The True Costs of Trade Wars: An Analysis of the US-China Trade War

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The True Costs of Trade Wars: An Analysis of the US-China Trade War

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Capstone Executive Summary

For the past year, the on-going US-China trade war has dominated headlines and caused increasing unrest in the global community. The tensions have escalated to a point where by the end of 2019, it is likely that the US and China will have tariffs covering nearly 100 per cent of imports from each other. Along with such expansive protectionist policies will come significant impacts on the US, China, and the rest of the world.

There have been numerous studies over the years on the trade wars and their effectiveness as a protectionist measure. In general, studies have found that all countries lose in terms of welfare from a global trade war, not just those directly involved. Due to these results and deepening global integration, large-scale trade conflicts have been extremely rare, until the current conflict.

The US has justified their initiation of the conflict with four central reasons, those being concern over the bilateral trade deficit with China, China’s incomplete free market transition, currency manipulation by China, and concerns over the World Trade Organization’s ability to address these concerns. These four concerns have varying degrees of legitimacy, with China’s stalled market transition being the most valid, as it is significant for both the US and the larger global trading community. On the other hand, concerns over a bilateral trade deficit and the specific accusation of currency manipulation present little to no legitimacy as a reason to justify a trade war. Backed with these four central reasons, legitimate or not, the US led the way into the trade war with the goals to reduce the bilateral deficit and to suppress China’s anticompetitive behaviour. While endeavouring to alter the bilateral deficit will only decrease US overall welfare, attempting to suppress anti-competitive behaviour is a worthy goal. However, doing so through tariffs has proved both costly and ineffective thus far.

US President Donald Trump has claimed that his tariff policies will have no impact on US consumers and that the tariff will be exclusively paid by foreign entities. Despite the President’s assertions, the claims appear to be false. To illustrate this point, this analysis conducted a case study to model the impact of the tariff policy on the US steel industry. The study indicated that US steel users will lose around US$6 billion in welfare, resulting a net loss of over US$900 million.

In addition to any domestic costs, the trade war will have severe impacts on the larger global trading community. These impacts can be broadly categorized into global economic, diplomatic, and system impacts. All evidence points to the international community being negatively impacted by the trade war. Most notably, global value chain disruption, breakdown of global connections, increasing uncertainty and rising tension between nations are likely outcomes of the protectionist policies. The most long lasting and damaging outcome of the US-China trade war may be the impact that it has on the WTO, as the conflict is adding to existing concerns over the effectiveness of the organization. The trade war is facilitating further breakdown of the norms and rules of the multilateral system as well as deteriorating the reputation of the US and China within it.

When all costs and consequences are considered, it is easy to see that trade wars are in fact not good and not easy to win, as has been claimed by the US president.
1. **Introduction**

When thinking of global economic power, the first two countries that come to mind are likely the United States (US) and China. They have both dominated the global stage in terms of economic performance, influence, imports, exports and production for years. However, 2018 saw the surfacing of a very public and well documented period of trade tensions between the two economic super powers.

Tariffs have always been an aspect of the global trading system, allowing countries to protect their own industries to an extent, while still obtaining the benefits of international products. For most of the past century, however, tariffs have dramatically decreased across the world because they typically lead to reduced trade and higher costs. The events of 2018 were a significant shift in the trend of lower tariffs that has been present since after World War II. Early 2018 was marked with protectionist threats by the US President Donald Trump against the entire global trading market, the size of which have not been seen since before the 1950s. China specifically was a central target for the President’s criticism and actions, eventually leading to new tariffs on US$250 billion of Chinese exports to the US.

In March of 2018, President Trump famously stated that trade wars are both good and easy to win. However, numerous experts on the subject have taken issue with this

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blanket declaration on trade wars. The statement also prompts the question of what the true costs of trade wars could be, including both the obvious and immediate impacts, and the more long-term and far-reaching. A trade war declared by one global economic super power largely targeting another, as is the case of the US and China, makes the matter all the more pressing. Due to the interconnectedness of the global trading system and the prominence of the US and China within it, the costs doubtless extend beyond the bounds of the countries directly involved.

As of August 2019, there is no end in sight for the tit-for-tat tariff dispute between the US and China. The ongoing nature warrants questioning of where exactly these actions will leave not only the two countries involved, but also the rest of the multilateral trading system. The obvious impacts of the conflict are the short-term economic costs felt by the targeted industries. Domestically, producer surplus will increase due to the higher domestic demand, allowing for higher prices. However, consumer surplus will decrease at a larger rate due to the higher prices, resulting in overall net costs.

Beyond the individual economies, the perception of trade agreements and the openness of global trading will be impacted, extending further to the World Trade Organization (WTO) itself. The uncertainty fostered by the continuing tensions will also significantly impact current and future global investment, dampening global economic growth. These larger and more long-term costs of rising protectionism can easily be overlooked when making a general declaration on the ease and goodness of trade wars, making further analysis necessary.

This paper will examine the true costs of trade wars, which are larger than they appear when the potential impact on the global trading system is ignored. The intended
goals of the US’s past and continuing actions are to reduce the bilateral trade deficit with China and to suppress what has been deemed anticompetitive behaviour by China regarding certain practices. With varying levels of support and legitimacy behind the reasoning for these actions, the US initiated the conflict with China, forcing the world and US citizens to bear the costs.

In order to identify the potential all-encompassing costs of the US-China trade war, an analysis of the short-term economic costs and benefits on the US steel market will be done. This analysis will demonstrate the impact on the industry due to a blanket tariff on all US global steel imports through a partial equilibrium (PE) evaluation. To consider the broader consequences, an analysis will be done on the long-term impacts that will likely be felt throughout the global trading system. This analysis will be done under the lenses of the global economic costs, diplomatic costs, and systemic costs produced through the conflict. This section aims to make clear how detrimental a breakdown of international trade cooperation would be, which would be significantly worse than the welfare impacts alone. This broader analysis will include a discussion on the disregard of the WTO by the two largest economies, and whether this event may undermine the WTO’s relevancy. The two analyses aim to display what the comprehensive costs of the current US-China conflict could be if a resolution is not found quickly. We anticipate that we will see findings suggesting that a trade war can improve a trade deficit in the short run, but at the cost of long-term economic growth. In the case of the US and China, the conflict will also pose a sizable risk to the multilateral trading system.

Section 2 will cover the background of the US-China conflict, as well as a discussion on the significance of trade wars and agreements, and the US-China trade relationship and
conflict specifically. Section 3 will analyze of the causes and corresponding goals of the US’s new trade policies against China. Section 4 will be the PE quantitative analysis, displaying the short-term impacts felt in the US steel industry due to blanket protectionism through tariffs. Section 5 will be an analysis of the larger and long-term impacts felt by the global trading system as a whole, particularly where the conflict will leave the WTO. Section 6 will conclude the paper through a synopsis of the results of the analysis and what the combination of the domestic and international impacts suggests for the costs associated with the US-China trade war.

Given the breadth of the US-China conflict and its various factors, the political motivations and elements of the conflict and the tariffs will not be discussed. The current tensions are as much about fighting for strategic space in the global sphere as they are about trade, warranting a discussion of their own.
2. **Background**

2.1. **The US-China Trade Conflict**

The escalating course of events that has been taking place between the US and China has been closely followed and well documented since its initial phases. There have been multiple rounds of talks between leaders and officials of both countries, but none have yielded tangible positive outcomes. Despite the unfortunate lack of resolution, the conflict has not yet escalated to an all-out trade war. The two countries have not cut off market access to each other entirely and future negotiations are not off the table.³

Given the recent escalations seen throughout the Spring and Summer of 2019, an imminent settlement of the dispute is unlikely. The course of events that brought the trade war to its current point has been a consistent progression by both countries looking to respond to measures taken by the other. The actions taken by both countries have developed the conflict into a prisoner’s dilemma, where neither would benefit unless cooperation is mutual. Neither country want to be the first to make concessions, effectively creating a game of chicken with neither country showing signs of backing down.

2.1.1. **Sequence of Events**

In January of 2018, the US announced restrictions of global imports of solar panels and washing machines worth over US$10 billion through the rarely used Section 201 of the US Trade Act of 1974.⁴ Section 201 allows the President to grant temporary import relief

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⁴ Chad Bown, “Donald Trump's Solar and Washer tariffs May Have Now Opened the Floodgates of Protectionism,” Peterson Institute For International Economics, January 23, 2018,
through barriers on imports that threaten the domestic industry. Less than two months later on March 1 the forthcoming tariffs of 25 per cent on steel and 10 per cent on aluminum were announced on all trading partners under Section 232 of the Trade Expansion Act of 1962. The steel and aluminum tariffs gained additional attention as they were enacted on the questionable grounds of national defence and national security, as permitted in Section 232. Following these two new restrictions, the China-specific measures were announced by the US, eventually covering a total of US$250 billion worth of Chinese imports over three installments, which is set to increase to US$550 billion by the end of 2019.

After months of investigations, threats and altering lists, the first phase of the US$50 billion lists were imposed by the US and China on July 6, 2018, each covering US$34 billion of imports at 25 per cent. The second phase covering the remaining US$16 billion was enacted by both countries on August 23. A month later on September 24, the third phase of tariffs went into effect. The US list subjected US$200 billion of Chinese imports to a 10 per cent tariff, while China’s list covered US$60 billion of US imports with tariffs ranging from 5 to 10 per cent. In May 2019, the tariff rate of the US$200 billion list increased from 10 per cent to 25 per cent, prompting China to increase the rates on $36 billion worth of US imports in June. Most recently, in August 2019 both countries announced further rounds of tariffs on each other that will take effect on September 1st and December 15th of 2019.

https://www.piie.com/commentary/op-eds/donald-trumps-solar-and-washer-tariffs-may-have-now-opened-floodgates
6 Hufbauer and Jung 2018, Steel Profits Gain, but Steel Users Pay, under Trump’s Protectionism
7 Bown and Kolb, “Trump’s Trade War Timeline.”
8 Bown and Kolb, “Trump’s Trade War Timeline.”
The US tariffs will cover an additional US$300 billion at 10 per cent, while the Chinese tariffs will cover a further US$75 billion at rates between 5 and 10 per cent.9

Combined with existing antidumping and countervailing duty laws, the US’s three current installments of special tariffs cover over 50 per cent of imports from China.10 Nearly every importing sector was affected, primarily intermediate goods. The areas that escaped the new special tariffs were predominantly final consumer goods.11 However, if the forthcoming September/December tariffs are put into effect, final consumer goods will no longer escape impact and almost 100 per cent of Chinese imports will be subject to tariffs.

While the US played the first card in the tit-for-tat tariff escalation, China was quick to respond with equal strength. Prior to 2018, 5 per cent of US imports to China were subject to special tariffs. Over the course of 2018, that number grew to 70 per cent of US imports.12 From July 2018 to September 2018, China imposed tariffs on an additional US$110 billion of US imports simultaneously with the US tariffs on Chinese imports.13 Even before the three phases, China had imposed retaliatory tariffs in response to the steel and aluminum tariffs in April, covering US$2.4 billion of US products.14 With the

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12 Ibid., 11.
13 Bown and Kolb, “Trump’s Trade War Timeline.”
implementation of the 2019 tariffs, China will also have tariffs on nearly 100 per cent of US imports. Figure 1 is a timeline of the events of the trade war up to August 2019.

As the two countries have not been able to come to an agreement as of Summer 2019, the existing tariff lists and levels may continue to evolve. For a more in-depth and updated timeline of the protectionist measures employed by the US and other nations, readers should see Bown and Kolb (2019). For a more in-depth history of the protectionist measures that the US and China have taken against each other prior to and during the conflict, see Bown (2019).

**Figure 1: Timeline of US-China Trade War, January 2018 to August 2019**

Source: Bown and Kolb, “Trump’s Trade War Timeline.”

2.1.2. *Grounds for Action*
Before analyzing the potential costs of the current conflict, the reasoning behind the actions of the US are important to discuss. The measures taken by President Trump and his administration in 2018 were some of the most extreme projectionist measures taken in years, implying substantial and valid reasons to do so. The stated reasons for the President’s actions and the initiation of the conflict are largely centered on four main grievances:

1. Concern over the bilateral trade deficit with China;
2. China’s incomplete transition to a free market economy, including intellectual property transfers;
3. Currency manipulation by China; and
4. US concerns with the WTO’s ability to address China’s ‘unfair’ trade practices.

There have been other concerns pointed out by various authors, however, these four are the most frequently discussed and salient at the current point in the conflict. These four central reasons for US’s recent policy changes, how they relate to the goals of the new policies, and the legitimacy of the grievances will be discussed further in Section 3.

The US’ concerns with China as a trading partner did not start in 2018, and Donald Trump is not the first President to have raised concerns over the relationship. In 2012 under President Obama, the US expressed concerns regarding Chinese practices on rare earth metals, auto parts, cars, solar panels, and anti-subsidy cases. The concerns were largely regarding increased restrictions intended to benefit Chinese industries and markets, rather than global industry. Along with the European Union and Japan, the US

filed a formal “request for consultations” with China at the WTO in order to address certain restrictions regarding rare earth metals. The US and its allies argued that China’s policies forced multinational firms to relocate to China in order to access the market.16 US objections were specifically about China not allowing the market to operate without interference due to various policies, which were accused of being against the rules agreed to when they joined the WTO.17

Clearly the dispute over China’s potentially unfair trade practices is a long-standing and contentious issue. The frequent concerns expressed by world leaders and professionals regarding China’s trade practices demonstrate that it is a valid concern to the global community. Therefore, the actions taken by President Trump have been looked upon favourably by some. However, while the actions may have worthy intentions, the costs will doubtless be significant and may alter the future of Chinese and American relationships with the rest of the international trading community. Given the size that the trade war has grown to, the associated costs may very well outweigh the significance of the causes and any potential benefits.

2.2. Trade Wars and the US-China Trading Relationship

Over time and as an element of increasing globalization, international trade has become a vital contributor to global prosperity. In today’s economy, countries exchange both final and intermediate goods, creating an intricate and complex global economic network. Over the past sixty years, trade as a per centage of gross domestic product (GDP)

17 Bradsher, “Trade Issues with China Flare Anew.”
has sustained largely positive growth, with the biggest downturn happening during the 2008 financial crisis.\textsuperscript{18} In 2017, exports and imports of goods and services accounted for 57.87 per cent of global GDP.\textsuperscript{19} Global trade has evolved to become a fundamental aspect of economic activity through the shared opinion that trade is mutually beneficial for all involved. International trade creates efficiency gains, specifically through fostering competition, economies of scale, and innovation.

Despite the many benefits that global trade has to offer, protectionist rhetoric and actions by world leaders has become frequent. In a report on the G20 Trade Measures, the WTO found that during the period of Mid-May 2018 to Mid-October 2018, the world saw a record level of new trade restrictive measures introduced by G20 members.\textsuperscript{20} The most striking and concerning case of this trend was the employment of the new US-China tariffs, worth over US$360 billion collectively as of August 2019.

\textbf{2.2.1. Significance of Trade Wars and Trade Agreements}

There has been an extensive collection of literature written on the impacts of trade wars over the years, both in theoretical and empirical applications. A review of both sides of the literature can be found in Bouët and Laborde (2018), and a review of US-China specific literature can be found in Li, He and Lin (2018).

A trade war can be defined as “a category of intense international conflict where states interact, bargain, and retaliate primarily over economic objectives directly related to

\begin{itemize}
\item \textsuperscript{19}Ibid.
\end{itemize}
the traded goods or service sectors of their economies, and where the means used are restrictions on the free flow of goods and services.” 

There are various other factors that can define and impact a trade war including whether it is multilateral or bilateral, the type of protectionism used, and the size of the countries involved in terms of market power. Despite the varying conditions that are applied to individual cases, there are some general understandings of trade wars and their outcomes. As described by Bouët and Laborde, the literature generally agreed that:

1. All countries lose in terms of welfare in a global trade war;
2. In a trade war between a large and a small country, the large country can gain in terms of welfare, but the small country will lose; and
3. All countries involved cannot gain from a trade war and cooperation may lead to a more desirable solution for all countries.

Over the past two decades, large-scale trade conflicts have been extremely rare due to the higher opportunity cost of entering a dispute. Deepening global integration and the lengthening of supply chains have contributed to lower tariff volatility, as the effects of a trade war are magnified by the presence of global value chains (GVCs). Additionally, the threat of reciprocity and developments in international trade institutions have also contributed to the lack of large tariff increases during recent history.

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22 Benjamin R. Mandel, “What is a Trade War?,” December 2017.
23 Mandel, “What is a Trade War?”
The most infamous instance of US protectionism was the Smoot-Hawley Tariff Act in 1930, which has been called the only fully-fledged trade war in history.24 Following the stock market crash in 1929, the Smoot-Hawley Act raised tariffs on over 20,000 imported goods by an average of 20 per cent.25 The act resulted in a decrease in US imports by 40 per cent, as well as wide spread retaliation from US trading partners and allies and a general increase in global protectionism.26 Intensified by the Great Depression, the law was found to have led to an efficiency loss in US gross national product (GNP) of up to 1.9 per cent.27

Even without the exaggerated negative impacts of the Great Depression, the Smoot-Hawley Act would still have been highly damaging to the US economy and welfare. The decrease in imports removes the many mentioned benefits that trade brings to a country due to tariff induced inefficiencies. Additionally, the wide spread retaliation from trading partners proved particularly harmful to the US economy.28

The many similarities between the Smoot-Hawley Act and President Trump’s current trade tensions with the rest of the world cannot be ignored. Both events have similar objectives of decreasing imports and lowering trade deficits, both targeted historical allies and both sets of tariffs resulted in massive retaliation from the supposed trade allies.29 Considering the repercussions felt throughout the world due to the Smoot-

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29 Pavlak, “A Short History.”
Hawley Act, the judgement behind President Trump’s actions appears lacking. Learning from history, it is questionable how President Trump can claim that a trade war of the scale that he is initiating could be considered “good” or “easy to win.”

To avoid the domestic and global ramifications like those felt following the Smoot-Hawley Act and other trade barriers, trade agreements play an integral role in the global economy. Trade agreements remove or reduce trade barriers, facilitating new markets and economic growth through mutually favourable trade conditions. A vital role of trade agreements is to allow governments to avoid the terms-of-trade driven “prisoner’s dilemma.” This issue arises when cooperation between nations is only worthwhile if it is bilateral, leading to terms-of-trade externalities when cooperation is not achieved.30 This scenario adds greater incentive for countries and trading blocks to further increase trade and global connections, driving economic welfare, competition and innovation. Some research has suggested that this motivation has led to a reduction in average tariffs of 30 WTO members by around 25 per cent compared to non-cooperative levels.31

Evidence of increasing world and domestic GDP values due to decreasing trade barriers has solidified the belief that trade agreements are beneficial for all countries involved. This outlook has been a central element of the modern global economy. International companies have been building up international markets over the years based on this shared opinion of trade. Since the General Agreement on Tariffs and Trade (GATT) was initiated in 1948, regional trade agreements (RTAs) have consistently increased in

30 Bouët and Laborde, “US Trade Wars in the Twenty-First Century.”
number, as shown by Figure 2. Despite the increasing number of trade agreements and the opinions on which the modern global system was built, President Trump claims that trade agreements have not been beneficial to the US. His views on the US needing more protectionist measures is a stark contrast to both global business trends and to the nature of the organizations and agreements which the US has helped build.

**Figure 2: Number of GTAs in Force, 1948-2018**

![Number of RTAs in Force](image)


### 2.2.2. US-China Trade Relationship

The economic reforms initiated in China in the late 1970s facilitated the country’s rise to be one of the paramount and fastest growing economies in the world. Due to this growth and eventually joining the WTO in 2001, China’s economy is second only to the US in nominal terms. In 2018, the US’s economy was worth over US$20 trillion in nominal terms while China’s was worth over US$13 trillion, with the third largest being Japan at
US$5 trillion.\(^{32}\) By 2006, the value of Chinese exports caught up to the US, with imports following in 2010.\(^ {33}\)

Being the two largest economies, the US and China have developed a close commercial and trading relationship. In 2017, total US-China merchandise trade was over US$634 billion, up from US$121 billion in 2001, making China the US’s largest goods trading partner.\(^ {34}\) China’s share of US annual imports and exports has steadily grown since 2001. Since around 2009, China’s share of US imports has settled at around 20 per cent while its share of US exports is roughly 7 per cent. These relationships make China the US’s number one import source, and third largest export destination.\(^ {35}\) Given the close ties and high values of trade, many US firms view China’s participation in US markets and as a commercial partner to be a vital aspect of America’s global competitiveness.\(^ {36}\)

Since 1985, the earliest available data by the United State Census Bureau (USCB), the US has maintained a trade deficit with China, as shown by Figure 3. For the past three decades, the US has also maintained a constant global trade deficit. In 2018, the US deficit with China exceeded US$400 billion for the first time, accounting for around 47 per cent of the US’s global trade deficit.\(^ {37}\) The global deficit decreased slightly in the early years of the 1990s but has increased consistently since that brief period of decline, as shown in Figure

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36 Morrison, “China-U.S. Trade Issues.”
4. Notably, the global deficit has been increasing at a larger rate since the early 2000s, which coincides with China joining the WTO. This correlation has been used by the US as reason to accuse China of taking advantage of the “permanent normal trade relations”. However, as pointed out in Dhar 2018 and displayed by Figure 4, the US trade deficit with China accounts for just under half of the US’s total trade deficit at its highest percentage in 2015. Therefore, while the US has a large trade deficit with China, it is not unlike their trade relationships with other trading partners. Even if all imports from China are stopped, the US will still have a significant global trade deficit due to certain macro-economic factors, which will be discussed in section 3.1.

Figure 3: US Trade Balance with China, 1999 to 2018

Source: United States Census Bureau, “U.S. Trade in Goods with China.”
For all of 2017, the US-China trade balance was a US deficit of US$375 billion.\textsuperscript{40} For every month of 2018, the trade deficit was larger compared to the same months of 2017, despite the new tariffs. However, in 2018 China had decreased as a per centage of the US's total imports from 21.59\% to 21.24\%.\textsuperscript{41} While small, it may imply that the threat and eventual implementation of the new tariffs had an impact on American companies looking to China for their imports. Of the 2019 USCB data that is currently available, every month is

\textsuperscript{40} United States Census Bureau, “U.S. Trade in Goods with China.”
\textsuperscript{41} United States Census Bureau, “Trade in Goods with World.”
showing a smaller deficit than reported in 2018, revealing emerging impacts of the tariffs on the US-China trade relationship.\textsuperscript{42}

\textsuperscript{42} United States Census Bureau, "U.S. Trade in Goods with China."
3. **Evaluation of the Causes and Goals of the US-China Trade Conflict**

Understanding and analyzing the issues leading to the initiation of the current trade conflict is an integral aspect in determining what the potential costs may be. China’s grievances with the US are as to be expected in light of the US’s course of action. China criticizes the US for their unfair treatment of China’s market economy status and excessive trade sanctions on China. Additionally, China takes issue with the US’s export restrictions on high-tech products, which is an element in the disagreement and resulting actions over the US’s intellectual property concerns.

While relevant, the focus of this study is the grievances, costs and goals of the US. As mentioned in Section 2.1.2, the central reasons identified as the US’s motivation to initiate the tariff conflict are:

1. Concern over the bilateral trade deficit with China;
2. China’s incomplete transition to a free market economy, including intellectual property transfers;
3. Currency manipulation by China; and
4. US concerns with the WTO’s ability to address China’s ‘unfair’ trade practices.

Given these four central reasonings, the Trump administration led the way into the current trade war with the following central goals:

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44 Li, He and Lin, "Economic Impacts of the Possible China-US Trade War."
1. Increasing net US exports to China in order to decrease the bilateral deficit; and
2. Suppressing China’s anticompetitive behaviour.

The goal of increasing US net exports to decrease the US-China trade deficit is aimed at returning American manufacturing jobs that have been relocated to China. While the intent of the goal is legitimate, the attempt to achieve the goal in its current design has little chance to succeed and is based upon a lack of comprehension of the economics of trade.

On the other hand, the goal to induce China to change its ways regarding certain anti-competitive practices is a well-founded and globally shared goal. Under this rationale for entering into the conflict, the US has some legitimacy backing their new trade policies.

3.1. Reducing the Bilateral Trade Deficit

As described in Section 2.2.2 and demonstrated in Figures 3 and 4, the US has consistently run a trade deficit with China which has been steadily growing as the two countries trade increases. As of 2018, the US deficit was over US$419 billion.46

The US’s trade balance with China has a been a key talking point for President Trump since his election campaign. He has used it to direct attention to the trading relationship, claiming it to be unjust and the culprit behind losses of American manufacturing jobs. However, economists disagree with the President’s view that trade deficits are inherently bad, based on the theory of comparative advantages, which will be discussed in the following paragraph. President Trump’s view of trade deficits appears to be built upon the notion that exports produce revenue, therefore they are good, and imports are like costs, therefore they are bad. Operating under this belief could

46 United States Census Bureau, “U.S. Trade in Goods with China.”
understandably lead to his infamous statement that trade wars are easy to win because under this logic, costly imports simply need to be reduced to diminish a deficit.

However, equating trade to a win or lose scenario ignores the benefit that both exporting and importing brings to a country. Trade allows for countries to specialise in the goods that they can produce efficiently and import those that they cannot produce as efficiently. International trade has allowed countries to buy goods for cheaper than they can produce them at home and sell their products in the world market at higher prices than they would get domestically. In the end, both trading partners benefit by producing the goods they have a comparative advantage in. The very nature of bilateral trade will result in one country having a deficit and the other having a surplus, unless they exchange perfectly equal amounts of goods. Attempting to force a perfect trade balance with an individual trading partner will result in market distortions and constrain the variety of goods available for consumers. Restricting a market in order to alter a trade balance will only drive up prices and provide little benefit in terms of national welfare. Additionally, a country such as the US which has a reserve currency can run a trade deficit indefinitely without sacrificing its well-being.

China’s comparative advantage is that it can produce consumer and intermediate goods for a lower cost than other countries, largely due to the lower cost of labour. The US cannot compete with China’s low costs, so it loses manufacturing jobs. On the other hand, if production is forced to be domestic, then local companies may have to cut jobs because of

the now higher costs of production associated with local imports, creating a “lose/lose” scenario. China’s ability to export lower-cost goods to the US, whether as part of GVCs or as final products, ultimately benefits American consumers.

The true cause of the US’s global trade deficit is that the country is low saving and high consuming. Due to high consumption rates, the US provides a good investment opportunity for foreigners and is therefore a recipient of high capital inflows. The trade deficit is a reflection of the savings-investment gap that is present in the US, which is a result of low domestic savings rates, not a fault of China or any other trading partner. The best way for the US to reduce their global trade deficit is to increase their national savings and consequently reduce capital inflows.

When considering the President’s goal to decrease the trade deficit in order to bring back American jobs, there are obvious flaws in the rationale. Through the current method of increasing the costs of Chinese imports, the Trump administration is simply making the entire process more expensive. While increasing domestic jobs is a worthy goal for any world leader, doing so through manipulating the market and limiting access is not the best way to do so. China’s low labour costs will prevent the US from being able to produce the same goods with the same processes for cheaper. Therefore, President Trump’s issues with the deficit and his goals to improve it have little legitimacy and do not provide justification to subject the international market to the current trade conflict. When considering the aims to decrease the trade deficit, the costs that will be incurred due to the trade conflict policies are not justified.

50 Dhar, “Trade Wars of the United States.”
A country operating with a closed economy, or no trade, would be at the equilibrium point Eq, producing $Q_s$ of goods at the cost $P_a$. This allocation would create a consumer surplus of area $V$ and a producer surplus of areas ($W+X$).

If trade was opened up, imports could be bought for the world price, $P_w$, increasing quantity demand to $Q_a$ and decreasing quantity supplied to $Q_s$. Since quantity demanded exceeds quantity supplied at the new equilibrium $Eq^*$, the home country now imports $(Q_a - Q_s)$. At $Eq^*$, consumer surplus increases by areas $(W+Y+Z)$, and producer surplus decreases by area $W$. The large increase in consumer surplus is due to more consumers being able to access the good due to the lower price, whereas at $P_a$, some consumers were priced out of the market. While producers lose from opening trade, the net gains from trade are positive, equal to areas $(Y+Z)$.

3.2. Suppressing China’s Anticompetitive Behaviour

Contrary to the goal of decreasing the bilateral trade deficit, China’s anti-competitive market behaviour is a valid and legitimate concern for the US and the rest of...
the global community. China’s anti-competitive behaviour is largely centralized in the state’s ability to subsidize domestic firms, giving them a distinct advantage over international competitors. In addition to the state’s aid, China has also been accused of partaking in currency manipulation in order to strengthen its trade balance and promote domestic production.

Both the state interference and currency manipulation prevent international markets from operating fairly, potentially allowing China to exploit the fair practices of competing international firms. This exploitive behaviour has led the US to initiate action through the recent tariffs and ensuing trade conflict with China. The costs that will be borne due to the restrictive policies may be worthwhile in the long run, but only if they can prompt China to alter its behaviour regarding specific practices.

3.2.1. China’s Market Transition

A key element to China’s lack of full acceptance of a free market system is in its practice of state capitalism. State capitalism refers to an economic system in which the government partakes in commercial activity through owning several large firms.\(^5\) In doing so, the state can decide which industries will receive subsidies, market protection or other forms of assistance that go beyond free market practices. These state-assisted industries compete directly with US and other international firms, giving what is seen by the non-Chinese firms as an unfair advantage.

The US’s concern over China’s partial shift to a free market has been echoed by others in the international community.\textsuperscript{53} China has been accused of intentionally operating in grey areas of WTO policy, allowing them to continue to offer advantages to state-run companies without explicitly breaking WTO requirements.\textsuperscript{54} These concerns are largely focused on China maintaining state directed policies, namely subsidizing exporters, that may be distorting trade and investment and creating unfair advantages when competing against international firms.\textsuperscript{55} Because these policies are not explicitly prohibited by the WTO, they have not been forced to forgo them. Some US officials have found China’s implementation of WTO policies to be only passable, with many failing to meet the expectations that come with their expanded market access.\textsuperscript{56} Aspects of China’s “Made in China 2025” policy seem to give support to the accusations by other WTO members. A number of the initiatives within the policy appear to possess industrial trade policies which subsidize and protect Chinese firms in order to develop the targeted sectors.\textsuperscript{57}

An additional area of concern not only for the US, but other members of the WTO as well, regards China’s treatment of international intellectual property. This element was a central piece of President Trump’s reasoning for implementing the China-specific tariffs. In March 2018, the Trump administration released results of a report on China’s unfair trade practices. The findings stated that China had conducted unfair trade practices regarding

\textsuperscript{54} Bown, “The 2018 US-China Trade Conflict After 40 Years,” 20.
\textsuperscript{56} Morrison, “China-U.S. Trade Issues,” 75.
\textsuperscript{57} Morrison, “China-U.S. Trade Issues,” 75.
technology transfer, intellectual property and innovation under Section 301 of the Trade Act of 1974.58

China’s economic size and position in the global trading market makes these market reform concerns important not only to the US, but to all countries accessing the Chinese market. Therefore, the goal of suppressing some of the pressing, anti-competitive aspects of China’s state capitalism has definite validity. Utilizing tariffs as a means to do so may make sense as a method to prompt China to alter their behaviour, but the costs will be significant, as previously mentioned. Thus far, the tariffs do not appear to have resulted in China taking any course of action on addressing the market transition concerns.

3.2.2. Currency Manipulation

Along with the issues concerning China’s market transition, accusations regarding China participating in currency manipulation also contribute to the US’s goals of supressing anticompetitive behaviour. In August 2019, the US Treasury declared China to be a currency manipulator after the yuan sank to its lowest level in eleven years.59 The Treasury’s findings were based on the conclusion that the People's Bank of China did not support the yuan as it was falling, claiming the action to be retaliation for the newly threatened tariffs on behalf of the US.60 The action accuses China of utilizing an anticompetitive practice in order to gain an unfair advantage in the international market.

China has firmly refuted the accusation, with numerous economists coming to China’s defence and the International Monetary Fund assessing China’s currency as fairly

58 Bown and Kolb, “Trump's Trade War Timeline.”
The most likely and supported cause for the devaluation of the yuan is market forces, which can be attributed back to the tit-for-tat tariffs by both countries. However, while China may not have intervened directly to commit currency manipulation, it may also not have taken all preventative action it could have. Market forces dictated the devaluation, and China may have simply stepped back and allowed it.62

A country partaking in currency manipulation would certainly classify as anti-competitive behaviour and warrant concern and potential retaliation by trading partners. Currency manipulation occurs when a country sells its own currency in order to keep their exchange rates weak and strengthen another currency, often the US dollar. In doing so, a country can essentially subsidize their own exports and raise the price of imports, promoting a trade surplus and domestic production.63

Along with declaring China a currency manipulator, the US also announced that new 10 per cent tariffs will be added to the remaining $US300 billion worth of Chinese exports, likely in relation to the accusation. However, the use of tariffs will not help the problem of currency manipulation, regardless of how well founded the accusation is. Tariffs alone will only raise the costs of the imported goods in the US. This policy used without any other tool limits any intended good, such as jobs from higher domestic demand, because of the

negative effects that tariffs have on prices.\textsuperscript{64} For tariffs to make a difference in currency manipulation, they would need to lower the costs of US exports in international markets through lowering the value of the US dollar, which has not been done.\textsuperscript{65} When retaliation by a trading partner occurs, as it has with China, tariffs are even less impactful in dissuading currency manipulation due to the higher cost of exporting.

In labeling China a currency manipulator without solid grounds to do so, the US will likely only make matters worse for global markets, rather than prompting any change from China. The accusations against China will add to the uncertainty that is created by the trade conflict. As China is a central player in GVCs, adding uncertainty in the form of the currency accusations will add to the rising tensions, further damage investment opportunities and disrupt global supply chains. Therefore, while suppressing anti-competitive behaviour is a worthy goal, claiming currency manipulation as a justification for action in this case is unfounded.

3.3. US Doubts Regarding the WTO

The final reason that the US has used to justify their new tariffs are concerns over the WTO’s lack of effectiveness and inability to address their other concerns. By implementing tariffs rather than going through the WTO dispute process, the US displayed a lack of confidence in the WTO’s system and skirted Article 23(a) of the Dispute Settlement Understanding of the WTO. This article outlines the obligation for every WTO member not to make a judgement on whether trade interests have been harmed without


\textsuperscript{65} Scott “Currency Manipulation and Manufacturing Job Loss.”
taking the issue to the Dispute Settlement Panel first. Both China and the US filed formal
WTO disputes against each other prior to tariff implementation, as required by WTO
rules. However, both acted outside of the formal dispute process through enacting tariffs
before the dispute settlement process unfolded, with the US again making the first move.

Through these actions, the US has decided that the WTO cannot provide the first-
best-solution in order to resolve the conflict over China’s trade policies or to achieve the
goals of their new trade policies. Due to the lengthy waiting times for retaliation to be
permitted following the formal dispute settlement process, side-stepping the process is not
uncommon. The frequency with which these actions are taken may also give some
relevancy to this argument for the US. However, in going about their stated goals by
undermining the WTO and its process, the US may be invalidating the organization that
they have helped uphold for many years, particularly given the magnitude of the tariffs.
President Trump’s actions clearly prioritized short-term aims of the significant issues on
which his administration has acted, rather than working towards long-term goals with the
rest of the international community.

Further discussion on the WTO’s disputes settlement system and its relevancy in
light of recent actions is in Section 5.3.3.

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66 Dhar, “Trade Wars of the United States.”
67 Does not include the US’s initial tariffs on solar panels and washing machine and steel and aluminum.
4. Partial Equilibrium Analysis on Short-Term Domestic Costs

Throughout the trade war, President Trump has been on record saying that US consumers will not be paying for any of the tariffs that he has put in place. However, non-government sources have largely claimed otherwise. For a policy to be deemed effective and successful, some parties must be gaining from the policy being in effect. This leads into the question of who exactly is benefitting from the tariffs and who is paying for them. In other words, who is gaining and who is losing due to the protectionism, and what is the overall impact.

In order to simulate what the costs of tariffs will be to the US and to identify who specifically bear those costs, a quantitative analysis on the US steel industry will be used. The analysis will only include one isolated industry and will take into account the US’s 25 per cent tariff on steel imported from all trading partners.

4.1. Pros and Cons of a Partial Equilibrium Analysis

In modeling a quantitative analysis, we can get a valuation of tangible welfare impacts that may result due to the US-China conflict. The results can be used to estimate the impacts of specific variables. In this case, we will simulate the results that the US steel tariffs will have on US welfare with a partial equilibrium model.

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72 In May 2019, President Trump removed the steel tariffs on Canada and Mexico. For simplicity sake and to represent the effects when the tariffs were at the most impactful, the analysis will include Canadian and Mexican steel exports in the calculations.
In using a partial equilibrium (PE) model rather than a general equilibrium (GE) model, we will consider the welfare effects of the tariff policy on a given market, steel in this case. A PE model will be used for simplicity’s sake and because it can be disaggregated. These conditions allow us to isolate the effects of the tariff increases only and with minimal data requirement.

While there are various advantages to using a PE model, it also has disadvantages that must be considered when analyzing the results that the model produces. Specifically, PE models do not account for inter-market interactions and linkages, which a GE model does. A PE model is also very sensitive to the values used for the elasticities. Therefore, poorly estimated elasticities can be detrimental to the accuracy of the PE model. Unfortunately, estimating accurate valuations for the supply, demand and cross-elasticities is difficult and a considerable obstacle in doing a PE analysis. Fortunately, tariff and trade literature has produced robust and viable estimates of elasticities, which were utilized in this case study. A GE model conducts an analysis of all markets simultaneously and how they interact. However, a GE model cannot easily be disaggregated. As we are looking for the welfare impacts of the new tariff policy specifically and due to time constraints, a PE model is the more suitable alternative. Essentially, a PE model is chosen for its simplicity and transparency, at the sacrifice of complexity and completeness.73

4.2. **US Steel Tariffs**

4.2.1. **Background of US Steel Industry**

The American steel industry has a long history of seeking and getting protection. During the 1940s, American steel mills dominated, producing over half of the world’s steel.\textsuperscript{74} Going into the 1960s, the US became a net importer of steel.\textsuperscript{75} Foreign steel makers became more competitive, particularly Europe and Japan, leading to overcapacity in the global steel industry in the latter half of the twentieth century.\textsuperscript{76} This overcapacity in conjunction with increasing efficiency led to decreasing prices, resulting in the US developing a series of protections for the domestic steel industry. Since the 1960s, the US steel industry has experienced various rounds of voluntary restraint agreements, trigger mechanisms, antidumping and countervailing duties with different trading partners.\textsuperscript{77} Given the wide variety and amount of different protections used, the US steel industry is one of the largest and most frequent users of the country’s trade protection measures.

In 2018, the US was the world’s largest importer of steel, importing steel from over one hundred different countries and territories.\textsuperscript{78} In 2017, US imports of steel products account for around 9 per cent of all globally imported steel. However, the 2018 tariffs have already made an impact, with 5 per cent less steel imported from January to March 2019 than the same period in 2018.\textsuperscript{79} Given the US’s prominent place in the steel industry, their


\textsuperscript{77} Blonigen, Liebman and Wilson, “Trade Policy and Market Power.”

\textsuperscript{78} “Steel Imports Report: United States,” Global Steel Trade Monitor, August 2019,\textsuperscript{https://www.trade.gov/steel/countries/pdfs/imports-us.pdf.}

\textsuperscript{79} Global Steel Trade Monitor, “Steel Imports Report: United States.”
declined demand of imports will have a significant impact on the industry in the long run if the tariff restriction persists.

4.2.2. 2018 US Steel Tariffs

As an aspect of his goals to bring steel industry jobs back to the US, President Trump imposed 25 per cent tariffs on nearly all steel imports, effective March 23, 2018. Select trading partners were issued steel quotas if exempt from the blanket tariffs, with only Australia, a small steel producer, being exempt from any protectionist measures. At the core of these tariffs, the President intended to make imported steel more expensive, forcing US companies to use domestic steel, allowing domestic steel producers to raise their prices.

As mentioned in Section 2.1.1, the steel tariffs were invoked under Section 232 of the Trade Expansion Act of 1962 on the controversial grounds of national security. The reasoning used by the US has caught attention through its claim that domestic steel workers must be protected in case of future war and the US military’s need for a domestic supply of steel.

In addition to the shaky justification of the tariffs, the President’s claims that the policy will only help Americans is equally suspicious. As described in Section 3.1, the US cannot produce goods at a lower cost than the countries who have a comparative advantage in that good. US steel producers may benefit from the policy, but US steel users and downstream industries at large will suffer. The domestic steel industry will benefit through higher earnings and job creation, but both will come as costs to domestic steel

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80 Hufbauer and Jung, "Steel Profits Gain."
81 Hufbauer and Jung, "Steel Profits Gain."
users and downstream industries. A study by Hufbauer and Jung (2018) found that the tariffs could create an additional 8,700 jobs in the US steel industry, however, users will pay an extra US$650,000 for each job created.\textsuperscript{82}

The 2018 steel tariffs are being used to analyze the costs, rather than a China specific tariff, because it will give a more accurate representation of the impact of protectionist policy. As the steel tariffs were placed in nearly every exporting country, US buyers cannot simply switch to an alternate supplier to avoid the costs of the tariffs. They are either forced to pay higher prices for the imports, or source from a domestic producer, also at a higher price. If a China specific tariff was used, the PE analysis would be unable to account for the change to alternate countries for imports. Therefore, the steel tariffs will give a more accurate representation of the costs and benefits of protectionist policies.

4.3. Partial Equilibrium Analysis

In the following analysis, the potential welfare impacts of the US steel tariffs on the US economy will be calculated. Due to space constraints, the retaliatory tariffs put in place by US trading partners will not be factored into the analysis. For simplicity sake, the 25 percent tariff will be applied as a blanket measure against all steel imports, despite some countries arranging quotas on imports. The methodology for the analysis is outlined in Hufbauer and Elliot (1994). Appendix A includes a listing of the variables, constants and elasticities used in the calculations.

4.3.1. Assumptions and Limitations

\textsuperscript{82} Hufbauer and Jung, "Steel Profits Gain."
In order to utilize the comparative static framework, four assumptions must be made of the partial equilibrium:

1. The domestic good and the imported good are imperfect substitutes;
2. The supply schedule for the imported good is flat (perfectly elastic);
3. The supply schedule for the domestic good is upwardly sloped (less than perfectly elastic); and
4. All markets are perfectly competitive.

The four above assumptions are necessary to simplify and control the analysis in order to find the desired welfare impacts of the tariff policy. In reality, the domestic and import markets are not perfectly competitive because of existing tariff and quota policies prior to those being evaluated. In assuming a perfectly competitive initial equilibrium, we can calculate the isolated impact of the tariff. In making this assumption, the analysis will likely underestimate the costs to consumers of the protectionist policy.

For the initial static equilibrium period, total quantities of domestic and foreign demand 2017 will be used. The initial domestic price used is the average price of hot-rolled band (HRB) and cold-rolled coil (CRC) in the US for 2017, as reported by SteelBenchmarker. This will represent the US economy prior to the implementation and official announcement of the tariffs, but after President Trump had been discussing protectionist measures for some time. For simplicity sake, it will be assumed that there are

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84 See text box on page 39.
no tariffs in the initial equilibrium period, therefore the average world price of HRB and CRC for 2017 will be used in the initial period.\textsuperscript{88} The post-tariff import price will be the initial price increased by the factor of the tariff.

As described when outlining the limitations of a PE model, the analysis will only consider the static welfare effects within the steel industry and will assume no change in the structure of domestic supply. Therefore, the dynamic effects of the larger economy and the impacts on the various retaliatory tariffs will not be accounted for.

\textsuperscript{88} Steelbenchmarker, “Price History.”
4.3.2. **PE Calculations**

In order to calculate the welfare impacts of the tariffs, the post-tariff domestic price \((P_d')\), post-tariff domestic demand \((Q_d')\) and the post-tariff import demand \((P_m')\) must be

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**Country Size and Market Power**

There is a distinct difference in the theoretical and quantitative application depending on whether the countries involved are considered large or small. The size of the country in this circumstance depends on the products in question and the amount of market power that a country exerts, as determined by the elasticity of demand for imports. If a country’s change in demand for imports affects world prices, then it can be considered a large country. When doing a quantitative analysis with a large country, the change in world price due to change in demand must be considered, whereas with a small country constant world prices are assumed.

The import supply curve reflects changes in the world price, and the slope is determined by the elasticity of supply of imports. A flat import supply curve implies a perfectly elastic export supply and constant world prices, or a small country economy. An upward sloping import supply curve implies that the country has enough market share to impact prices, therefore the price will shift with the country’s demand, representing a large country economy.

The above assumption number 2 (flat import supply curve) pertains to a small country economy. This may be counter intuitive when thinking of the US, as they are the world’s largest importer of steel. However, a 2019 study by Amiti, Redding and Weinstein (2019) found that the full incidence of the US’s 2018 tariffs falls on US consumers. The study found that there is little to no impact of the tariffs on the price of the exporters, thereby passing the cost of the tariff onto consumers. Therefore, the study suggests that supply elasticity of exports is close to perfectly elastic in this short-run time frame. Fajelbaum, Goldberg, Kennedy and Khandelwal (2019) also support the finding that US consumers bear the full incidence of US tariffs.

Due to these findings, this study will treat the US as a small country economy.
found. From these the change in consumer surplus, producer surplus, and government revenue can be calculated to determine the net impact of the US’s steel tariffs.

The initial equations set by Hufbauer and Elliot (1994) to solve for the quantities demanded in the domestic and import markets, and domestic supply are the following:

\[
\ln Q_d = \ln a + E_{dd}\ln P_d + E_{dm}\ln P_m \tag{1}
\]

\[
\ln Q_S = \ln b + E_s\ln P_d \tag{2}
\]

\[
\ln Q_m = \ln c + E_{md}\ln P_d + E_{mm}\ln P_m \tag{3}
\]

These equations can then be rearranged to solve for the unobservable constant terms using estimates for the elasticities as found by Hufbauer and Goodrich (2001) and the initial prices and quantities.

\[
\ln a = \ln Q_d - E_{dd}\ln P_d + E_{dm}\ln P_m \tag{4}
\]

\[
\ln b = \ln Q_S - E_s\ln P_d \tag{5}
\]

\[
\ln c = \ln Q_m - E_{md}\ln P_d - E_{mm}\ln P_m \tag{6}
\]

Using the initial equilibrium values, \(\ln a\) is found to be 25.07, \(\ln b\) -1.74 and \(\ln c\) 23.30. Now that the constant terms are solved, \(P_d'\) can be found using the elasticities and the new price of imported steel in the US (\(P_m'\)).
\[ \ln P_d' = \frac{\ln a - \ln b}{E_s - E_{dd}} + \left[ \frac{E_{dm}}{E_s - E_{dd}} \right] \times \ln P_m' \] (7)

The natural logarithm can then be solved to find \( P_d' \), which is equal to US\$804.02.

With \( P_d' \), equations 1, 2, and 3 can be rearranged to solve for the new quantities.

\[ \ln Q_d' = \ln a + E_{dd} \ln P_d' + E_{dm} \ln P_m' \] (8)

\[ \ln Q_s' = \ln b + E_s \ln P_d' \] (9)

\[ \ln Q_m' = \ln c + E_{md} \ln P_d' + E_{mm} \ln P_m' \] (10)

Solving for the natural logarithms, \( Q_d' \) and \( Q_s' \) are found to be 88,952,746 metric tons and \( Q_m' \) is found to be 21,523,017 metric tons. With the pre and post tariff quantities and prices, the changes in consumer surplus (CS), producer surplus (PS), government revenue (G) and deadweight loss (DWL) due to the tariff policy can be found.
Starting with the US domestic market, the tariff will result in a direct transfer of consumer surplus to producer surplus. The change in PS due to this transfer is shown by area $abEqEq'$.

\[ \Delta PS = (P_{d}' - P_d) \times (Q_d) + \left(\frac{1}{2}\right) \times [(P_{d}' - P_d) \times (Q_{d}' - Q_d)] \]  \hspace{1cm} (11)

When calculated, the increase in PS is found to be nearly US$2 billion as a result of the tariffs on steel imports. The higher tariffs on imports shift the domestic demand curve up, allowing domestic producers to increase their prices, contributing to the large gains for domestic producers.
Turning to the US import market, the tariff causes an increase in the price of imports, shifting the market supply curve up to reflect the higher import price. This higher price causes the import demand curve to shift down, decreasing US demand of foreign steel.

\[
\Delta G = (P'_m - P_m) \times Q_m'
\]

\[
DWL = \left(\frac{1}{2}\right) \times [(P'_m - P_m) \times (Q_m - Q_m')]
\]

The US government will collect revenue from the tariffs on all imports of US steel.

Due to the findings previously mentioned justifying treatment of the US as a small economy in this case, the import supply curve is perfectly elastic. Due to this elasticity, the cost of the
tariff is passed onto US consumers, forcing them to pay the full incidence of this tariff. Therefore, the increase in G, shown by area $E_q'wxy$ and calculated as US$3 billion, is effectively a transfer from consumers to the government.

The area marked $E_q'E_qw$ shows the efficiency loss, or DWL, that will come from the inefficient allocation forced by the market distorting tariff. The DWL amounts to over US$931 million, which is at the expense of society overall.

As the increases in PS, G and DWL are all at the expense of consumers, CS in the steel industry will decrease by nearly US$6 billion.

### 4.3.3. Results and Considerations

The changes to CS, PS, G and DWL are shown below.

<table>
<thead>
<tr>
<th>Change to Consumer Surplus</th>
<th>ΔCS</th>
<th>-5,953,020,504.73</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change to Producer Surplus</td>
<td>ΔPS</td>
<td>1,943,731,747.27</td>
</tr>
<tr>
<td>Change to Government Revenue</td>
<td>ΔG</td>
<td>3,078,221,922.73</td>
</tr>
<tr>
<td>Deadweight Loss</td>
<td>DWL</td>
<td>- $931,066,834.74</td>
</tr>
</tbody>
</table>

While producers in the steel industry and the government will benefit significantly from the 25 per cent steel tariffs, it will be entirely at the expense of US steel users. Not only are the steel users forced to pay higher prices, but some are priced out of the market entirely. Prior to the tariffs, the total quantity of steel demanded including both domestic and international demand was over 116 million metric tons of steel. After the tariffs, total quantity of steel demanded falls to 110 million metric tons, effectively eliminating 5.6
million metric tons worth of demand. The policy will lead to a net loss of around $931 million, equal to the amount of the DWL, therefore US welfare will decrease in aggregate.89

As mentioned previously, a study by Hufbauer and Jung (2018) found that the tariff policy will create 8,700 jobs in the US steel industry.90 As the policy created an efficiency loss of $931 million, each new job in the steel industry will cost US steel users $107,011. This cost is a 103 per cent increase from the median salary of a steelworker in the US, which was $52,610 in 2017.91

While the cost to US steel users is significant, US$931 million accounts for only around 0.005 per cent of the US’s $20 trillion economy. This small economic cost will likely not be considered severe enough to deter the US from continuing on this path of aggressive trade policy.92 If policy makers feel that the tariffs are having a positive impact in political or other non-economic goals, the impact on steel users may be considered negligible. Moreover, the economic stimulus produced out of the increased domestic demand may outweigh the negative effects of the policy, leading it to be considered a success by policy makers, despite the significant costs steel users are forced to pay.

However, this study does show that the numerous claims by President Trump that US consumers are not paying the tariffs is incorrect. This analysis found the cost to US consumers and steel users to be almost US$6 billion, which is a glaring discrepancy to what

89 If the US did have market power and the import supply curve was not perfectly elastic, the Optimal Tariff Theory may have applied to the steel tariffs. If this was the case, the net costs to US welfare would have been lower due to terms of trade improvements.
90 Hufbauer and Jung, “Steel Profits Gain.”
the President has claimed since the trade war began. The China specific tariffs would also create significant costs to consumers, as they would also have a perfectly elastic import supply curve, according to findings of Amiti, Redding and Weinstein (2019) and Fajelbaum, Goldberg, Kennedy and Khandelwal (2019). Given the findings of those studies, consumers will bear the full cost of the China specific tariffs in addition to the steel tariffs, increasing the impact felt by US consumers throughout this intensifying trade war.

Along with the reported findings are several considerations that could alter the magnitude of the various changes in welfare. As mentioned previously, PE analyses are very sensitive to elasticity rates, therefore, a change in elasticity would significantly alter the results. For example, the elasticity of demand would become more elastic over time as adaptations would be made by steel users given the higher prices, assuming the steel tariff policy remains. This would result in consumers still bearing the full incidence of the tariff due to the elasticity of supply, but the loss to consumer surplus due to the transfers and the DWL would be smaller. This shift would alter the welfare results for consumers, producers and the government.

Additionally, in May 2019, the US agreed to remove the steel and aluminum tariffs on Canada and Mexico. This analysis assumes a blanket tariff applied to all steel imports. Therefore, the calculated impacts of tariffs are higher than if Canada and Mexico were exempt, making the analysis an over estimate. However, steel is an important intermediary element of many other sectors within the US. Consequently, the higher price that steel producers are charging will lead to higher input costs, raising marginal costs for other firms. These firms will then be forced to respond by either increasing their own prices or lowering their mark up and receiving lower profits. As mentioned when discussing the
limitations of a PE analysis, the inter-market interactions cannot be accounted for when not using a GE analysis. This spill-over effect would exacerbate the negative impacts of higher steel prices, making this analysis potentially an underestimate of the total negative welfare effects on the US economy.

This case study also has not included the impacts of retaliatory efforts by countries that the tariffs are imposed on, due to the limitation of a PE analysis. This element also contributes to the findings in this study being an underestimate of the total cost incurred by the US because of the steel tariffs.
5. Analysis of the Long-Term Impacts on the Global Trading Market

The immediate economic implications of the trade conflict are vital to analyzing the repercussions from the conflict. However, a more pressing global concern is where the international trading community will be after a conflict between the two largest trading countries in the world plays out. More specifically, where the WTO will be left after the conflict.

The negative impacts that may come to the global multilateral trading system as a result of the US-China trade conflict can generally be categorized into global economic harm, diplomatic harm, and systemic harm. All three have the ability to contribute to disruption in the global system and leave both individual countries and the world worse off in terms of welfare.

Economists have spoken for many years about the real losses that can come from import protectionism. Through various methods, researchers have done studies on the potential impacts of the US-China trade conflict on the larger international system. In many of these studies, the findings have showed that the world at large will not benefit from the conflict and that the countries that may gain in some way are few in number.

In 2018, Li, He and Lin completed a study on the economic impacts of the potential US-China trade war. Their findings showed that many other countries could gain individually in terms of welfare and trade due to the redirection of US-China trade. However, they found that world total welfare, GDP, trade and other indicators will all decline due to conflict.
Bouët and Laborde 2018 analyzed potential US-China and US-Mexico trade wars. Through their literature review and their own analysis, Bouët and Laborde concluded that global welfare systematically decreases due to trade wars to varying degrees.

The Peterson Institute for International Economics’ 2019 study on US-China economic relations points out that long-term, indirect damage will be done to the world trading system as a result of the conflict. Damage will also be seen through lowering investment and efficiency, significantly hurting downstream producers and global supply chains. The study found that economies that export intermediate goods and raw materials to China will suffer the most, while others may benefit by offering alternatives to Chinese products. The study warns that the conflict could pull the global economy into recession, highlighting the destructive potential of the conflict to the international community.

5.1. Global Economic Costs

Due to globalization and ever-increasing worldwide integration, the global economy has developed as one giant entity based on the international system of trade. The deepening of global integration and the lengthening of supply chains have contributed to lower tariff volatility, as the effects of a trade war are magnified by the presence of global value chains (GVCs). The global economic impacts that could result out of the US-China trade war are particularly troubling because they can spread to every nation which is somehow tied economically to one of the two.

Global economic harm would largely be attributed to disturbances in GVCs, which are a vital element to modern trade and business. GVCs allow for different stages of

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93 Mandel, “What is a Trade War?”
production to occur across countries, permitting the production process to occur as efficiently as possible through offshoring and outsourcing. In today's economy, around 70 per cent of international trade involves the utilization of GVCs for both goods and services. The rise and persistence of GVCs within the international trade system has only further increased the linkages between countries, therefore increasing the necessity of cooperation among countries.

The OECD Trade in Value-Added database (TiVA), developed through a joint initiative with the WTO, found that the average developing and developed country's GVC participation index score in 2015 was 41.4 per cent. The index value provides an estimate of how much a country's economy is connected to GVCs for its foreign trade. The indicator considers both backwards and forwards GVC participation in order to reflect the upstream and downstream activity within international trade connections.

For 2015, China’s GVC participation index score is 34.9 per cent, and the US's score is 31.7 per cent. While both countries have a below average participation in GVCs related to their total exports, they still amount to roughly US$747 billion and US$478 billion, respectively. These both represent a significant portion of their individual gross exports, and considerable contributions to GVCs. When considering international exports as a

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whole, the 41.4 per cent that is involved in GVCs represents US$6.7 trillion in the global economy.

While GVCs would not be completely disrupted by the continuing US-China trade conflict, they may be forced away from the most efficient production locations. This disruption would decrease the profitability of the affected supply chains, harming global business ventures, investment and welfare for all involved. Some leading businesses are already claiming to have reoriented their supply chains in the wake of the recent tariffs.97 Appendix B shows what the total GVC value would be for a 0.4% decrease in exports through to a 4% decrease in exports, demonstrating the potential effects of a decrease in GVC production.98 The decrease in production could result from inefficiency induced restrictions on production levels or a decrease in demand due to higher protectionism, among other potential causes. As shown in Appendix B, a decrease in Chinese, US or world GVC value would lead to billions of dollars in losses to the individual countries and the global economy.

Since the implementation of the new tariffs in early 2018 and the corresponding increase in trade tensions, the global economy has already felt the impact. The World Bank recently forecasted global economic growth for 2019 to be 2.6 per cent, which is 0.3 per cent lower than previous forecasts.99 If this forecast is correct, global economic growth will be at the lowest level since the financial crisis in 2009.100 The World Bank attributes the

98 Assuming a constant rate of GVC participation.
100 "Global Growth to Weaken to 2.6% in 2019, Substantial Risks Seen," World Bank.
low levels to weaker-than-expected global trade and investment throughout 2019 thus far, and names the escalating trade tensions between the two major economies as a catalyst. Therefore, the increased risk to investment caused by the increased trade barriers has already altered world welfare in 2019 and can easily deteriorate further if the conflict is not resolved and trade barriers reduced.

The International Monetary Fund (IMF) has analyzed the potential global impacts from the tariffs of 2018 and 2019, and in June 2019 the IMF estimated that US-China tariffs alone would reduce global GDP by 0.5 per cent in 2020, amounting to a reduction in GDP of around US$455 billion.101 Looking at the US’s actions against not only China but Europe and other allies, Oxford Economic estimates that the conflict could reduce world trade by 4 per cent and global GDP by 0.4 per cent, amounting to roughly US$800 billion.102

5.2. Diplomatic Costs

The diplomatic harm that is associated with the US-China conflict is largely regarding the relationships between countries and how they may be altered due to the conflict. These effects will impact not only the US and China but will harm advanced economies, many of which are US allies, as well as bystander emerging economies.103 The ongoing conflict has created a significant pocket of uncertainty in the international community, which can be broken down into missed opportunities in terms of investment.

growth and innovation on a global scale. Figure 5 shows the level of uncertainty from 1997 to 2019, as found by the Global Economic Policy Uncertainty Index. The data shows that at the time of the initiation of the trade war, global uncertainty increased dramatically.

**Figure 5: Global Economic Policy Uncertainty Index, January 1997 to July 2019**

![Graph showing the Global Economic Policy Uncertainty Index from 1997 to 2019, with key events marked such as US pulls out of TPP, Trump elected, and Phase 1 of US-China tariffs.]


The impact of uncertainty of the global economy has been particularly worrying to policy makers worldwide.104 Findings in various studies have shown that uncertainty in trade policy has a large impact on both trade flows, as well as FDI.105 The impact on trade is

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not surprising. If a country projects uncertainty in their trade policy, leading to the possibility of tariffs or some other form of barriers, trading partners will likely evaluate their relationship, possibly leading to a decrease in trade. The logic around the impact on FDI is discussed in Krol (2018). Foreign investors typically have weaker protections against the legal systems in the countries they invest in. Therefore, international investment is likely to be highly sensitive to uncertainty in economic policy and would be dissuaded by occurrences like a trade war. High economic policy uncertainty gives both domestic and foreign businesses incentive to wait for a more secure period, lessening global connectivity. The preventative effect that uncertainty has on investment and trade can lead to a fall in GDP and economic growth, lowering living standards.

The US-China trade conflict has the potential to increase tensions and animosity between the two global economic superpowers not only monetarily, but militaristically. The US and China rank first and third in the world, respectively, in terms of military strength based on a variety of factors. Rising pressure on the relationship between the two nations is not good and any developing animosity has the potential to spill onto allied countries. The outcome of this cannot be predicted, nor can it be underestimated.

If the current tariffs persist, tensions between the two will inevitably increase. Additional rounds or increases of tariffs beyond the current level, as had been threatened by President Trump in May 2019, would be particularly troubling. If tariffs increase, a message would be given to the rest of the world that negotiations are going nowhere, slowing business and diplomatic ventures due to the uncertainty. This could also prompt a

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106 Ibid., 13.
transition from uncertainty in the global market to mistrust and cynicism, which would not foster the investment or cooperation necessary for global economic growth.

In addition to the growing uncertainty in the international community, the attitudes and perceptions that other countries and electorates have of the US will be altered. Since he gained office, President Trump has been reported as having insulted country leaders, trade agreements, and trade practices across the world. While this appeals to his supporters, it alienates those outside of these groups, creating a negative connotation of the US government. Some countries may seek retribution, want a public apology or may want less involvement with the US due to such language and offensive comments.

In January 2017, President Trump signed an executive order withdrawing the US from the Trans-Pacific Partnership (TPP), calling the agreement a disaster for American workers. If the President expected his withdrawal to prompt the other countries to renegotiate the deal, the plan didn’t work. The other eleven countries involved in the TPP reached an agreement without the US and signed the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) in March of 2018. All President Trump’s actions achieved was the US being left out of a likely beneficial agreement and missing out on signing a trade agreement with the five CPTPP members that the US doesn’t have a bilateral agreement with. The TPP could have also been a way for the US to work with other countries to get China to conform to more free market practices by way of a trade agreement, rather than a trade war.

109 Taylor, “A Timeline of Trump’s complicated relationship with the TPP.”
A positive diplomatic effect of the trade conflict is China’s changing relationship with other countries. While many have voiced concerns similar to the US regarding intellectual property and government subsidization of competing firms, China has taken steps to placate some of these issues. Throughout 2018, China lowered its tariffs on imports from all WTO members, besides the US. China’s tariffs on the rest of the world decreased from 8 per cent to 6.7 per cent in November 2018, giving US exporters a significant disadvantage. China’s method of offering incentives for other international exporters has likely lessened the blow to their economy and created a positive diplomatic outcome for all WTO members, besides the US.

President Trump’s statements may also prompt several other threats to the US in less obvious ways, which can be damaging all the same. Canadian politicians calling on Canada to stop tourism to the US, foreign investigations into US conglomerates like Amazon and Google, and boycotting of US goods have already occurred. These are just a few examples of the deterioration of diplomatic relations between the US and its trading partners because of the inflammatory, protectionist rhetoric and actions displayed by the Trump administration.

5.3. **Systemic Impacts and the World Trade Organization**

The WTO is the only international organization set to deal with the rules and regulations of global trade. The WTO took over from the General Agreement on Tariffs and

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Trade (GATT) in 1995, expanding the breadth of products regulated by the organization and created new procedures for dispute settlement. Since 1995, the organization’s membership has grown to include 164 member countries from the 128 GATT contracting parties, representing over 98 per cent of international trade.

In order for the multilateral trading system to develop and expand, the GATT and WTO have provided three critical roles:

1. Established a forum for member countries to meet and proceed with negotiations on country commitments, system rules and guidelines and to further liberalize trade in a neutral setting;
2. Established a forum for dispute resolution among members with an outlined legal process for the countries involved, the impartial adjudicators, rulings and compensation in events of non-compliance; and
3. Established a forum for technical administration in which countries make and report any changes to trade policies, promoting transparency and efficient distribution of information.

Through these functions, the WTO operates to ensure trade flows smoothly, predictably and as freely as possible.

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While the economic and diplomatic harm to the global community will be damaging, the systemic harm that will result out of the US-China conflict will likely be the most prolonged and detrimental. This outcome is likely because the conflict could forever alter an organization which the current trading system is built off, and which is the main supporter of transparent and free trade. Systemic impacts will come from a breakdown of the norms and rules of the multilateral system and from a deterioration in the reputation of both the US and the WTO.

5.3.1. American Disregard of WTO Rules

While claiming that China has ignored numerous WTO rules and customs, the US itself has blatantly disregarded some conditions of the organization which they also agreed to follow. One such condition is a privilege given to developing countries, which outlines that developed countries would not expect reciprocity from developing countries in reduction of tariffs or other trade barriers.115 The decision by the Trump administration to put in place “reciprocal tax” in the form of tariffs is a violation of this condition. While China has made extensive market reforms and has seen rapid economic and social development, it is still classified by the WTO and the World Bank as a developing country. Due to the incomplete market reforms and its low per capita income, China is not yet classified as a developed country, therefore it is still entitled to the privileges of a developing nation in the WTO.116

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115 Dhar, “Trade Wars of the United States.”
Besides the actions taken directly against China, the US has also committed violations of discriminatory policy in exempting some countries from the steel and aluminum tariffs in 2018. The US’s steel tariff exemptions were issued under the guise of “important security relationships with the US”, resulting in the administration treating specific countries differently than to other steel exporters.¹¹⁷ In doing so, the tariffs on specific countries were laced with discriminatory sentiments, violating another element of the WTO’s rules.¹¹⁸ The US has also put voluntary export restraints in place, which are restricted in Article 11 of the WTO Agreement on Safeguards.¹¹⁹

In addition to the actions taken over the course of the trade war, the US has also taken actions against the WTO’s Dispute Settlement Body, specifically its Appellate Body. As an aspect of President Trump’s argument that the US has been taken advantage of in international trade, he has claimed that the US loses cases in the Dispute Settlement Body because other countries have appointed more judges.¹²⁰ US Ambassador to the WTO, Dennis Shea, has claimed that the Appellate Body committed unapproved rule-breaking and rule-making, breaking the trust that WTO members have put in the body.¹²¹ Due to this view of unjust treatment, the President and his administration have blocked the appointment of judges to the Appellate Body, leading to only three of the seven seats being filled currently. Three of the seven leaves the body at the minimum number it can operate

¹¹⁷ Dhar, “Trade Wars of the United States.”
¹¹⁸ Dhar, “Trade Wars of the United States.”
The matter will come to a head in December of 2019, as the second four-year term of two of the three judges ends on December 10, 2019. If the US continues this block, the world’s highest trade court will be unable to function.

The Trump Administration has clearly disregarded rules of the multilateral trading system in their own right. The question that remains is how much further the rules of the WTO can be pushed until the system becomes irrelevant to its members or dissolves entirely.

5.3.2. Diversion of Interests and Influence in the WTO

China and the US economies combined represent over 21 per cent of total world exports and over 23 per cent of world imports. The two also hold the number one and two spots for world rankings in merchandise exports and imports as of 2017. Despite the clear and vast connections between the US and China in terms of trade and their prominent places in the multilateral trading system, the level of cooperation and coordination between the two is lacking. The disconnect is particularly apparent when compared with the previous “Group of Two” members, the US and Great Britain and subsequently the US and the European Union. While many WTO members have engaged in some form of regression in terms of free trade, the current US-China conflict has reached heights not seen in the history of the WTO or between such prominent members.

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125 VanGrasstek The History and Future of the World Trade Organization, 26.
The conflict brings to light a serious issue with the multilateral trade system, that being a growing divergence between the interests and the influence of the most prominent countries in the WTO.\footnote{126} Of the various factors that may have contributed to this rise of separation in interests and influence, the widening scope of membership and the different rates of growth are some of the most significant. During the GATT years, membership largely included developed countries with similar objections and ideas regarding trade. The four central members during this time were the US, Japan, Canada and the EU. These four had both economic interests which motivated them to develop and sustain the GATT, as well as the influence to achieve this goal.\footnote{127}

Following the GATT, many more countries joined the WTO, causing the organization to become more diverse and representative of the international community. Along with being more representative, the relationships within the WTO became much more contentious and complicated given the wider variety of nations.\footnote{128} Over the course of 1995 to 2011, the four central members’ combined share of global GDP fell from three quarters to less than three fifths.\footnote{129} This time frame also saw emerging economies accounting for increasing shares of global GDP. In having a lower share of the global economy, the central four and other developed members now in the WTO experienced declining influence while developing economies expanded their shares of the global economy. However, the difference between developing nations holding influence rather than developed countries is the willingness to carry the burdens and leadership roles of the international system.

\footnote{126} VanGrasstek \textit{The History and Future of the World Trade Organization}, 30.  
\footnote{127} VanGrasstek \textit{The History and Future of the World Trade Organization}.  
\footnote{128} VanGrasstek \textit{The History and Future of the World Trade Organization}.  
\footnote{129} VanGrasstek \textit{The History and Future of the World Trade Organization}. 
This concern is particularly relevant with China, who has risen to become an economic superpower, but is still considered a developing country because they have not completed full reform to a free market system. China’s behaviour within the WTO is not a perfect example to set for other countries nor does it have a good enough record to direct the future of the WTO in aims of transparent and free trade. This leaves the WTO at a point where one of the most influential members does not uphold the interests of the organization.

China has progressively increased its activity within the WTO, moving from a “rule taker” to a “rule shaker” and onto a “rule maker”.\(^{130}\) This process has led to China evolving from passively accepting the rules it was given, to attempting to exploit said rules to their advantage, to making new rules that reflect their own interests.\(^{131}\) This status quo-disrupting development has naturally led to China becoming a frequent complainant in recent WTO disputes, with US-China disputes becoming especially frequent. Between 2002 and 2018, there was a total of 38 disputes between the two, with fifteen coming from China as the plaintiff and twenty-three from the US.\(^{132}\)

In addition to the different interests and influence due to prevalent emerging economies, the US has shown a declining interest in taking on the leadership position in WTO negotiations that it has held for many years.\(^{133}\) In 2018, President Trump claimed that

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\(^{133}\) VanGrasstek The History and Future of the World Trade Organization, 559.
the WTO was set up to benefit all members except for the US and has threatened to withdraw the US from the WTO.134

Even beyond avoiding the leadership mantle, it appears that the US may not participate in measures to be taken by the rest of the G20 major economies in addressing the trade conflict. At a meeting in June 2019, G20 officials warned of the intensifying trade tensions and agreed to address the associated risks and slowing global economic growth.135 Despite the consensus by the rest of the G20, US Treasury Secretary Steven Mnuchin insisted that the trade tensions were not contributing to the global economic slowdowns.136 The US government making statements contrary to the rest of the G20 does not bode well for cooperation in the WTO.

In order for the multilateral trading system to survive, it requires the support of the biggest economic actors. In the wake of the US resisting international cooperation and not being outwardly supportive of the WTO, there was a hope that China would add its weight and influence to upholding the system. However, as mentioned previously, there are significant problems with China holding a leadership position in the organization, namely its lack of a full transition to a free market. This leaves the US unwilling to provide leadership to the organization, China not in a position to do so, and the two countries unable to act in unison given the ongoing trade tensions. The lack of a powerful, international lynchpin to ensure the survival of the multilateral system, in conjunction with conflict between two major members, leads to uncertainty over the future of the WTO.

134 Schott and Jung, “The US-China Trade Disputes.”
135 Rappeport, “World Economic Leaders Warn off Fallout.”
136 Rappeport, “World Economic Leaders Warn off Fallout.”
5.3.3. Damage to the WTO and its Dispute Settlement System

The policy and legal infrastructure embedded within trade agreements provide arenas in which trade disputes can be aired before they develop into larger and more destructive conflicts.\textsuperscript{137} The WTO has the broadest and most robust of these dispute resolution systems with its Dispute Settlement Body. This body has widely been considered a source of pride within the organization, called the “crown jewel” of the organization.\textsuperscript{138} In joining the WTO, all members committed to resolving trade disputes with other member countries through the settlement system. From 1995 to 2018, there were nearly 600 requests for consultations made to the settlement system by member states, with rulings issued on over 350 of those cases.\textsuperscript{139}

While the WTO’s dispute system has been much accredited, it’s also been the topic of doubt lately. A large concern has been the lack of adaptation and evolution to the institutional framework and rules of the system, despite the new negotiating interests and other challenges.\textsuperscript{140} New negotiating interests would correspond to the divergence in interests and influence discussed previously, which would be seen frequently in the dispute process.

Other emerging challenges are the increasing complexity of disputes in addition to the high case load put on the system.\textsuperscript{141} Trade conflicts between members has an

\textsuperscript{137} Mandel, “What is a Trade War?” 14.
\textsuperscript{138} “WTO Disputes Reach 400 Mark,” World Trade Organization, Accessed July 30, 2019, \url{https://www.wto.org/english/news_e/pres09_e/pr578_e.htm}.
\textsuperscript{140} Bown, “Mega-Regional Trade Agreements and the Future of the WTO.”
increasingly damaging effect on the dispute resolution system, as they both increase the number of cases for the system thus creating a backlog, and they also present the need for immediate attention. Immediate attention and quick resolution will be made more difficult when more cases are loaded onto the system.

In 2018 alone, thirty-nine dispute cases were brought to the WTO with twenty-seven having US involvement. Of the thirty-nine cases in 2018, nine involved China, seven of which also involved the US. This means that 18 per cent of new 2018 WTO dispute cases involved the US and China alone. Being the current G2 countries, the US and China need to find ways to deal with the friction in their relationship besides flirting with an all-out trade war or filing numerous disputes within the WTO. Additionally, both countries acted unilaterally against each other before the filed disputes had time to work through the system.

The reputation and effectiveness of the WTO and its operations have been called into question due to the high-profile US-China trade conflict. In addition to the leadership, work load and other internal issues, the dispute system has not assisted in solving the US-China conflict. The disputes filed in 2018 are all at varying stages within the process, but given the escalations seen in 2019, none of the disputes have contributed to finding a solution. The future and effectiveness of the dispute settlement system may be determined in part by whether the trend of US-China cases on the docket continues, or if a solution on their trade frictions can be reached.

143 World Trade Organization, “Chronological List of Dispute Cases.”
144 VanGrasstek The History and Future of the World Trade Organization, 560.
These issues are in addition to the US preventing appointments to the Dispute Resolution System’s Appellate Body, potentially making the world’s highest trade court inoperable if an agreement is not reached. Stalling dispute resolution would not help the WTO’s reputation for effectiveness and may strengthen the argument that the organization needs to evolve to prevent situations like that which the US and China are causing.

The WTO is the right place theoretically to handle disputes, but if it has lost the respect of its members or cannot assist in the most destructive disputes, the WTO may be becoming a moot organization. The institution is supposed to provide a forum for resolution before disputes dissolve into broader escalations. However, the US-China conflict is quickly becoming more dire and extreme, which does not allow for the time the WTO dispute body needs to reach decisions.
6. Conclusion

Despite the growing commercial ties between the US and China, the relationship between the two has become significantly more complicated. While the US has always employed various forms of protectionist trade laws, 2018 marked a shift in the country’s views regarding free trade and special protection. The most concerning element of this policy shift is the ongoing and intensifying US-China trade war.

Over 2018 and 2019, the US-China trade war has expanded beyond expectations, developing into the largest trade war seen since the 1930s between the world’s two largest economies. The US has used legitimate and illegitimate reasoning to justify its actions in both instigating the trade war and being the initiating party in every new phase of the conflict.

Despite the President and his advisors’ claims otherwise, the new trade policies are not harmful to China alone. The new tariffs will significantly impact US consumers through the higher prices they are forced to pay. The case study completed in this analysis found that the steel tariffs alone will cost US steel users more than US$6 billion and create an efficiency loss worth US$931 million. While steel producers will gain around US$1.9 billion and roughly 8,700 jobs from the policy, each new job created will cost steel users $107,011.

In addition to the short-term domestic costs, the trade war will undoubtedly have ramifications felt throughout the entire global trading market. The costs to the world trading market will be larger and more long-term than the domestic costs alone, impacting economic growth, inter-domestic relationships and the global trading system. The costs to
the WTO in particular will be exacerbated the longer the conflict goes unresolved, having
the potential to jeopardize the validity of the organization.

As of August 2019, there has been no progress made on resolving the conflict, despite many sources pointing out the ramifications of the conflict. The lack of action on behalf of the US administration in response to widespread criticisms of the tariffs may indicate that the administration is willing to accept the costs that the US will inevitably bear. These costs will present in the form of welfare loss for consumers, damage to relationships, both trading and otherwise, and loss of its reputation within the WTO.

Considering the costs and consequence of the US's decision to initiate a tariff war, the actions hardly seem justified and it appears unlikely that they will achieve the desired outcome. An element of the conflict that was not included in this analysis is the political reasonings behind the trade war. As they were out of the scope of this study, they were not factored into the discussion on the costs and benefits to the US specifically. However, political motivations unquestionably played a strong role in bringing the conflict to its current state. Therefore, while the economic costs and benefits to the US cannot justify the trade war, if political considerations were included, it might be a different story. Only time will tell where the conflict leaves the US economically and politically, as well as the state of the international trading market.

The end of the US-China trade war could present itself in various ways, ideally through a tariff-eliminating resolution. However, this desirable outcome seems unlikely as of now, and perhaps the best that can be hoped for at this time is a resolution that doesn’t make extensive tariffs the new norm in US-China relations. What can be concluded from this study is that trade wars are not good, they are not easy to win, and they come with a
plethora of consequences to the countries involved as well as the larger multilateral community.
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# 8. Appendix

Appendix A: Variables in Partial Equilibrium Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Notation</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Price elasticity of total demand</td>
<td>Edt</td>
<td>-1.00</td>
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<tr>
<td>Elasticity of domestic demand</td>
<td>Edd</td>
<td>-1.66</td>
</tr>
<tr>
<td>Elasticity of import demand</td>
<td>Emm</td>
<td>-2.34</td>
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<td>Cross-price elasticity for domestic steel</td>
<td>Edm</td>
<td>0.66</td>
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<td>Cross-price elasticity for imported steel</td>
<td>Emd</td>
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<td>Elasticity of domestic supply</td>
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<td>Intercept for domestic demand schedule</td>
<td>Ina</td>
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<tr>
<td>Intercept for domestic supply schedule</td>
<td>Inb</td>
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<td>Intercept for import demand schedule</td>
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<tr>
<td>Price of domestic steel (US$ per metric ton)</td>
<td>Pd</td>
<td>$781.23</td>
</tr>
<tr>
<td>Post-tariff price of domestic steel (US$ per metric ton)</td>
<td>Pd'</td>
<td>$804.02</td>
</tr>
<tr>
<td>Price of import steel (US$ per metric ton)</td>
<td>Pm</td>
<td>$572.08</td>
</tr>
<tr>
<td>Post-tariff price of import steel (US$ per metric ton)</td>
<td>Pm'</td>
<td>$715.10</td>
</tr>
<tr>
<td>Demand of domestic steel (metric tons)</td>
<td>Qd</td>
<td>81,600,000</td>
</tr>
<tr>
<td>Post-tariff demand of domestic steel (metric tons)</td>
<td>Qd'</td>
<td>88,952,746</td>
</tr>
<tr>
<td>Demand of imported steel (metric tons)</td>
<td>Qm</td>
<td>34,543,110</td>
</tr>
<tr>
<td>Post-tariff demand of imported steel (metric tons)</td>
<td>Qm'</td>
<td>21,523,017</td>
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<tr>
<td>Domestic supply (metric tons)</td>
<td>Qs</td>
<td>81,600,000</td>
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<tr>
<td>Change to CS</td>
<td>$\triangle CS$</td>
<td>$(5,953,020,504.73)$</td>
</tr>
<tr>
<td>Change to PS</td>
<td>$\triangle PS$</td>
<td>$1,943,731,747.27$</td>
</tr>
<tr>
<td>Change to government revenue</td>
<td>$\triangle G$</td>
<td>$3,078,221,922.73$</td>
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<tr>
<td>Deadweight loss</td>
<td>DWL</td>
<td>$931,066,834.74$</td>
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Appendix B: Impact of Decreasing Exports on US, China and World GVC Value

<table>
<thead>
<tr>
<th>Total exports of goods and services in 2015 and corresponding GVC data in millions:</th>
<th>Exports</th>
<th>GVC per centahe</th>
<th>Total GVC value</th>
</tr>
</thead>
<tbody>
<tr>
<td>US: 1,511,000.00</td>
<td>31.70%</td>
<td>$478,987.00</td>
<td></td>
</tr>
<tr>
<td>China: 2,143,000.00</td>
<td>34.90%</td>
<td>$747,907.00</td>
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<tr>
<td>World: 16,303,000.00</td>
<td>41.40%</td>
<td>$6,749,442.00</td>
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<thead>
<tr>
<th>Export Value in USD</th>
<th>US</th>
<th>China</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease in Exports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.40% 1,504,956.00</td>
<td>2,134,428.00</td>
<td>16,237,788.00</td>
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</tr>
<tr>
<td>0.50% 1,503,445.00</td>
<td>2,132,285.00</td>
<td>16,221,485.00</td>
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<tr>
<td>0.60% 1,501,934.00</td>
<td>2,130,142.00</td>
<td>16,205,182.00</td>
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<tr>
<td>0.70% 1,500,423.00</td>
<td>2,127,999.00</td>
<td>16,188,879.00</td>
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<tr>
<td>0.80% 1,498,912.00</td>
<td>2,125,856.00</td>
<td>16,172,576.00</td>
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<tr>
<td>0.90% 1,497,401.00</td>
<td>2,123,713.00</td>
<td>16,156,273.00</td>
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<tr>
<td>1% 1,495,890.00</td>
<td>2,121,570.00</td>
<td>16,139,970.00</td>
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<tr>
<td>1.50% 1,488,335.00</td>
<td>2,110,855.00</td>
<td>16,058,455.00</td>
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</tr>
<tr>
<td>2% 1,480,780.00</td>
<td>2,100,140.00</td>
<td>15,976,940.00</td>
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<tr>
<td>2.50% 1,473,225.00</td>
<td>2,089,425.00</td>
<td>15,895,425.00</td>
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<tr>
<td>3% 1,465,670.00</td>
<td>2,078,710.00</td>
<td>15,813,910.00</td>
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<tr>
<td>3.5% 1,458,115.00</td>
<td>2,067,995.00</td>
<td>15,732,395.00</td>
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<tr>
<td>4% 1,450,560.00</td>
<td>2,057,280.00</td>
<td>15,650,880.00</td>
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</table>

<table>
<thead>
<tr>
<th>Total GVC value</th>
<th>US</th>
<th>China</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>GVC Share of Exports</td>
<td>31.70%</td>
<td>34.90%</td>
<td>41.40%</td>
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<tr>
<td>Decrease in Exports</td>
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</tr>
<tr>
<td>0.40% 477,071.05</td>
<td>744,915.37</td>
<td>6,722,444.23</td>
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<tr>
<td>0.50% 476,592.07</td>
<td>744,167.47</td>
<td>6,715,694.79</td>
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<tr>
<td>0.60% 476,113.08</td>
<td>743,419.56</td>
<td>6,708,945.35</td>
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<tr>
<td>0.70% 475,634.09</td>
<td>742,671.65</td>
<td>6,702,195.91</td>
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<tr>
<td>0.80% 475,155.10</td>
<td>741,923.74</td>
<td>6,695,446.46</td>
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<tr>
<td>0.90% 474,676.12</td>
<td>741,175.84</td>
<td>6,688,697.02</td>
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<tr>
<td>1% 474,197.13</td>
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<tr>
<td>1.50% 471,802.20</td>
<td>736,688.40</td>
<td>6,648,200.37</td>
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</table>

<table>
<thead>
<tr>
<th>Rate</th>
<th>Initial Value</th>
<th>Final Value</th>
<th>Total Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2%</td>
<td>469,407.26</td>
<td>732,948.86</td>
<td>6,614,453.16</td>
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<tr>
<td>2.50%</td>
<td>467,012.33</td>
<td>729,209.33</td>
<td>6,580,705.95</td>
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<tr>
<td>3%</td>
<td>464,617.39</td>
<td>725,469.79</td>
<td>6,546,958.74</td>
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<tr>
<td>3.5%</td>
<td>462,222.46</td>
<td>721,730.26</td>
<td>6,513,211.53</td>
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<tr>
<td>4%</td>
<td>459,827.52</td>
<td>717,990.72</td>
<td>6,479,464.32</td>
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</tbody>
</table>