able to compensate for the losses for the steel- and aluminum-using industries and final consumers’ welfare.

Moreover, we expect an increase in prices in every product consumers buy at the local store that has aluminum as input source, such as beer cans, phones or computers. Even though the rise in price might not be very significant, companies in these industries might face other problems that were also identified under President Bush’s administration in 2002. In fact, President Bush likewise imposed tariffs on steel, and the companies that reported the increased cost of input into the final good lost market shares at home and abroad. However, Bush’s steel tariffs were conceived to last only three years. These tariffs being only temporary, the outcome

³⁶ Data from United States Department of Labor - Bureau of Labor Statistics, Analysis from L. Cox, K. Russ (February 18, 2018)

after three years was foreseeable, which cannot be said for the current trade policy approach of President Trump. This again creates uncertainty, which will be treated in the next chapter.

The National Review states that the top exporter to the US of steel and aluminum is Canada, as shown in **Figure 1**. In the case of aluminum, 90 percent of the market are represented as imports from foreign countries. Imposing a tariff on steel and on aluminum would mostly hurt the domestic U.S. economy in the medium term, as well as steel-using and aluminum-consuming industries throughout the country³⁷. The second-biggest loser will most likely be Canada, who will lose a large market share in the United States, since U.S. firms and companies will have to pay more for Canadian steel and aluminum. The third-biggest losers might be the workers of steel- and aluminum-using industries. From history (Bush tariffs on steel), we have learned that the steel-producing jobs saved do not compensate for the job losses in steel-using industries, even though the safeguard tariffs were announced as being temporary.³⁸ Finally, the consumers of these final goods will also be losers of this trade policy approach, but the consequences will not be as harsh as for the above-mentioned agents. In comparison with the Bush administration's tariffs in 2002, Trump tariffs make the possibility to reach a positive outcome for the US economy look rather small³⁹. Since we are not going to treat the case of retaliation of other countries to the measures imposed by the US in this chapter, we expect a high probability for an even more negative outcome for domestic workers if foreign countries decided to retaliate against the United States with tariffs of their own targeting American export products.⁴⁰

³⁷ De Rugy V. (2018), "The U.S. Steel Industry: A Reality Check" <https://www.nationalreview.com/corner/the-u-s-steel-industry-a-reality-check/> (accessed on 24 May 2018)

³⁸ Job losses due to Bush tariffs on steel; "February 2003 report estimated that Bush's steel tariffs cost 200,000 jobs by boosting the costs of non-steel manufacturers. The estimated job loss was more than the total employment in the steel industry, which was 187,000 in December 2002." <https://www.politico.com/story/2018/03/07/steel-tariffs-trump-bush-391426> In contrast, a Peterson Institute report suggested that only 3 000 to 10 000 jobs were saved in the steel-producing sector. <http://econofact.org/will-steel-tariffs-put-u-s-jobs-at-risk>

³⁹ The economist and trade expert Chad P. Bown claims that one can only compare both tariffs (2002 and 2018) on the consequences they will produce since Trump's proposal differs a lot from Bush's initiative on steel tariffs. In fact, Bush's tariffs implied specific targets or included exceptions for the closest allies whereas Trump tariff are said to apply to all countries. Moreover, the legal justification and the scope president Trump is targeting are unprecedented in history.

⁴⁰ Lynch D. and Dewey C. (2018), "Trump finally gets his tariffs — and much of the world recoils", https://www.washingtonpost.com/business/economy/trump-finally-gets-his-tariffs--and-much-of-the-world-recoils/2018/03/01/ee277bd8-1d89-11e8-9de1-147dd2df3829_story.html?utm_term=.614f1773c143 (accessed on 24 May 2018)

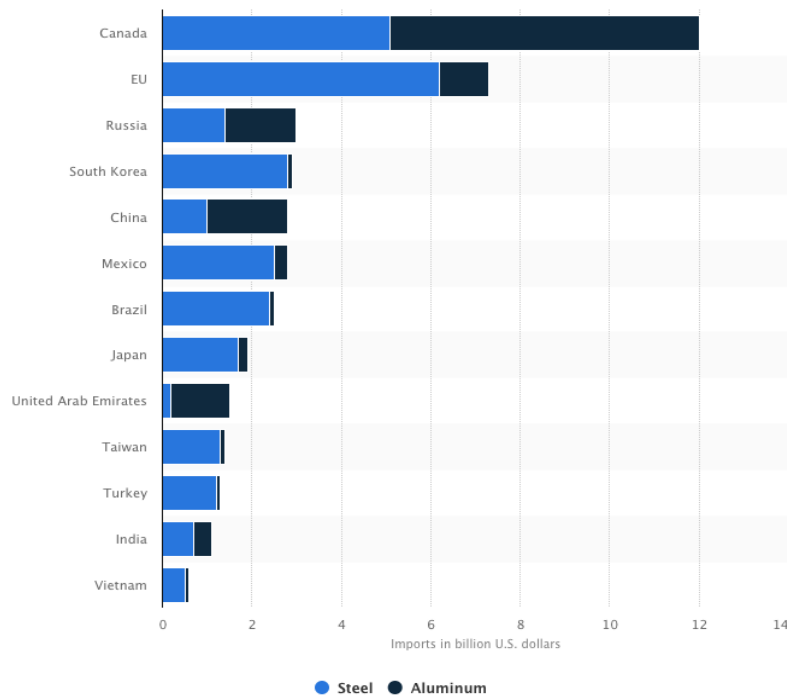


Figure 1 Imports of steel and aluminum into the U.S. in 2017 by value and trade partner (billions of U.S. dollars)⁴¹

Furthermore, applying economic theory we might expect a rise in internal competition. This means that the smallest and weakest producers of steel and aluminum will probably fall out the market since they will not be able to compete with the higher prices of the big firms, and because small producers rely on foreign inputs that are less expensive but now out of reach due to tariffs. Moreover, it so happens that the United States already produces more than two thirds of its own steel, which raises further questions as to why President Trump is willing to impose a tariff on steel in order to protect the domestic industry, which seems to be doing exceedingly well⁴². In the final analysis, we expect these tariffs to be doing more harm than good for the U.S. economy, and that these tariffs might harm U.S. allies more than traditional U.S. trade “enemies” such as China, since the United States imports very little steel and aluminum from China directly.

⁴¹ <https://www.statista.com/statistics/821041/value-of-us-imports-of-steel-aluminum-by-trade-partner/> (accessed on 11 July 2018)

⁴² Goodman P. (2018), “Trump Just Pushed the World Trade Organization Toward Irrelevance”, *The New York Times* March 23 2018, <https://www.nytimes.com/2018/03/23/business/trump-world-trade-organization.html> (accesses on 24 May 2018)

1.2.3 Other Tariffs

In addition to tariffs on steel, aluminum, solar panels and washing machines, President Trump claimed that the United States would be imposing a tariff on US car companies that would outsource their production, or even whole operations, to foreign countries such as Mexico. He proposed a tariff in the range of 15 to 35 percent on “every car, every truck and every part manufactured in Ford’s Mexico plant that comes across the border”.⁴³ This action goes strongly towards the determination of President Trump to concentrate US production on U.S. soil in order to reinforce the domestic market and the National Gross Production. He gives out the idea of wanting to forge a stronger U.S. economy with strong businesses, firms and companies that produce in the U.S., using solely U.S. inputs. One could say, by analyzing this sort of claim, that President Trump is looking for a way to create an auto-sufficient U.S. economy, not reliant on cheap foreign inputs to satisfy domestic as well as foreign demand. By these means, the President wants to create a “greater America” from within, targeting to punish even U.S. producers that try to outsource their production to cheaper countries with a cheaper working force.

When the European Union threatened to retaliate against the potential automobile tariffs and impose counter-tariffs on U.S. exports, President Trump responded via social media⁴⁴ threatening to impose a tariff on European car producers that export to the U.S., as European cars in the US would hinder U.S.-made cars from being sold in the States. However, more recent events show that the EU and the US agreed on working towards a trade agreement that will be explained in section 4 of the thesis.

To conclude the part on tariffs and the American policy and actions on the subject, we can fairly claim that President Trump is using an aggressive approach concerning trade to discourage cheaper foreign products from entering U.S. soil. However, the most unpredictable action from the Trump Administration in trade policy is the legal justification behind the tariffs. Figuratively, USITC and USTR empowered President Trump to impose tariffs as he pleases,

⁴³ Lane C. (2015), “Donald Trump’s contempt for the Free Market”, Washington Post 21 October 2015, https://www.washingtonpost.com/opinions/trumps-contempt-for-the-free-market/2015/10/21/2f61d87c-7815-11e5-bc80-9091021aeb69_story.html?utm_term=.fe5f740b2348 (accessed on 24 May 2018)

⁴⁴ Trump Donald (realDonaldTrump). “If the E.U. wants to further increase their already massive tariffs and barriers on U.S. companies doing business there, we will simply apply a Tax on their Cars which freely pour into the U.S. They make it impossible for our cars (and more) to sell there. Big trade imbalance!”, 3 March 2018, 9:53 <https://twitter.com/realDonaldTrump/status/969994273121820672> (accessed on 24 May 2018)

given their rhetoric of rising foreign influence on the United States economy being a threat to national security.

Let us now therefore discuss the consequences these tariff measures will have on the main trade partners, notably China, Canada and Mexico, as well as the effects on the renegotiation of the NAFTA.

1.3 Consequences of Import Restriction on main Trade Partners and the Exchange Rate

Even though President Trump made it clear that most of his tariff measures are meant to concern all countries exporting to the United States, administration reports and social media activity of the president raises concerns that he might be principally targeting China, and the re-negotiation of the FTA between Canada, Mexico and the US to ensure political leverage for upcoming negotiations with the latter's top trade partners. We shall presently analyze the major consequences for these three trade partners who can be seen as the top partners for trade for the United States, largely due to proximity or other Gravity equation determinants for international trade.⁴⁵

China has been repeatedly accused of unfair trade practices and dumping measures⁴⁶ by President Trump. An investigation of the U.S. Trade Representative of China's Acts urged that different responses should be put in place by the Trump Administration⁴⁷, the first being tariff increases aimed specifically at China's exports to the US. Secondly, a WTO dispute is recommended in order to counter "China's discriminatory technology licensing practices." Thirdly, the USTR recommends investment restrictions with respect to China's investments into the United States. Here again, we find evidence that the United States under President

⁴⁵ "The gravity equation in international trade is one of the most robust empirical finding in economics: bilateral trade between two countries is proportional to size, measured by GDP, and inversely proportional to the geographic distance between them." The closer two countries are, the more they trade. Same goes for GDP-size. <http://www.nber.org/papers/w19285> (accessed on 25 May 2018)

⁴⁶ WTO's definition of dumping and view on anti-dumping measures: "If a company exports a product at a price lower than the price it normally charges on its own home market, it is said to be "dumping" the product". However, the World Trade Organization does not regulate the actions of dumping, but rather proposes how governments, affected by dumping of other countries, can react anti-dumping-wise. https://www.wto.org/english/tratop_e/adp_e/adp_e.htm (accessed on 25 May 2018)

⁴⁷ <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/march/president-trump-announces-strong> (accessed 25 May 2018)

Trump is keen to enforce US laws to assure “fairer” trade with China. Even though these allegations are strong, we ought to look at the immediate effect the Trump tariffs on solar panels, washing machines, steel and aluminum have on China.

However, we understand that the Trump’s Administration is not specifically targeting China with the previous mentioned tariffs. We have to differentiate the tariffs on goods explained in this chapter and the list of Chinese goods on which the U.S. is imposing tariffs specifically against China. This list was published in the Federal Register on April 6, 2018 and includes over 1,300 tariff lines valued at approximately \$50 billion, which include industrial parts, vehicles, chemicals for example.⁴⁸ To circumvent further confusion, these are the tariffs actually targeting China, while the tariffs on solar panels, steel and aluminum concern all other countries, including China. Nevertheless, we are going to report the consequences of the previous mentioned Trump tariffs on China.

In fact, China is the current world leader in the manufacturing of solar panels, as stated by the International Renewable Energy Agency (IRENA)⁴⁹. Naturally, the Trump tariffs on solar cells and modules affect the Chinese exports and the Chinese Administration feels unfairly treated by these measures. With respect to the tariffs imposed on solar panels, the Chinese Ministry of Commerce made a statement that the government would seek to find a solution with other WTO members in order to defend Chinese interests.⁵⁰ In so doing, President Trump managed to get the attention of China as these tariffs would slap heavy costs on solar panel manufacturers from China.

As for steel and aluminum tariffs, China barely makes the top 10 exporters to the United States. At this point, we might raise the question as to why President Trump would repeatedly threaten China with these tariffs if the US imports negligible quantities steel and aluminum from Chinese producers. Under these circumstances, we can consider the tariffs to be a political ploy on the part of President Trump. In addition, most of the steel and aluminum imported directly from China is already covered by antidumping and countervailing duties imposed by the United States in the past.⁵¹ We may therefore be forgiven for suspecting that the new Trump tariffs and import restrictions are more likely to impact other countries exporting directly to the US than China. Contrary to the public affirmation that these tariffs are going to harm China and

⁴⁸ <https://ustr.gov/about-us/policy-offices/press-office/fact-sheets/2018/june/section-301-product-list-fact-sheet>

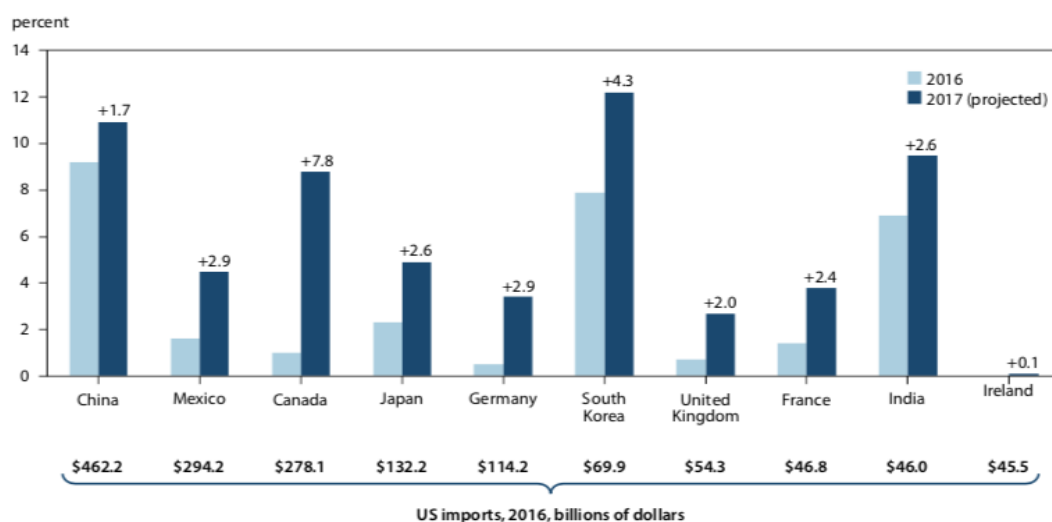
⁴⁹ <http://www.irena.org/publications/2018/Mar/Renewable-Capacity-Statistics-2018> (accessed on 25 May 2018)

⁵⁰ <https://www.nytimes.com/2018/01/22/business/trump-tariffs-washing-machines-solar-panels.html> (accessed on 25 May 2018)

⁵¹ Chad P. Bown, June 2017, “Steel, Aluminum, Lumber, Solar: Trump’s Stealth Trade Protection” Policy Brief, 17-21

“teach them a lesson”, what The Trump Administration is really doing is hurting Canada. In fact, as stated in the previous sections, Canada represents the largest exporter of steel and aluminum to the United States. By publicly targeting China, President Trump might just really be wanting to get leverage on Canada and the future renegotiation of the NAFTA by lending political credibility to his campaign’s threats and promises regarding international trade.

Even though President Trump imposes import restrictions on China, we can see in **Figure 2** that China is not the country that is most affected by these measures. Indeed, if we use the share of total bilateral imports affected by the new import restrictions as a yardstick, South Korea becomes the most distressed exporter to the US. In fact, 12.2 percent of South Korean exports to the US will be affected compared to hitherto 7.9 percent. On the other hand, annual exports from China that are subject to new Trump tariffs will be shifting from 9.2 percent to 10.9 percent, which is not a large increase compared to countries like South Korea, Canada (1 percent to 8.8 percent) or Mexico (1.6 percent to 4.5 percent).



Notes: 2017 projections are based on the policies listed in table 2. Selected partners are the top 10 sources of US imports in 2016. Percentage point change between 2016 and 2017 in share of US bilateral imports covered by projected trade barriers shown above 2017 bar in blue.

Figure 2 Projected increase import coverage of President Trump’s “100 days” trade policy actions, by partner⁵²

⁵² Chad P. Bown, June 2017, “Steel, Aluminum, Lumber, Solar: Trump’s Stealth Trade Protection” Policy Brief, 17-21

Trade specialist Chad P. Bown also indicates that the laws under which President Trump imposes new import protection can create new incentives to create additional restrictions due to macroeconomic changes in climate. It stands to reason that if the dollar appreciates, making it possible to purchase more foreign goods with the same amount of dollars, foreign-produced goods will get proportionately cheaper. This will put pressure on domestic firms since consumers will have a higher incentive to buy foreign-produced goods. In this context, one must beware of the fiscal policy of the Trump Administration imposing priority for further appreciation of the dollar. In fact, this would create additional demand for imports and foreign-produced goods, hence leading to fiercer competition for domestic firms, which, again, would produce incentives to impose new import restrictions under the laws by which the Trump Administration legitimizes its current trade policy.

Having analyzed the countries most affected by the new Trump tariffs and projected a possible scenario based on the appreciation of the dollar, we must turn our attention to the discrepancies between the official statements of the Trump Administration and the actual consequences of their actions. It is this inconsistency that fosters uncertainty as to how the actual approach of US trade policy is enforced. In the following chapter, we will therefore take a closer look at the consequences of the current US trade policy by analyzing the rising concern of domestic and international uncertainty.

Chapter 2

Uncertainty, Credibility, Trade and Policy

In this chapter, we will proceed to describe the differences in trade-, policy- and investment uncertainty and gauge the economic consequences and its costs for the US economy. We will start with general economic policy uncertainty before turning over to trade uncertainty and conclude with both the short-and long-term costs for the real economy.

2.1 Economic Policy Uncertainty

Rising economic policy uncertainty threatens the reliability of predictable policy actions and raises uncertainty concerns in every domain, from domestic policy to foreign policy to trade policy and agreements. In order to understand trade uncertainty, we must first take a brief look at the “Economic Policy Uncertainty” index, or EPU, for the largest economies in the world (**Figure 3**). We can observe that after geopolitical issues such as 9/11 and the Gulf War II, policy uncertainty remained rather stable and at low levels from 2004 until 2007. The US-originated Global Financial Crisis of 2007-08 led to high volatility in the world markets and to a sharp increase in economic policy uncertainty due to the unexpected crash of the housing bubble and the worldwide impact of the consequences. Policy makers all over the world were taken by surprise, which contributed to higher uncertainty in the world economy. In 2016, Brexit raised major concerns for the European Union and generated uncertainty as to existing trade relations with the EU. However, it so happens that not only the European Union were suffering from a rise in uncertainty, as there was mounting fear that other countries might

follow the UK into exiting the European Union or withdrawing from long-lasting agreements. Finally, at the end of 2016, we may observe a peak in the index due to the U.S. presidential elections and politics in Brazil, China, France, South Korea and the United Kingdom. Even though it might be more relevant to disregard the effect of the U.S. presidential elections on the EPU index, we wish to describe the actual status of the world economy. From this graph, we can infer that policy uncertainty is at a peak at world level.

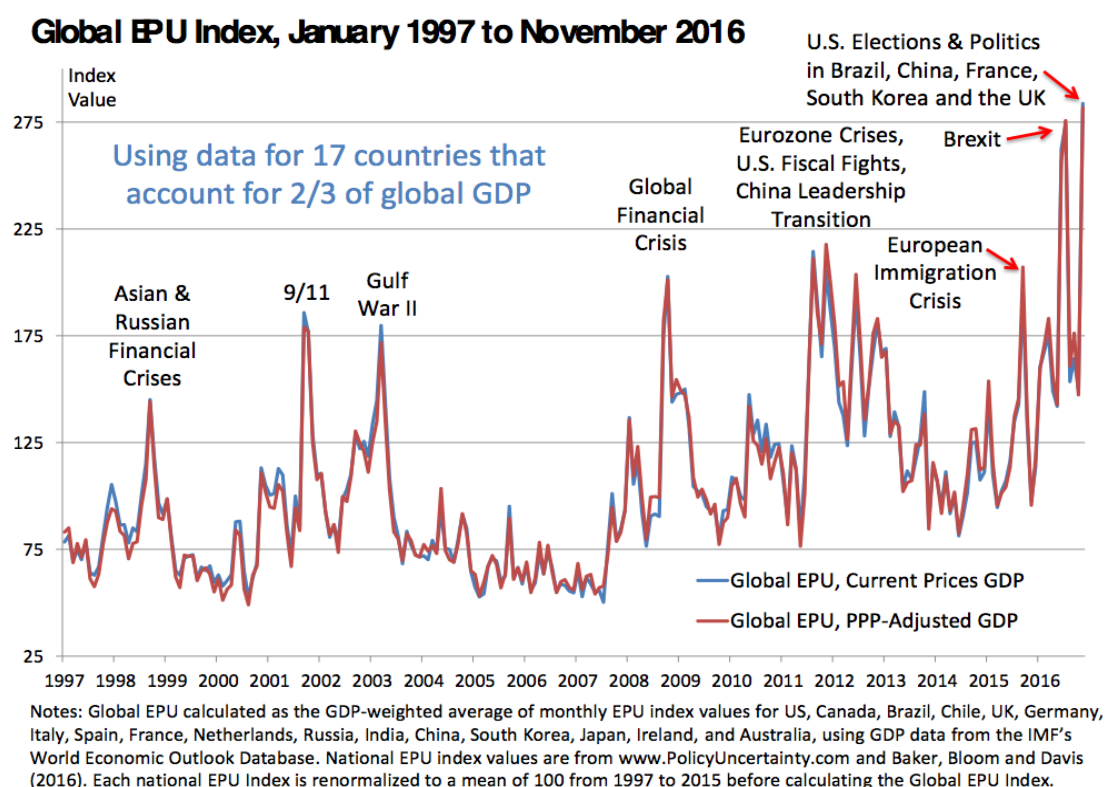


Figure 3 Global Economic Policy Uncertainty Index (1997-2016)⁵³

Haddow et al. (2013) summarizes the consequences of uncertainty and the channels through which uncertainty affects the real economy (**Table 2.1**). In fact, uncertainty affects households differently than firms. While households increase precautionary savings in order to smooth consumption during an uncertainty shock, firms mainly opt for “wait and see” or “entry and exit” strategies. The economic variable affected by the precautionary savings is consumption.

⁵³ <http://www.policyuncertainty.com> (accessed on 8 July 2018)

In fact, during a temporary uncertainty shock, household savings are liable to rise, hence diminishing the aggregate consumption level. On the other hand, firms opting for the “wait and see” strategy postpone their production and investment decisions until the uncertainty shock is resolved. This strategy typically results in a short-term decline of investment and productivity for the firms. If the firms opt for an “entry and exit” strategy, we should expect to see a decline in short-term foreign direct investment and in aggregate export levels. Compared to the data presented in **Annexes 1-3**, we observe in the first quarter of 2018 a decline in the growth rate of US Real Personal consumption expenditures per capita and a decline in the US net exports (growth and level). Nevertheless, we cannot verify the hypothesis of the presence of uncertainty in the domestic US economy, as other cyclical effects could be the reason for the decline in consumption. Moreover, we cannot observe a precautionary strategy of US firms that would hold off production or investment decisions since the announcement of tariffs. In fact, we can even observe a positive and increasing growth rate of domestic investment towards the beginning of 2018. We interpret from this data that domestic households are reducing consumption because of economic uncertainty, whereas firms increase their domestic investment while postponing exports. In this case, firms can be described as confident in their belief that tariffs will protect the domestic firms from international competition, hence strengthening firms producing and investing in the domestic market.

Sector	Channel	Description	References	Economic variable affected
Households	Precautionary savings	Households unsure about labour income and postpone consumption to insure against temporary shocks to income	Carroll (1996)	Consumption
Firms	"Wait and see"	Firms uncertain about future sales and profits postpone production and investment until uncertainty is resolved	Dixit and Pindyck (1994)	Investment and productivity
	"Entry and exit"	Firms postpone entering new markets, including export markets. These firms are likely to be the most productive.	Bloom (2009), Disney, Haskell and Heden (2003)	Productivity and exports
	Labour market distortions	Households unwilling to search for more productive jobs, firms unwilling to post vacancies so the resulting matches are less productive.	Lazear and Spletzer (2011)	Productivity
All sectors	Financial	Uncertainty over future asset price volatility raises risk premia and the cost of credit to households and companies	Whaley (2000), Gilchrist, Sim and Zakrajsek (2010)	Credit, consumption and investment

Table 2.1. Channels through which uncertainty affects the economy⁵⁴ (Haddow et al., 2013)

⁵⁴ Haddow, Abigail and Hare, Chris and Hooley, John and Shakir, Tamarah, Macroeconomic Uncertainty: What is It, How Can We Measure It and Why Does it Matter? (June 13, 2013). Bank of England Quarterly Bulletin 2013 Q2. Available at SSRN: <https://ssrn.com/abstract=2281090>

From economic theory we can state that two effects are at play for firm investment. First, uncertainty can lead to a substitution effect in the portfolio of investment and production of domestic firms. In this case, when uncertainty rises, US firms will prefer to invest less, and national savings increase. Since the Current Account of a country is the difference between national savings and national investment, the current account of the United States during an uncertainty shock would increase due to the substitution of investment to savings. In the second period, since firms have been saving more, they have more at their disposal to invest. However, due to uncertainty in the international markets, US firms will prefer to invest their surplus in the domestic market. This investment will theoretically lead to higher production, higher employment and higher productivity in the near future. *Ceteris paribus*, this constitutes the simplified main economic consequences on the national level for the United States. However, Bostic Raphael, an American economist and CEO and president of the Federal Reserve Bank of Atlanta, states that the rise in investment comes from the supportive US tax reform, which raised optimism for firms. However, he cautions that with the recent trade policy, that business optimism will fall due to the tariff implementation and the rise of uncertainty in the near future.⁵⁵

We conclude from the data that a rise in uncertainty is mainly observed in the international markets with a decline of the net exports. Internally, uncertainty effects seem to be less strong, since we cannot observe a decline in investment or a “wait and see” approach in the early 2018 due to tariffs. In fact, we even observe that investment in the US has been rising in the last months mainly due to internal tax reforms affecting firms. Investment has been on an upward trend despite the adverse effects of economic policy uncertainty. Nonetheless, one might wonder what the counterfactual would have been with a more reasonable trade policy, creating less uncertainty. Most likely, investment would be even higher if the markets were more certain and more predictable. Even though US investment is booming, there is no necessary contradiction for the observation of rising uncertainty. As shown by the uncertainty index and the smaller growth rate of domestic consumption, uncertainty in the United States is present in accordance with the uncertainty index. The effects and economic costs of a slower growth in consumption and a loss in exports will be pursued in the third section of this chapter. We shall now turn to the more specific trade uncertainty and to the international trade markets.

⁵⁵ Matthews S. (2018), “Fed’s Bostic Says Business Optimism Is Fading While Trade Tensions Rise”, *Bloomberg June 18 2018*, <https://www.bloomberg.com/news/articles/2018-06-18/fed-s-bostic-says-business-optimism-fading-amid-trade-tensions> (accessed on 17 July 2018)

2.2 Trade Uncertainty

Labelling China as a currency manipulator and threatening to impose tariffs on China and Mexico if they don't play fair, President Trump has been creating tension on the international trade scene ever since he took over the presidency. Even though this administration might not enact every threat its president makes, *"its overall approach can seriously damage the credibility of the world trading system for years"* (Handley K. and Limão N., 2016).⁵⁶ Subsequent to the withdrawal from the TPP, the renegotiation for NAFTA and the establishment of tariffs on China, experts on trade and investors are concerned about US trade policy. Professor Aaronson from George Washington University's Elliot School of International Affairs goes so far as to assert that "other countries look more stable and better managed than the United States". Moreover, she states that "Trump's chaos and unpredictability are signaling a decline in the rule of law".

From a domestic point of view, as shown below by **Figure 4**, President Trump has generated considerable uncertainty since his bid for the presidential race. This index⁵⁷ is based on US news and the mentioning of the words "uncertain" or "uncertainty" in newspaper articles related to international trade and trade policy. From the graph, we can infer that not only in foreign countries, but also on domestic ground, President Trump managed to raise uncertainty about trade. Indeed, surveys reveal that in September 2016, "52% of US CFOs say that they are holding off on spending, and 40% on hiring, due to political risk" and that "26% say they have delayed plans specifically due the presidential election".⁵⁸ Among foreign firms, President Trump has naturally also created uncertainty about trade. "About 50% of European CFOs say that a Trump win would cause them to hold off on investment until uncertainty about his presidency is resolved, compared to fewer than 10% if Clinton wins".⁵⁹ Generally, we can say that most firms are waiting off for the tensions to cool down until investing again abroad. These numbers also confirm that more than half of US firms are concerned about trade uncertainty and the same goes for European firms. Essentially, since the emergence of Donald Trump, the top concerns for U.S. businesses are Economic Uncertainty, a weak demand for products/services, access to capital and Government policy.⁶⁰ Clearly, the higher the share of exports-to-U.S. in firms' sales, the more the firms are exposed to the rising uncertainty

⁵⁶ Handley K. and Limão N., Economics and policy in the Age of Trump – Trade under T.R.U.M.P. polices, 2017

⁵⁷ This index is based on the methodology of Baker et al. (2016), focusing on domestic policy uncertainty instead of trade policy and the association with lower economic activity

⁵⁸ <https://www.cfosurvey.org/2016q3/Q3-2016-US-KeyNumbers.pdf>

⁵⁹ Ibid

⁶⁰ Ibidem

concerning U.S. trade policy. Since mostly large firms are exporting, the rising uncertainty leads to fewer investments towards the United States.

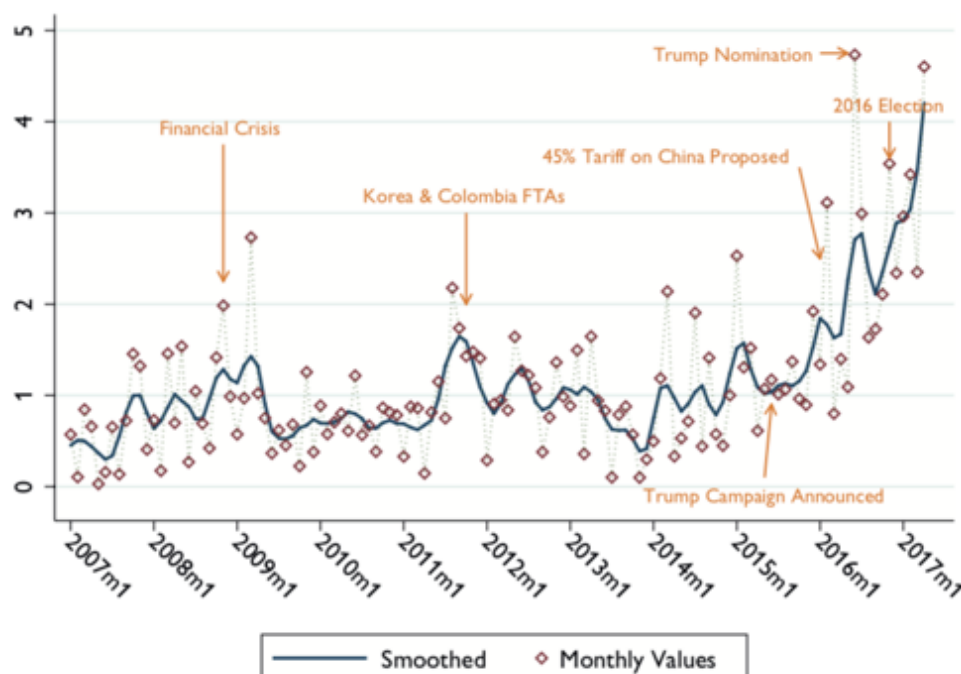


Figure 4. US Trade policy uncertainty news index, 2007-2017⁶¹

The relevant literature suggests that a large part of U.S. firms never had more concerns about the stability of trade relations than since the Age of Trump. This allows us to presume that this trade uncertainty would seem to reflect on their domestic production and investment plans, and that US-based international firms are going to take a more careful approach. Comparing this to the data on hand, we find that Foreign Direct Investment into the United States plummeted in 2016, when Donald Trump was elected President of the United States and in the first half of 2017.⁶² However, when the US tariffs were announced in 2018, we cannot observe that same phenomenon.

We can so far conclude that the Trump tariffs did not create the same kind of uncertainty as the election of President Trump in 2016. However, the tariffs created tension in the

⁶¹ Handley K. and Limão N., Economics and policy in the Age of Trump – Trade under T.R.U.M.P. policies, 2017

⁶² See Annex 4

international market not by the uncertainty of the outcome of the tariffs on prices, production or investment decision. Trump tariffs mostly created uncertainty in the context of retaliation from other countries. In fact, we believe that the trade uncertainty concerns the trade relations between the US and its trade partners, the role of WTO in the Trump tariffs and trade war scenarios emerging since the beginning of 2018. We also think that the final outcome of the US import tariffs, which will likely turn into a trade war with China and maybe other partners, is rather uncertain for the US. In the third chapter, where we will analyze the trade war between the US and China, the literature shows that the United States will suffer in terms of social welfare, while China will be less affected than predicted. However, with the most recent trade talks between the US and the European Union, this scenario might change. In the end, the unpredictability of the current US trade policy creates uncertainty for the international markets and can lead to short-term as well as long-term costs for the US economy.

Assessing trade policy uncertainty, we study the case of China's WTO accession in 2001, where we observe a significant decrease in trade policy uncertainty. Feng et al. (2017), discusses the major effects of a reduction in trade policy uncertainty in the case of China. In fact, we observe an expected increase in trade volume and an expansion of new exporters. Less trade uncertainty reflects not also in new exporters starting to export, but also incumbent firms exiting the export market. In fact, with less trade uncertainty, the incentives for new exporters to install is risen. However, in the Chinese case in 2001, the new exporting firms charged lower prices while exporting higher quality goods than the exiting exporters. Feng et al. (2017) compares the observation with heterogeneous firm models such as Melitz (2003), which does not predict the exiting of incumbent firms, which are already exporting, following favorable trade policy changes. In fact, the paper observes congestion effects, as an increasing number of firms now seeks the export market, which affect the fixed costs of export. These fixed costs are related to specific factors, as skilled labor, marketing, or finding a reliable importer, which are supplied imperfectly elastically (Bergin and Lin (2012)). To resume, we can state that the effect of a reduction in the degree of uncertainty has different effects on aggregate firm-level but also in the price and quality of the newly traded goods. If the trade uncertainty reduction intensifies competition, "smaller aggregate price increases are expected for products that experienced a larger decline in trade uncertainty". Moreover, trade uncertainty reductions affect the export market in reallocating from high-price low-quality exiting exporters, to low-price high-quality new exporters.

In relation to the current US trade policy and the rising trade uncertainty, we can relate to contrary effects of the previous literature. With fewer incentives for firms to trade with the US, changes in the foreign export market can be expected. Since the United States represents the largest importer in the world economy, increasing trade uncertainty originated in the US, can lead to a high number of firms exiting the export market. Firms that majorly exported to the

United States and that are now facing tariffs and higher uncertainty in their bilateral trade relation with the US will face downturn forces that can lead the less productive firms to exit the export market or even go out of business. Moreover, a change in quality can be expected, as the adverse reallocation to lower-quality high-pricing exports is likely to be on the rise. In order to conclude, we can state that not only less firms will be exporting to the United States due to rising trade uncertainty, but also that the US will face a higher number of lower-quality imports as foreign firms are likely to increase their prices while reducing the quality of their products. In addition, Handley (2014) states that exporting under trade uncertainty makes firms less responsive to trade barriers reduction while delaying the entry of exporters into new markets, whereas binding trade policy commitments at the WTO, increase entry. We believe that this statement concerns domestic as well as foreign firms. In fact, not only foreign firms will feel unsure about whether to start exporting with the US and enter the export market if uncertainty is rising. Domestic US firms might also feel doubtful to engage in long-term commitments in the export market or to simply invest abroad.

Describing trade policy as inherently uncertain, Kyle Handley claims that commitments at the WTO are meant to provide more secure and a more certain outcome for prospective exporters. However, the related costs of trade uncertainty can be diverse. We expect a downturn in US foreign direct investment which will hurt the domestic economy as well as a significant drop in US imports and more importantly, a decline in total international trade.

2.3 Costs

It is important to note that even though uncertainty has been created due to unexpected policy changes by the Trump Administration, the United States have known a positive GDP growth since the beginning of Trump's presidency. Yet although forecast studies expect a rise in GDP growth for the rest of 2018, we have been able to observe a clear fall in GDP growth of 0.9 percentage points since the imposition of import tariffs in the early months of 2018. We believe that the US GDP growth rate has been rising because of booming investment since the tax reforms. In the short term, the costs of uncertainty, and especially trade uncertainty, might not be visible at first glance as we do not see a decline in the forecast of US production growth for the following quarter.



Figure 5. United States GDP growth (qoq %)

Bichler Shimshon and Nitzan Jonathan⁶³ claim that much of the buzz surrounding trade uncertainty and more recent trade wars misses the essential point. Due to fragilization of trade relations since the Trump tariffs, it seems clear that foreign trade will slow down for the US. However, the key issue is to focus on foreign investment. Since foreign trade contributes relatively little to US corporate profit, a decrease in FDI into the United States is expected to deal damage to corporate profits in the medium term, hence hurting the US economy. We believe that if corporate profits are affected by less foreign investment, domestic US investment will fall in response. In the long term, a slower consumption growth rate combined with slower domestic and foreign investments can be the output of the current trade uncertainty of US trade policy, leading to adverse effects on GDP growth in the future. Marianna Schneider-Petsinger (2017) in a paper of “Trade Policy Under President Trump”, explains that ultimately, as a consequence of higher intermediate inputs, exports could also become more expensive. If we combine higher import costs, higher export costs with a slower growth of domestic consumption and investment, US GDP growth could be adversely affected. However, in the current system where US trade policy might change with a tweet, this only represents a possibility for the long-term if no measures are taken by Trump’s Administration.

Finally, if we isolate the United States economy and analyze the costs of the Trump tariffs and trade uncertainty, we can conclude that the short-term costs consist of a loss of consumers’ welfare and inflated prices. The long-term costs will come into place due to a fall in foreign investment into the United States which will lead to a reduction of incentives for innovation

⁶³ Bichler S. and Nitzan J. (2018), “Trump’s Trade Wars Threaten US Foreign Investment”, *Real-World Economics Review Blog*, March 17, 2018 <https://rwer.wordpress.com/2018/03/17/trumps-trade-wars-threaten-us-foreign-investment/> (accessed 10 July 2018)

and damage the US's competitiveness due to an uncertain economic environment. However, other costs can arise in the case of retaliation of US trade partners. In fact, if a large importer of US goods would decide to retaliate and impose its own tariffs on US exported goods, costs on social welfare could be immense for the United States or even other third-party countries.

In the next chapter, we are going to take a closer look into retaliation between trade partners, trade wars and its cost to the United States and the rest of the world.

Chapter 3

Rest of the world – Trade wars, Retaliation and WTO

In the context of trade restrictions from the United States, a scenario where the foreign countries retaliate and respond with their own imposition of tariffs is a realistic assumption. In fact, China promised to counter with import restrictions of their own on US goods. In the paper “*The False Promise of Protectionism*”, Douglas A. Irwin (2017) states that the United States must recognize that “protectionism at home can lead to protectionism abroad”.⁶⁴ From history, we have learned that when the Smoot-Hawley Tariff Act was put in place back in 1930, the world took this as a signal for “tariff-making activity” in other countries in order to parry the tariffs imposed by the United States.

In this chapter, we are going to set out the most likely scenario of retaliation of foreign countries in response to Trump tariffs with insight of economic Game Theory. Moreover, we shall analyze the World Trade Organization’s position in a potential trade war between the United States and its trade partners and explain how current US trade policy might damage the open world trading system.

⁶⁴ Douglas A. Irwin, *The False Promise of Protectionism: Why Trump's Trade Policy Could Backfire*, 96 Foreign Aff. 45 (2017)

3.1 Trade Wars

“A trade war is when a nation imposes tariffs or quotas on imports and foreign countries retaliate with similar forms of trade protectionism.”⁶⁵ This scenario generally results in a reduction of international trade, as trade protectionism leads to higher trade barriers and higher prices on traded goods and services. As President Trump established tariffs in the beginning of the year, a trade war was likely to ensue.

Analyzing the literature of trade wars, Johnson (1953) was the first to demonstrate how large countries might benefit from trade wars under a neoclassical framework and perfect competition based on the optimum tariff argument.⁶⁶ However, in the general case, large countries lose from trade wars. Conybeare (1987) distinguishes three types of trade wars:

- Trade wars as a “prisoners’ dilemma”; where non-cooperation between the two countries is a dominant strategy⁶⁷. If both players opt for this strategy, both countries are worse off than if they had cooperated.
- Trade wars between a large and a small country; where the large country wins and the small country loses from the trade war (“Johnson’s case”).
- Trade wars between a large set of nations; exemplified by the Smoot-Hawley Tariff Act of 1930.

In the latter case, US Congress raised tariffs on 20,000 imported goods, increasing the share of protected imports from 34 to 48 percent. As a consequence, global trade collapsed when many US trade partners retaliated against the United States, which negatively affected the US. In our opinion, this scenario corresponds to the most likely outcome of the current US trade policy, generating retaliation policies from major US trade partners.

⁶⁵ Kimberly Amadeo, *Trade Wars and How They Affect You*, <https://www.thebalance.com/trade-wars-definition-how-it-affects-you-4159973> (accessed on 22 July 2018)

⁶⁶ The optimal tariff theory states that if a country is a primary buyer from many competing foreign suppliers – if the country has monopsony power –, the country can shift the economic burden of an import tariff from domestic consumers to foreign suppliers. <http://chicagopolicyreview.org/2015/01/15/rethinking-the-optimal-tariff-theory/> (accessed on 22 July 2018)

⁶⁷ “A strategy is dominant if, regardless of what any other players do, the strategy earns a player a larger payoff than any other. Hence, a strategy is dominant if it is always better than any other strategy, for any profile of other players' actions. Depending on whether "better" is defined with weak or strict inequalities, the strategy is termed strictly dominant or weakly dominant. If one strategy is dominant, then all others are dominated.” <http://www.gametheory.net/dictionary/DominantStrategy.html> (accessed on 10 July 2018)

Bouët and Laborde (2017) draw three main conclusions from trade war literature. First, global tariff wars may negatively affect all countries and be very prejudicial to the world economy. Second, during bilateral trade wars, two scenarios are to be distinguished. In the general case, compared to the free trade scenario, both economies are hurt. In other cases, the large country increases its welfare or GDP, while the small country is negatively affected. This is what they call the Johnson cases. The last conclusion states that even under Johnson cases, world welfare is decreased.

From the literature review on trade wars, we infer that the US tariffs on imported goods will most likely turn out to affect the US economy negatively, due to retaliation and hence affecting the global trading system. On the other hand, Bichler and Nitzan (2018) claim that the loss of foreign trade is not the key issue for the United States. Foreign trade's contribution to US corporate profit being very small, it is the decline in foreign investment that will hurt the US economy the hardest. The US export-to-GDP ratio is relatively small (12%), smaller, that is, than that of their largest trade partners such as the European Union (43%) and East Asia and the Pacific (28%). Therefore, the drop in US exports-profits from a trade war will most likely be compensated by increasing domestic profit gains. However, if this trade war degenerates into an investment war, like the trade wars in the 1920s and 1930s, the US will endure a fall in exports, imports, and an even larger downturn of foreign investment and foreign profit. The paper concludes that President Trump's initiative to start a trade war goes in the opposite direction than the domestic tax reform, now weakening and "threatening the structure of US corporate power".

Having introduced and defined the concept of trade war and briefly discussed the main consequences of trade wars, we can now explain why trade wars exist. This, we shall do with the help of economic game theory. Furthermore, we will discuss the role of the World Trade Organization in the recent threat on free international trade by the United States.

3.1.1 Game Theory

Let us assume a simplified representation of the world where only two large countries (A and B) exist. Country A imports a set of goods (b_1, b_2, b_3 , etc.) from country B. Country B imports a different set of products (a_1, a_2, a_3 , etc.) from country A. Imagine now that both countries must choose between two different trade policies, free trade (FT) and optimal tariffs (OT), where each strategy represents a game strategy. In choosing the FT strategy, the country imposes no import tariffs. If the country chooses the OT strategy, it determines the optimal tariff for each imported good and sets the tariff on imports accordingly. Now let us assume that

countries care about the national welfare effects of trade policy. With a game theory setup, we are going to review the theoretical effects of optimal tariffs and retaliation.

A		FT	OT
B	FT	100 100	130 50
	OT	50 130	80 80

Figure 6. Simplified trade policy game⁶⁸

Country A's strategies correspond to the two columns in **Figure 6**, whereas country B's strategies are represented by the two rows. The payoffs for both countries represent the respective national welfare in each country. To explain the four possible outcomes for the four simplified scenarios we start with the upper-left box, representing the scenario where both countries play the "free-trade strategy" and do not impose tariffs on imports from the other country. In this case, we have a representative level of welfare of 100 for each country. If country A now decides to impose tariffs (playing "OT-strategy"), and country B does not retaliate (playing "FT-strategy"), the outcome favors the protectionist economy, by increasing the level of welfare to 130. Note that in this scenario (upper-right box), the level of welfare for country B decreases to 50, and that total world welfare decreases from 200 to 180. Similar results are given when country B sets optimal tariffs while country A maintains free trade. Here we assume that the effect of tariffs is symmetric. Finally, if both countries set optimal tariffs, welfare is 80 for each country, while world welfare decreases to 160.

⁶⁸ https://saylordotorg.github.io/text_international-trade-theory-and-policy/s10-09-retaliation-and-trade-wars.html (accessed on 23 July 2018)

Let us now assume now that both countries have the choice whether to cooperate or not. If they do not cooperate, the solution of this game is referred to as the Nash equilibrium, if we consider that the primary objective for each country is to maximize its own national welfare. In this case, the Nash equilibrium is found by the interaction of both economies' dominant strategies. In order to find the respective dominant strategies of both countries, we are going to analyze the choices faced by either country depending on the other country's strategy.

Starting with country A:

- If country B plays FT, the best response on the part of A in terms of its own national welfare, is to set optimal tariffs, as the national welfare is higher (130) than if they respond with FT (100).
- If country B plays OT, the best strategy of A, is to retaliate and also play OT, since national welfare is higher (80), than if country A plays FT (50).

The dominant strategy of country A is to always set optimal tariffs, whatever the strategy of country B. Since our example's payoffs are symmetric, the same goes for country B. Both countries' dominant strategies being to play OT, the only possible outcome is the Nash equilibrium with payoffs of 80 for each. Note that the outcome (80,80) is less beneficial for both economies than the scenario where both countries would implement free trade (100,100). This is called the prisoner's dilemma. Both countries could be better off if they would cooperate and even maximize total welfare. The prisoner's dilemma states that the pursuit of self-interest leads to an inferior outcome for both players. In fact, if one country plays FT, there is an incentive for the other country to deflect from the outcome by setting tariffs in order to reach higher welfare in the short term. If either country were to deviate from the cooperative solution (free trade, free trade), the other country would most likely retaliate in order to minimize welfare losses.

As trade wars can be seen as the Nash equilibrium of this game, where one country retaliates in response to the other country's trade policy, we can now explain how US trade partners are supposed to respond to Trump tariffs. This theory suggests that retaliation from China, Mexico or even the European Union is in order, which would lead to a decrease in international trade, while limiting the national welfare losses of the respective countries. We can also conclude that it is not easy to assure the most favorable scenario for world welfare where both countries cooperate to assure free trade due to self-interest incentives to deviate from the equilibrium. It is this reason that the World Trade Organization (WTO) and the General Agreement on Tariffs and Trade (GATT) exist. In order to assure free trade and world welfare maximization related to trade, WTO and GATT are institutional instruments to assure cooperation between countries and limit the deviation incentives.

3.1.2 US Trade War with China

This subsection is devoted to explaining and understanding the main effects of a trade war between the United States and China. For illustration purposes, our efforts shall be focused upon the US-China trade war, since we think that this scenario will be appropriate to make sense of the game theory and retaliation scenario explained above. The analysis is made with the assumption of import tariffs imposed by the United States on China, and retaliation on the part of China against the US, *ceteris paribus*, meaning that no other tariffs will be applied to other countries. Again, this scenario serves for illustration purposes in order to exemplify the mechanisms and effects of a trade war between two countries. Naturally, a trade war between more countries, i.e. US-EU and US-Mexico has a more severe outcome for international trade.

The present analysis is taken from Guo et al. (2017), who evaluate the *Burden of Trump's Trade War* based on the multi-sector and multi-country general equilibrium model of Eaton and Kortum (2002). As a preliminary, the paper forecasts that China will be very little hurt in terms of welfare, whereas the US will be one of the biggest losers. We are going to complete the analysis of Guo et al. (2017) with the paper from Bouët and Laborde (2017) where the authors analyze five different scenarios; first, that of China imposing the same import tariffs on products from the US; second, that of China implementing tariff duties on all imports of the US in order to equalize the tariff revenue collected by the Trump tariffs of the US authorities. A third scenario sees China retaliate with tariff duties in order to equalize the terms-of-trade with the US before the trade war. Number four is known as the optimal tariff scenario, “where each country imposes the tariff that maximizes its representative agent’s welfare”, based on the initial US tariff. Lastly, there is the Nash equilibrium, where countries impose tariff duties based on the best response in terms of national welfare. All scenarios are represented in **Table 3.1** separating short-term and long-term closure.

We observe that US tariffs on Chinese goods would damage the Chinese terms-of-trade. Hence, China would have to increase its tariff duties up and above the actual 35 percent of US tariffs. In order to restore the same tariff revenue for the Chinese government as the United States, China would have to impose even higher (59.9 percent) tariffs on US imports. This is due to the lower trade flow from the US to China. In fact, as the trade flow from China to the United States is higher, Chinese authorities would have to impose higher tariffs to get the same amount of tariff revenue than the US. Comparing the optimal welfare scenario with the Nash equilibrium tariffs, we observe that the United States do not maximize domestic welfare with the imposition of 35 percent tariff duties on Chinese products. Also note that optimal retaliation tariffs would be reduced when shifting from short- to long-term closure.

	Short-term closure		Long-term closure	
	China	United States	China	United States
US unilateral tariff	n.a.	35.0	n.a.	35.0
35 percent tariff retaliation	35.0	35.0	35.0	35.0
Tariff revenue retaliation	59.9	35.0	59.7	35.0
Terms-of-trade retaliation	42.9	35.0	38.5	35.0
Optimal welfare retaliation	4.1	35.0	3.7	35.0
Nash equilibrium	3.6	7.0	3.1	7.0

Source: MIRAGRODEP model simulations (AGRODEP 2013)

Note: n.a. = not applicable

Table 3.1. Changes in tariffs implemented, by scenario, percentage points

Due to the size of both economies, the destruction of international trade is higher than in the potential US-Mexico trade war. Moreover, the paper claims that spillover effects are greater in the US-China case, with trade deflection being more pronounced. In the US-China trade war, trade destruction would be shared relatively equally between both countries, whereas in other scenarios (US-Mexico trade war), it was mostly the non-US country that suffered the greatest losses of trade destruction. In addition, Guo et al. (2017) state that in case of a trade war between the United States and China, the US would expand their domestic production in all sectors protected from import tariffs while reducing imports in these sectors. Small countries would then benefit from this bilateral trade war because of trade diversification from China and the United States.

However, Guo et al. (2017) conclude that in all trade war scenarios studied, the United States would suffer welfare losses, whereas China would not bear the same losses due to a potential gain in terms of trade for China. A trade war would also be detrimental to international trade. Moreover, the paper states that China is actively pursuing regional trade agreements, such as the Regional Comprehensive Economic Partnership (RCEP)⁶⁹. If the trade war were to

⁶⁹ Countries involved in the RCEP are the member states of the Association of Southeast Asian (ASEAN) such as Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietman, as well as the six Asia-Pacific states (Australia, China, India, Japan, South Korea and New Zealand)

degenerate, the United States could also impose heavy tariffs on the countries involved in this free trade agreement and vice-versa.

Internally, the US industries will not all benefit from trade protection. Bouët and Laborde (2017) state that while some US sectors may gain in terms of value-added due to protection from international competition, these gains are inevitably to the detriment of other sectors. Workers, skilled or unskilled, in agricultural and nonagricultural activities will also bear the negative consequences. The emergence of free riders is likewise worth mentioning. In fact, third countries or regions may benefit from US trade wars with China or other countries in terms of social welfare due to increased exports to the United States in order to replace Chinese goods. In conclusion, trade wars can be very harmful to the world economy. Organizations like the WTO should overtake negotiations between the US and China so as to restore confidence in the trading system and reduce the incentive to install protectionist measures.

3.2 World Trade Organization and GATT

In the last section, we are going to give a definition of WTO and GATT and explain their role in the upcoming trade war started by the United States' protectionist trade policy.

The World Trade Organization (WTO) is an organization for trade opening established in 1995 and replaced the General Agreement on Tariffs and Trade (GATT). The organization is run by the member governments and can be seen as a forum for governments to negotiate trade agreements or a place to settle trade disputes. The primary objective of the WTO is "open trade for the benefit of all".⁷⁰ Both organizations were put in place in order to limit the occurrence of trade wars and tariff conflicts familiar before World War II.

In the current context of Trump tariffs and retaliation scenarios from trade partners, the WTO principles are challenged. President Trump justified the imposition of tariffs citing national security threats. In fact, the WTO even allows such behavior in its body rules if the national security of a member government is threatened. The implications of this scenario would mean that other member governments could challenge Trump's tariffs at the WTO. However, "legal

⁷⁰ https://www.wto.org/english/thewto_e/whatis_e/whatis_e.htm (accessed on 16 June 2018)

experts say it is unlikely that the Trump Administration would lose such a case”.⁷¹ The worst case scenario would be that other WTO members such as China also invoked their right to impose tariffs and retaliation on US imports with the justification of a threat to China’s national security. This would lead to more countries opting for protectionist measures and retaliation, which would, in turn, have the major effect of reducing total international trade and weakening the world trading system.

The Trump Administration has drafted a bill threatening to abandon WTO rules with a Fair and Reciprocal Tariff Act, giving the president the power to impose tariffs without congressional consent and with no international rules to reject him. President Trump has concerns about the WTO and if he were to retreat from WTO ruling, he might encourage other countries to do likewise, which would create damage to the organization and free trade. We gather that the WTO could suffer from credibility issues if more countries were to adopt United States’ behavior on trade policy. The problem lies in the fact that WTO cannot overrule US tariffs since they are based on national security rationale. WTO rules even state that if one member imposes tariffs, other members are allowed to do the same. Trump tariffs managed to find the loophole in WTO rules and constitute a large concern for the credibility and continuity of the organization.

As we explained in subsection 3.1.1, institutions like WTO and rules of GATT are necessary to eschew the noncooperative Nash equilibrium of the trade policy game which harms international trade and prosperity of trading countries. In order to intervene in the US tariff case and prevent further trade war policies, the WTO needs to find a consensus between its members to change the rules in case of national security threats and limit US power to impose tariffs in a discriminatory way. If not, the United States are likely to overrule WTO, and the future of the organization will be uncertain, on the assumption that the largest trade partners will be likely to follow protectionist measures to counter US tariffs. In conclusion, if the United States under President Trump feels unfairly treated by its trade partners and existing trade agreements, we think that the US ought to appeal to the World Trade Organization in order to reach an agreement that would benefit the US economy. Instead, by trying to undermine the WTO and threatening to follow up on a global trade war, the current US trade policy is expected to weaken the US economy and labor market. In addition, a loss of US national welfare, a weakening of the global trading system as well as a loss in total world traded products are to be expected.

⁷¹ McBride, J. (2018), “The Risks of U.S. Steel and Aluminum Tariffs”, Council on Foreign Relations, <https://www.cfr.org/backgrounder/risks-us-steel-and-aluminum-tariffs> (accessed on 10 July 2018)

4. Critical assessment and recommendations

More recent events have shown that the Trump Administration is not anti-free trade. In fact, on July 25th, the United States struck a deal with the European Union at a meeting between President Trump and the current president of the EU commission, Jean-Claude Juncker.⁷² The details of this bilateral agreement pledge the mutual effort to reduce tariffs to zero for non-automobile products and abolishing trade barriers between the two partners. This partnership seems to run counter to the previous statements made in this thesis, where the United States imposed steel and aluminum tariffs on the European Union, and the resulting retaliation from the EU. Both countries decided to set aside these tariffs and restructure their large and prosperous trade relationship. President Trump follows up on his statement that he prefers bilateral trade agreements to global free trade or other regional trade agreements as TPP or NAFTA.⁷³ We believe that bilateral trade agreements between the two countries can be welfare improving as long as this does not discriminate smaller third-party countries. Moreover, the EU and the US have agreed to reform the WTO and address unfair trade practices together.

This meeting confirms the uncertainty we discussed in Chapter 2. Although it is positive for international trade, it goes against the statements that president Trump has made since the beginning of the year. Interestingly, this agreement between the US and the EU comes close to the objective of the previous Transatlantic Trade and Investment Partnership (TTIP). Even though discussions of TTIP were suspended after Trump took over the presidency, the more recent bilateral agreement will be beneficial to both national and international trade. We now expect the trade war between the US and China to have a smaller impact on US social welfare, since damages will be hampered by the gains from the US-EU agreement.

Nevertheless, President Trump's approach to trade policy remains unparalleled. One month after EU retaliation on tariff duties in response to steel and aluminum import tariffs from the United States, the US and the EU now agree to a bilateral trade deal that will work onto zero tariffs and no trade barriers in order to promote free trade. Can we expect the same scenario with China? Unless, China is willing to let go of retaliatory tariffs and meet with President Trump, letting bygones be bygones, we can probably not. However, we could conceive of a

⁷² <https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-launches-new-reciprocal-trade-relationship-european-union/> (accessed on 28 July 2018)

⁷³ Lightizer from the USTR on renegotiation of NAFTA: "As President Trump has said, we hope for a successful completion of these talks, and we would prefer a three-way, tripartite agreement. If that proves impossible, we are prepared to move on a bilateral basis, if agreement can be made." <https://www.thenewamerican.com/usnews/foreign-policy/item/28504-trump-might-replace-nafta-with-bilateral-trade-agreements> (accessed on 16 June 2018)

scenario where the European Union cooperates with Chinese authorities on a trade deal, so that the EU would not bear any collateral damage from the US-China trade war.

The future of NAFTA also remains uncertain. Possible scenarios could revolve around the US concluding bilateral trade deals in the medium term with both Mexico and Canada. Analyzing Caliendo and Parro (2012) on estimating trade and welfare effects of NAFTA, we observe that direct and indirect effects from tariff changes depend on the interrelation between sectors and that gains from tariff reductions are spread throughout sectors. Using a multi-country, multi-sector Ricardian model, Caliendo and Parro (2012) finds that all countries in the world gained, related to welfare effects, majorly due to several FTA entering into force since the beginning of NAFTA in 1993. The paper uses counterfactual exercises to estimate the quantitative effects of NAFTA for the US, Canada, Mexico and also the rest of the world, introducing a change in the tariff structure from 1993 to 2005 while fixing the tariff from and to the ROW to the year 1993. Whereas Caliendo and Parro (2012) conclude that the biggest winner of NAFTA was Mexico, in terms of welfare and real wages, we believe that Mexico will most likely be the biggest loser of the current US trade policy. However, NAFTA has benefited all three partners in terms of welfare created by trade, by creating more trade within the bloc. Nevertheless, the agreement diverted trade from countries outside of the FTA, hence generating a negative welfare effect as we observe a reduction in volume of trade with the rest of the world. In the current case, we could be expecting the opposite scenario, since the credibility and enforcement of NAFTA is damaged, that mostly Canada could compensate for the loss of welfare created by the Trump tariffs, with an increase of trade with the rest of the world. From the perspective of the US, the NAFTA created higher trade diversion, mostly with Mexico, and an improvement of US terms-of-trade (from importing low-price Mexican goods). In the actual context of Trump tariffs and trade uncertainty, the renegotiation of the NAFTA can prove to be detrimental for Mexico, and to a lesser extent, for Canada. The current US trade policy being the reverse scenario of the NAFTA, with a rise in tariffs for both trade partners, and for the rest of the world, we believe that the United States might prefer establishing two bilateral trade agreements with both partners. Rather than abolishing the NAFTA with all its benefits for trade and welfare, the US might want to adopt a trade policy strategy involving the same reasoning as with the very recent agreement on zero-tariffs with the European Union.

In the short term, we believe that the Trump Administration wants to protect domestic industries from international competition and to improve productivity of the steel and aluminum sector. However, trade policy under President Trump seems very uncertain, since it is liable to change with a single statement on social media.

Since we are analyzing a very recent subject and one in which most consequences are far from obvious to foresee, it is the economist's job to have a critical view on the recent happenings.

In this thesis, we made a descriptive panorama of the consequences of US trade policy and as a result we can prematurely say that things have to fall into place with time.

5. Conclusion

Most studies point out the very aggressive trade policy waged by the United States since the beginning of Donald Trump's presidency. Aggressive tax reforms and threats on trade wars have not made President Trump a friend to international markets and investors. With rising uncertainty and major changes yet to come in order to put "America First", The Trump Administration is looking to defend its national ambitions.

In this thesis, we have analyzed the major tariffs implemented by the United States since the beginning of 2018 and its effects on the US economy. Given the current approach on trade policy, The Trump Administration created uncertainty for the domestic industries as well as for its major trade partners. As a consequence, foreign investment and investment to the United States have been slowed down and held off, as firms adopt a "wait and see" strategy in order for the uncertainty to clear. The current US trade policy has also led to threats in trade wars against countries that would discriminate free and fair trade in the eyes of President Trump. Here, we discussed trade war theory with the help of game theory. We foresaw major consequences for the United States if they were to pursue trade wars with large economies such as China. The role of WTO has equally been clarified and is considered vital for the continuity and credibility of free international trade. More recent events, such as the agreement on "zero tariffs" and "zero subsidies" on non-automotive products between the US and the European Union constitute an important step towards free trade. In our opinion, US trade negotiations with other countries such as Canada and Mexico are likely to follow suit. In fact, bilateral trade agreements can be more beneficial for the US since they are easier to negotiate than multilateral agreements, involving more than two countries, and are faster to come into effect.

We conclude that the Trump tariffs specific to steel and aluminum might create some jobs in the domestic market, but not significantly many. Foremost, these tariffs might cause increasing costs in different US industries that rely on steel and aluminum as inputs, such as defense equipment, construction, infrastructure and cars. We share Jacques Pelkmans' belief that that these costs might actually translate into job losses that will outweigh the job gains in the protected sectors.⁷⁴

We also agree on the aggressive approach on trade policy for the United States with a hint of protectionism. The US being the largest importer in the world economy, it would hurt its trade partners if the United States were to impose trade barriers and reduce their imports. Not only

⁷⁴ Pelkmans Jacques (2018), "Trade policy-making under Irrationality", CEPS

would this hurt the US economy and consumers, but also main exporters to the US would need to find other trade partners to export the surplus of their production they once traded with the United States. We believe that the Trump Administration is aware of this outcome and that the ultimate goal of the United States is to temporarily protect domestic industries, such as the steel and aluminum sector as well as its agricultural workers, and to renegotiate trade agreements that will lead to higher prosperity in the medium-term. Short-term destruction of trade relations in order to rebuild stronger bilateral free trade agreements might be the strategy pursued by the US. However, this short-term destruction might heavily backfire on the US national economy in the long term, creating losses in productivity and social welfare, due to retaliation policies from large economies such as China.

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