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# The Trade War between the US – China: An Effective Tool on Transformation from Unipolar World to Bipolar World?

**Ceren UZUNTARLA**

**0561933**

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Promotor: Mohammad SALMAN

Jury: Liviu HOROVITZ

Social Sciences & Solvay Business School

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## Abbreviations

FDI - Foreign Direct Investment

GDP - Gross Domestic Product

GNI - Gross National Income

US - United States

DID - Difference in Difference

**Abstract**

*This study aims to examine if the trade war affects the transition from unipolar world to bipolar world. The difference in difference method and linear regression is used to test effects of trade war on countries. The results of statistical analysis prove that protectionism, export dependency are the ones that decrease the probability of transformation of the world order. Additionally, free trade approach and effects of foreign direct investments are likely to increase the probability of the transformation. Both countries are limited for resources through the regulations and tariffs of the opposing country. Therefore, both countries are likely to be affected negatively. The results support the stance that the US is less likely to be affected by the trade war than China. Overall, the willingness of the US to cease China's economic rise is actualized by the trade war in some extent.*

## 1 Introduction

In July 2018, the first import tariffs on Chinese products began to be implemented. Later, this process continued with mutual tariff increases. The first step came from always the US and China retaliated. The process leading up to the trade war has been openly said for a long time. The US complained that the trade deficit with China was excessive and widening. Trump asserted the ideas that "America First" and "Buy American, Hire American" (Guo, Lu Sheng, Yu, 2018; 102). He also described China's participation to WTO as a catastrophe for the USA (Guo, Lu Sheng, Yu, 2018; 102). The USA wants a balanced trade and does everything possible to achieve its goal. On the other hand, there are those who think that this is not just to decrease the trade deficit, it is actually a technology war. The two countries are the strongest countries in the world and they want to have a say in the future and these reasons were effective in the formation of tariffs on imports (Frontline PBS, 2019). The USA also wants to bring back the job opportunities and therefore lower the unemployment rate.

The US is the durable hegemonic power for the long term but recent developments in China show that with the high economic growth, China is able to change the international order and the world can move to the bipolar system as in the Cold War era. (Schweller and Pu, 2011; 69) The unipolar structure, which settled after the Second World War, progressed by strengthening itself until the global crisis. The transition from unipolarity world to multipolarity world accelerated especially after global economic crisis. The US's hegemony is transforming to China-US bipolarity with the decline of liberalism in the world. There are slow economic

growth rates in liberal West countries (Xuetong, 2018:1-7). China makes large investments from Asia to Europe and from South America to Africa and employs Chinese citizens in these investments. China is trying to find new politic, economic partners by using these investments. In these investments, it was actually evidence that China wanted to have a say in the future. The strengthening economic relations with countries was very important for China.

The research is formed to demonstrate how the trade war between China and the US limit the rise of China and therefore, contributes the permanency of current unipolar system with the US hegemony. Furthermore, the effects of four variables will be tested by linear regression model. The model will be created by using annual GDP growth, annual GNI growth, annual export growth and net foreign direct investment data. The model will check the difference between the before tariff period and the after tariff period for both countries.

The structure of the thesis covers six main parts. It will start with introduction and continue with the second part. The second part is a synthesis of the literature search and review about the content of unipolarity and bipolarity as well as the situation of countries with trade war. The third part is consisted by theoretical background and game theory is used. In fourth section the analysis will test the connection between dependent and independent variables and data is collected to test. In the fifth section, statistical data is examined and interpreted as well as combined with the literature review. In sixth section include the final conclusion and results of the study.

# 2 Literature Review

## 2.1 Unipolar World Order

Unipolarity is a structure in which one state's capabilities are too great to be counterbalanced. At the same time, capabilities are not so concentrated as to produce a global empire. (Wohlforth, 1999; 9) Unipolarity is different than the hegomony. (Ikenberry, 2003;617)

After the cold war, the United States became the world's superpower, while the Soviet Union continued to lose power. The bipolar world thus became the unipolar world and the United States emerged as a superpower. It was the world leader in military, technology, economy and many other fields. The world has passed through a long period of unipolarity. (Wohlforth, 1999; 5-8) The USA emerged as a global power in the 1990s. The USA gained

momentum thanks to the fall of the Soviet Union and the slow economic growth of countries such as Japan and Germany. (Ikenberry, Wohlforth, Mastanduno, 2009; 1)

The US determined the unipolar system on the liberal order. The liberal order contains multilateralism, partnerships and alliances. (Ikenberry, 2004; 609-610) The unipolar world actually brought peace in a sense because there was no contention like in the world today. Because the existence of a single power can calm other countries and a relatively peaceful system can be provided. (Ikenberry, 2004; 618-619) Other countries can compete with the US only in some areas, in areas where they are successful and have comparative advantage. (Ikenberry, Wohlforth, Mastanduno, 2009; 1)

While the USA had more imperial relations with Latin America and the Middle East, Europe had different relations with China and Russia. The USA founded NATO together with Europe. In the field of economy, good relations with Europe have been carried out up to now. Relations with East Asia were mostly conducted in bilateral ways. Because Europe has small equal-sized countries, therefore multilateralism is more appropriate, but the same cannot be said for East Asia and bilateral relations are more common. (Ikenberry, 2004; 611)

Globalization made a great contribution to the American economy. Once upon a time United States had made a great effort to open Chinese economy to the world. Thanks to the pressure of American companies in 1994, China was given the status of the most favored nations. Opening to the Chinese market and opening the tiles out of the world caused the highest population of the world population to grow at a high rate each year and there was an influx of foreign capital to this country. (Ozel, 1997; 12-13)

Although countries such as Russia, China, Germany, France and England cooperate with the USA, they will try to break this US power. Because other countries will worry about all kinds of US superpowers. (Ikenberry, 2003; 2-3) Liberal system cannot be changed by the partners, but if an unexpected power comes out, it can only be changed like China in the world today. (Wohlforth, 2009) After the Cold War, the USA was partner with Germany and Japan. Japan lost this role to China and China became the second largest economy in the world. The US had a big role in this, and the US and China became indispensable partners. The US and China's interdependencies deepened in terms of finance, investments and economics. China also developed and deepened in the relations between Asian countries. Relations between these countries would be either complementary or substitute. USA encouraged China about open market. China would get access to North America and Europe in exchange. After participating

the WTO, China grow tremendously. China and the USA became dramatically interdependent. USA was borrowing and consuming while China was exporting and lending. (Mastanduno, 2019; 496-498) The relation that started as complementary in the beginning however, transformed to substitutive approach gradually.

### 2.2 Bipolar World Order

The world order is always changing from the very beginning. The world order, which was bipolar during the Cold War, changed after the cold war and switched to the unipolar world order. **(**Jiang, Baig,n.d.; 2-4) But the change shows its face again and the world returns to the bipolar order with different actors.

The bipolar world order lasted from the Second World War to the end of the Cold war. The bipolar world had an effort and a struggle to find supporters between two powerful countries. Obviously, this system contributes to a balance compared to the unipolar world. In this world order, however, global confrontation can rise in an instant and undesirable consequences can occur. The unipolar world order is a transition period, and of course it will turn into a bipolar or multipolar world order. **(**Jiang, Baig,n.d.; 3-4)

In the bipolar order, the superpower of the two worlds and their adherents are in conflict, and they have army forces to create fear on the other side. These superpowers are made up of great powers. (Volgy and Imwalle, 1995; 820) If you chose your side in the bipolar world, you did not have a chance to move to the other side. If both poles are equal, full balance is achieved, but this is unlikely in today's world. (Beres, 1973; 653)

The international system is a very fragile system and is open to constant change. The unipolar world only lived until 2006. The world has changed as a result of the relative decline of the US economy. The 2008 economic and financial crisis put the US in an irreversible decline. At the same time, China has been on a rapid rise, and then its pace has gradually declined and is now falling. (Gaiser, Kovac,2012; 49) Henry Kissinger asserts interestingly in his well-known Diplomacy (1994; 17): ‘‘Almost as if according to some natural law, in every century there seems to emerge a country with the power.’’ (Gaiser, Kovac,2012; 50)

Russia has been defeated from the previous bipolar world order and now China is on the rise as a candidate instead. China has a very different structure and culture compared to the USA. ( Volgy and Imwalle, 1995;823) On the other hand, Japan does not have enough political and security infrastructure for this competition. Russia is defeated. The EU may be involved in

this contest, but it is dealing with unity problems within itself and hence such a possibility is not seen in the near future. The only alternative remaining is China. ( Volgy and Imwalle, 1995; 823)

## 2.3 Current Situation in Prospect of Bipolarity

### 2.3.1 Current Situation in United States of America

Some experts say the end of North Amerikan Free Trade aggreement. The relations between Canada and the US is worsening. Borders to Mexico were closed. (Khan, 2019; 936) The United States, on the other hand, no longer has the power to stabilize the international system on its own, and regional powers are emerging. (Kutlay, 2018; 19) US president Trump takes a protectionist approach and wants America to be the only incomprehensible power to the world again. So he started his biggest trade war. Production jobs should return to the United States again. (Evans, 2019;47-48)

The twentieth century was when America was very strong. The USA, which had a pole in the cold war period, turned into a single power. The thoughts and institutes of the USA spread all over the world. Globalization started to be felt everywhere in the world. Liberalism was one of the caracteristic of the world order. The other one was institutionalism in the world but this was more successful in Europe. Democracy and the open market economy have been spreaded. (Mastanduno, 2019; 483-485)

USA became the biggest economic power in the world. In this way, it prioritized many organizations playing global roles; United Nations, World Bank, International Monetary Fund, Organization for Economic Development and Cooperation and World Trade Organization. Thanks to these multinational collaborations and military allies, the USA established sincere relations with many countries including Japan, South Korea, and Australia and showed its presence in the oceans. Finally, US dollars started to be used in the international economic system. The sale and purchase of each item is made in the US dollars. Its only major rival so far made the USSR history in 1991. After the 1970s, Brazil, India and China had rapid economic growth rates. After the 2008 crisis, China continued to grow with double figures while the USA remained at low growth figures. (Kroeber, 2017)

### 2.3.2 Current Situation in People's Republic of China

The global economic crisis created problems in the neoliberal economic model. During that time developed countries challenged but developing countries enjoyed the high growth

rates. China had the highest growth rate with 8.6% on annual basis between 2010-2014 periods. The investment rate of developing countries enables these countries to play active role in world politics. It is expected that China will overtake the role of the US in 2028. There is a transition also inside of China for institutions and economic reforms. The long-term success can be sustainable with high quality of economic and political institutions. (Kutlay, 2018: 17-23).

China uses state interventions and state economic enterprises despite western liberal model. China has controlled foreign direct investment. China has different systems, values and structures in this development and growth process compared to western countries. (Kutlay, 2018: 17-23). Lastly, the conclusion part reveals final results of the thesis. China's growth method is very different from that of the US. Strategic industries belong to the state, conversely, nonstrategic industries belong to market stakeholders in the Chinese system. (Hsueh, 2016: 85-88) 'The Chinese leader Deng Xiaoping coined the term 'Socialism with Chinese Characteristics.' The description leads to Communist Party rule with capitalist economy. China's motto is to produce cheaper goods with cheap labor, but recently labor prices have been rising in China. Thailand and Indonesia are competing with China in terms of labor prices. (Marshall, 2016; 42-52) State-owned enterprises strengthen the power of China by supporting the investments from the state budget against the US private-owned enterprises. China makes investments, especially in developing countries. China does not have restrictive rules for foreign investments. This situation brings an enormous advantage to China. (Chow, 2016: 466-484)

Nowadays, China tries to build its own regional and international cooperation. The New development Bank, the Asian Infrastructure Investment Bank, the Belt and Road Initiative shows the Chinese interest to build its own regional and international cooperation. (Campbell, Ratner, 2018: 65-70) China and the US are presently two largest economies in the world. Both sides want to be the world leader in an easy and cost-effective way and build their strategies on it. The main goal of the US is to increase the consumption of American products and to increase the business opportunities as much as possible. Conversely, China wants to continue growth and win-win strategy. (Yin and Hamilton, 2018; 135-136) The United States and China trade war will have impacts on all over the World and the effects will be more intense long-term. The US is the durable hegemonic power for the long term but recent developments in China show that with this high economic growth, China can change the international order and the world can move to the multipolar system as pre-Cold War era. (Schweller and Pu, 2011; 53) China makes large investments from Asia to Europe and from South America to Africa and employs

Chinese citizens in these investments. China is trying to find new politic, economic partners by using these investments. (Wolfe, 2013: 300-302) China uses its economic growth and foreign exchange reserves for its own purposes. Different attitudes in speech texts are not reflected in texts, and very little has changed. The 8th year of the Pivot to Asia strategy, but no significant change. South Korea, India, Japan, Austria, Southeast countries are still doing their politics according to the rise of China and the uncertain approach of the USA. The policies against China are being made to address the trade deficit, but China is trying to overcome this deficit by buying more raw material from the USA, which means more industrial production. American companies continued their investments in China in 2019 as American investments declined all over Asia. The only case was successful to hinder the expansion of Huawei. (Holslag, 2019; 4-8)

China invests in ports in Burma, Bangladesh, Pakistan, and Sri Lanka. Even China rented port in Gwadar, Pakistan for forty years depends on 'One Belt One Road initiative'. China executes everthing to save its routes on South China Sea to continue huge amount of trade.Furthermore, China invests in ports in Kenya, railways in Angola, and hydroelectric dam in Ethiopia. Approximately ten millions of Chinese work in all over the world. China has grown in the global economy and its economic systems have evolved in this direction. If they are not taken, they will not be able to produce more and they will be dragged into unemployment. Chinese firms started to be located all around the world and these firms will be protected by Chinese military means. The Western sanctions on Russia because of invasion of Crimea leads to better trade relations between Russia and China. (Marshall, 2016; 43-61) China started to increase its influence in neighbors such as Cambodia and Laos, which had little power. Central Asian countries such as Kazakhstan and Turkmenistan also look to Chinese investments to improve their transportation infrastructure. China is the most traded country in the world and the second in trade partnership. Crises arising from US protectionism have changed the course of China's relations with other countries. It began to normalize its relations with China, Japan, India and South Korea. There are friendship relations with the Philippines. Partnership with Russia has been increased. (Lukin,2019; 41-43) Asia is an important region and half of the world population lives there. While Chinese needs of oil and gas rises, the need of the US declines because of decrease in production compare to old times. The situation is reflected to Middle East policies of the countries. The US tends to its self-sufficiency in energy supplies therefore, the Middle East will look for new partnerships. (Marshall, 2016; 81-85) China's goal is to share this century with the USA. China wants to dominate internationally as much as the

USA and they do not want any protection from USA. US Vice President declared China preferred military improvements and economic tensions. (Lukin, 2019; 25)

China's understanding of democracy is very different from the western understanding of democracy. The growth and development of China began to change the negative views about authoritarianism. Democracy makes it possible for a country to be more peaceful and not to go to war easily. Most democratic countries were with the USA after the Second World War. But this was not the same in communist countries, the conflicts between China, Soviet and Vietnam showed that military debates could take place between these countries. (Lukin, 2019; 24-25)

Chinese citizens believed that the administration would make them a great power in the world, but after the trade wars, there was a decrease in this view. The Chinese authorities were not aware of this heavy wave of protectionism that would come with Trump. Nowadays, they question timing of One Belt One Road and Made in China strategies that revealed in 2015. (Lukin, 2019; 26) He thinks that the Chinese army should support economic goals. The scarce resources in China are obtained from outside and should be protected. At the same time, China never wanted to engage in direct conflict with the United States. (Kroeber, 2017) China has stepped up infrastructure work abroad and has commissioned its army to support this national interest. China is increasing its trade with Africa. Washington made its decision, according to them, the rise of China should be stopped. China should reduce the trade surplus in its trade with the U.S. (Lukin, 2019; 36-38)

Chinese economic growth has been slowing down these days. China is the second largest economy in the world, but the level of welfare per capita and citizens is very low compared to the USA. Almost half of Chinese exports and 70 percent of high-tech exports are realized by foreign companies. China opened up to foreign investment before many East Asian countries. China did not hesitate to sign agreements with the USA and Europe. Since the early 2000s, Chinese companies began to expand abroad. The primary purpose of this was to meet the need for resources. China's investments are completely economic compared to other countries and do not want any countries to interfere in their internal affairs. China has started to establish its own international organizations. The first of these is Shanghai Cooperation Operation, with the participation of Russia, China and East Asian countries in 2001, the second one is ASEAN that is the free trade agreement includes the second Southeast Asian countries. New Development Bank, also known as BRICS. Apart from this, the currently developing One Belt One Road initiative will connect China Central Asia and Europe. This connection includes

roads, railroads, and ports. To support this initiative, the establishment of the Asian Infrastructure Investment Bank has been approved and many Asian and European countries have been invited to become a founding member of this structure. (Kroeber, 2017)

### 2.3.3 Trade War

Trade war is an economic conflict arising from overprotective approach and putting barriers in the trade of countries. This happens mutually by countries. Instead of the benefits of free trade, such approaches often have negative consequences. (Evans, 2019; 47) The excessive expansion of trade leads to mutual oppositions. As a matter of fact, it seems that these discussions will be on the scene about trade in the 21st century. The first aim of USA is preserving the present structure and it prefers to remain as a single power in the world. Thus, it will do everything to prevent transition. The fact that multiple countries have power means instability and this poses a danger to the world. The widespread view is that this hegemony achieved by the USA after the Second World War will not remain constant in this way and the world order will change. (Ozel, 1997; 9-11) Tariffs and quota implementations can be made to protect the local industry, but the increase in business and producer in the short term will replace the trade decline in business in the long term and the decrease in economic growth in the world. Heavy tariffs cause prices to increase and thus bring inflation. The country that prevailed in the trade war is the country with the highest import demand elasticity. Therefore, large countries tend to overcome trade wars more easily. (Khan, 2019; 934)

The US, which had been advocating globalization from the very beginning, was now advocating the opposite and initiating a separation. In this case, the main goal of the USA was to reduce the trade deficit. He also wanted to prevent the intellectual theft of China, which he betrayed. The USA is also targeting technology products and wanted to prevent China from taking the lead in this regard. (Evans, 2019; 49-50)

In 2017, both leaders Xi Jinping and Donald Trump emphasized that the two economies could work together. Despite this, tariff implementation has started in 2018. China has expressed its wish to continue its growth more peacefully, but Trump has continued its tariff implementation anyway. Trump says his job opportunities are going to China and these jobs must come back. Another view that this tariff war is claimed to be mainly technological origin. (Frontline PBS, 2019)

The first signal of trade war was appeared in March 2018 with the tariffs on aluminum (10%) and steel (25%) that imported by China, Brazil, South Korea, Japan, Turkey, Mexico,

Russia, EU, and Canada aftermath of Donald Trump's election victory in 2017. Trump has protectionist view that involved to 25% tariffs on each 50-60 billion goods imported that includes aerospace, technologies and machineries that values $34 billion. This approach flamed the retaliation of China with tariffs on various products such as apples, wine that totaling $34 billion. (Onyusheva, Nain, Zaw, 2019; 11-12) Thereafter, the US declared more tariffs on 1300 Chinese commodities, China came up with tariff on Boeing planes. The protectionist approaches started by Trump and the fundamental aim was rise of production and employment in local industries as well as offset trade deficits. The trade deficit between China and the US was about $375 billion in 2018, $568.4 billion in 2017, and $504.8 billion in 2016, respectively. (Onyusheva, Nain, Zaw, 2019; 8-11) To show the effects of tariff in countries we can use the Harberler's triangle.

There are price and quantity relation to show the effects of trade war. During the trade war countries are losing welfare, utility of consumers and producers because of tariffs. Deadweight loss shows the loss that caused by reduction in benefits due to trade war. Price for the American buyers are higher than the price for Chinese sellers. If country implements tariff on in the other countries' products, the prices will go up. Therefore, the burden caused by reduction in trade will increase. (Evans, 2019; 51-52)

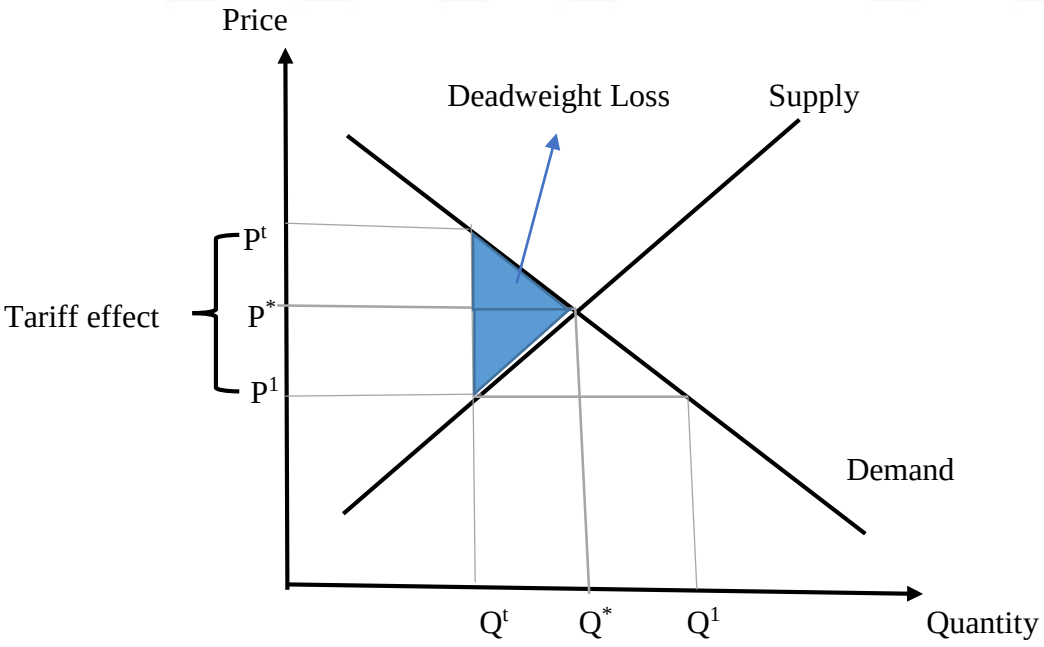


**Figure 1:** The Harberger's Triangle for Tariffs between the US and China

**Source:** Evans, 2019.

Initially, the data of the graph is provided from U.S. Department of Commerce that indicates the US export to China, the US import from China and trade balance annually from 2010 to 2019. Beside, monthly data also provided from U.S. Department of Commerce that reveals the US export to China, the US import from China and trade balance from January 2017 till January 2020. While explaining the trade war situation, trade data were preferred because the trade data of the best countries explained the effects of the trade war between the USA and China and the tariff.


**Fig 2:** The US export, import and trade deficit of annual trade of goods with China

***Source:*** U.S. Census Bureau, U.S. trade in goods with China

| Years | US annual export rates with China | US annual import rate from China | Balance of trade between China and US |
|---|---|---|---|
| 2010 | 91911,1 | 364952,6 | -273041,6 |
| 2011 | 104121,5 | 399371,2 | -295249,7 |
| 2012 | 110516,6 | 425619,1 | -315102,5 |
| 2013 | 121746,2 | 440430 | -318683,8 |
| 2014 | 123657,2 | 468474,9 | -344817,7 |
| 2015 | 115873,4 | 483201,7 | -367328,3 |
| 2016 | 115594,8 | 462420 | -346825,2 |
| 2017 | 129797,6 | 505220,2 | -375422,6 |
| 2018 | 120148,1 | 539675,6 | -419527,4 |
| 2019 | 106626,8 | 452243,4 | -345616,7 |

**Table 1:** The US annual export and import with China

***Source:*** U.S. Census Bureau, U.S. trade in goods with China

A graphic was created using the data in this table. The table illustrates the export, the import of USA with China and trade balance deficits annually between United States of America and People's Republic of China. Primarily, exports of the USA to China increased from 2010 to 2014. After a small decline in 2015 and 2016, it returned to its previous levels in 2017. The tariff

contention, which first started in July 2018, started to show its effect between China and America in 2018 data and a small decline was observed. In 2019, the single was felt deeper and had a relatively larger drop rate with 106626, 8 millions of the US dollars. China's exports to the USA increased rapidly until the end of 2015. There was a decline in 2016. It reached the highest export levels of all time in 2017 and 2018. There was a relatively large decline in 2019 and fell from 539675.6 to 452243.4 millions of dollars, and the main reason for this was the tariffs applied by the USA. The trade deficit between China and China increased until 2015. A small decline was observed in 2016, but it increased again and again until 2018 and decreased with the tariffs in 2019 and fell to $ -345616.7 million. The trade deficit of the US was reached the peak point of $419bn trade deficit in 2018 and sparked the trade war by the US. These data suggest that the USA and China are adversely affected by the tariffs, but this situation may benefit the US, albeit slightly, by reducing the trade deficit. While 13521.3 million dollars decreased US exports, China lost 87432.2 million dollars, so this situation affected China more than the USA. While the USA rapidly increased the applied tariff level, China initially responded at the same rate, but later started to respond less.


**Fig 3** The US export, import and trade deficit of monthly trade in goods with China

***Source:*** U.S. Census Bureau, U.S. trade in goods with China

The data in the graph demonstrates the monthly export of the US to China, export of China to the USA and trade balance from 2017 to the first month of 2020. Initially, balance of trade between China and the US as well as China's export to the US fluctuated since 2017 on the monthly basis. In contrast, USA export to China was respectively stable. Significant decreases are observed in China's trade with the US after November 2018. At the same time,

the trade of the United States with China is at the same levels. The trade balance decreased in the same way after November 2018. The decrease in the export of the USA was after November 2019. Among these months, the highest level of export made by China to the US was recorded in October 2018, and the trade deficit was the highest in this month, after which this rate fell sharply until March 2019.

**The US – China Trade War Phases**

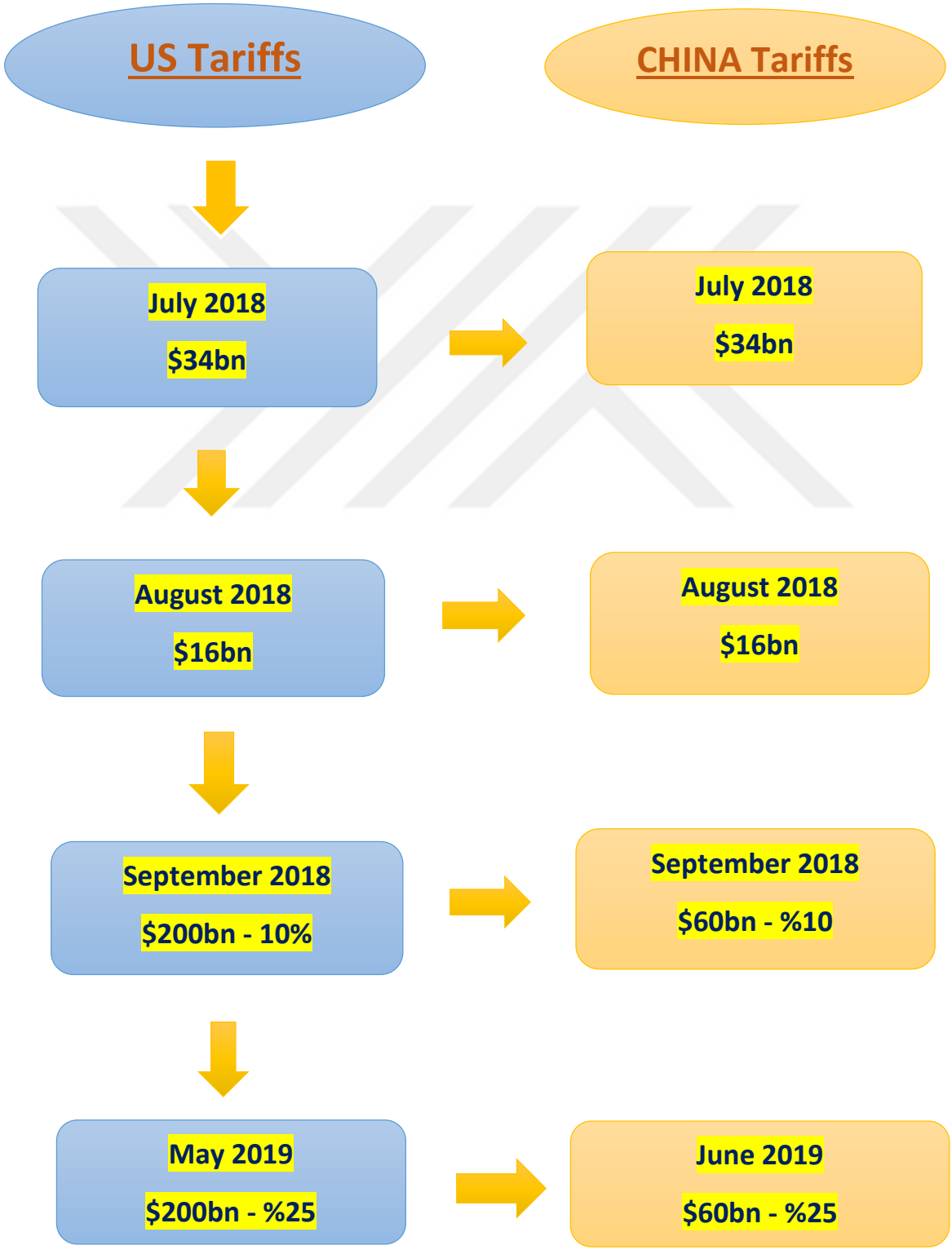

**Fig 4** The US-China trade war evolves throughout 2018-2019

***Source:*** BBC Research, 2020

## 3 Theoretical Framework

The protectionist attitudes or free trade choices of the countries affect the profit of the countries. The aim of the tariff struggle between China and the USA and started by the USA was to be able to close the gap between the USA and China and to stop the development of China relatively so that the USA will be able to continue the unipolar world order and not lose its power. The subject to be learned in this study is whether the trade war will fulfill this request of the USA or not. In this study, it was preferred to use Game theory to clarify this aim. Game theory examines the commercial tension between USA and China in many options. The parties have election rights and the process is still ongoing. Parties have been applying tariffs since 2018, but their next steps may differ and change strategy, so Game theory is the most logical choice to explain the possibility that the world order of the US-China trade war will shift from unipolar to bipolar.

Game theory can be explained as a study of mathematical models of conflict and cooperation between intelligent rational decision makers. Game theory provides general mathematical techniques for analyzing situations. (Myerson, 1991; 1) Game theory has aim to explain relations between two or more than two actors. Game theory, economics and international relations affected each other since the establishment of game theory. (Correa, 2001; 1) Game theory deals with people's interactions. (Levine, n.d.;1) Game theory was seen as a separate field in the 1960s and 1970s. However, these days, game theory is seen as an indispensable tool of the economy. (Samuelson, 2016; 107) Game theory can use in many areas such as international relations, economy, policy and so on. Even the first official example of international trade, mercantilism has used game theory. (Correa, 2001; 11-12)

Nation states usually act in their own interests, and examine the interests of other states if they pose a threat or help their interests. Game theory is inspired by real life and produces theories accordingly, which encompass a wide area from security to economy. Game theory is concerned with the results of the election, without question of the reason of the elections. Economics and international relations are two closely related fields. The continuity of a state depends on the strength of its economic structure. Game theory has examined commerce, economic cooperation, and financial interactions. (Correa, 2001; 11-12)

### 3.1 Methodology

Countries with large and better economic power tend to apply tariffs to economies that are less powerful than themselves. States that are weak tend to continue free trade in general. In addition, monopolists in the country that implements the tariff will want to earn more, so they will waive short-term profits. (Gowa, 1989; 1251) The USA was in a stronger position due to the fact that many companies producing in China belong to the USA, so the USA applied for tariff to prevent China's growth but in fact these two countries are the world superpowers. Therefore, they have similar economic capabilities that caused retaliations. However, if there are two poles, they can apply to exploit their own partners as the competition between them will increase day by day. They may choose to use their resources for their own advantages. (Gowa, 1989; 1251-52) If one of the trading partners applies the tariff on importing products, it will increase the profit above than the free trade level. The profit of the other country will decrease, so they will try to decrease this imbalance. This situation can be called as tariff or trade war. (Correa, 2001; 11-12) In our case, trade war started in the purpose of decreasing imbalance by the United States and keep on with same amount retaliation from China.

Trade is not zero sum game, both side can have profit from trade relation. If both sides refuse trade, the trade war begins, but if both countries continue to trade, both sides gain. Rejecting trade is done to punish the other party. All interventions so far have occurred mutually. While the United States imposed restrictions on trade, China responded at similar rates. On the one hand, exports of United States to China is less than exports of China to United States. Yet, China is more likely to be hurt by the trade war because China has many foreign direct investments from the US as well as when we consider measures like GDP, GDP per capita we still see the US as a superpower. (Yin and Hamilton, 2018; 143-145) Furthermore, trade war creates asymmetric losses. First of all these trade wars depends on tariff increases in the US on commodities. The demand increase for the products means the prices go up, therewithal labor force wages raise. Although local industry improved, price increase procreated challenge for steel-related companies which needs to purchase the steel by any cost. (Onyusheva, Nain, Zaw, 2019; 8-9)

There are few possibilities in the US - China trade war case according to game theory: the US has availability to choose either status quo or protectionist measures against the rise of China. When the US enacts protectionist on trade China has two options; first one is conceding the second option is retaliate. If both countries follow protectionist approach, they will get the

biggest loss. If one country utilizes from protectionist view without tit for tat from other country, it will own the biggest profit. (Yin and Hamilton, 2018; 143-146) As was argued before, Mcggwire also presented both countries continue free trade with two options or apply tariffs. If they choose free trade in both countries, they both benefit from this situation, gain benefits, increase income, and improve living conditions. If only the USA applies this tariff, its exports will not change, but the prices of foreign products will increase and the public will not prefer these products. Therefore, the biggest advantage and profit can be achieved in this way. If China does not respond to this, its export-related economy will suffer and export rates will drop rapidly. In this case, China will choose to respond. (Mccgwire,n.d.; 70-71) The economy of China is a trade and export-dependent economy. At the same time, the USA, where it is the most traded country, therefore economic sanctions will bring deep effects. The USA produces many products through China and this will affect the USA deeply. . (Mccgwire ,n.d; 72-73)

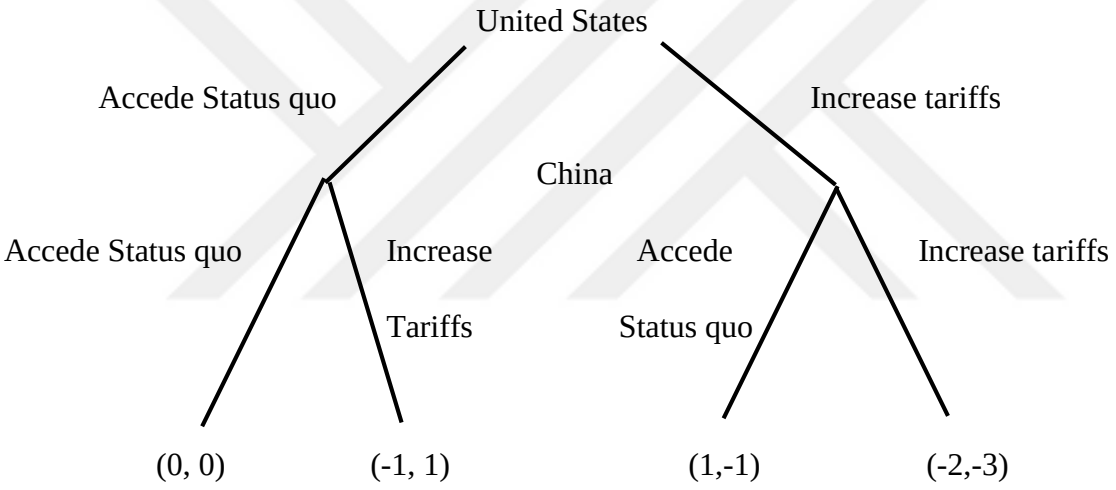


**Figure 5:** Model of Game Theory for Trade War Effects on United States and China

***Source:*** Yin and Hamilton, 2018.

Liberal policies in trade oppose the protectionism. If there are countries A and B, when one approaches to protectionism, the most plausible option for the other one is also being protectionist. If country A abandons protectionism, the other should be the logical and approach to give up protectionism as well. The bargaining power of the countries is directly proportional to the gains and losses in the protectionism versus liberalism game. Protectionism will bring loss according to the current situation of country. Each country cares about their citizens. The trade war causes everyone to lose, but rates of loss change depend on countries' current situation. One side is less affected by the trade war while the other side is more affected, thus gaining a comparative advantage. Generally, the two communities avoid major losses, if possible, they tend to agree more than tendency to protectionism. (Harrison and Rutström, 1991;

420-432) Nonetheless, this is true that if the tariff between two big powers disappear, they can gain more profit than remain in trade war. (Gowa, 1989; 1246)

As a result, based on the game theory, if countries continue to the current world order, free trade, a return to the bipolar world will be achieved. The implementation of the trade war or the economic sanctions imposed by one side will stop the world change and the unipolar order will remain constant.

If the countries will apply tariffs to each other, it means that the investments in these two countries will decrease. This situation will result from both the decrease in sales and the uncertainty in the countries. As a result of this situation, as shown in the game theory, an economic decline will occur and the trade war will negatively affect both countries as both countries apply tariffs.

The US made investments in China for a long time because workers' wages were lower and the cost was much lower. Goods produced in China were spreading around the world. Therefore, China has invested more and more in the field of export. This increased China's dependence on exports and its place in the economy. With the trade war, the situation will be negatively affected and trade rates will decrease. As shown in the game theory, if the trade continues in its normal course, no change will be seen, otherwise the two countries will be negatively affected by this situation, but China will be more affected.

## 3.2 Hypothesis

### 3.2.1 Protectionism

The countries' protectionist approach so called the trade war affects profoundly the transformation of the world form unipolarity to bipolarity. The increase in trade tariffs had an effect on real income, bilateral trade and sectorial value added in China. China tends to be more affected by tariffs than the US. US exports are decreasing, but China's fall amount is higher. The biggest reason for this: China's export to the US is higher than the US export to China. (Felbermayr, Steininger, 2019; 27-29) Tariffs were a method used in the past until Trump started using it again. Apart from the tariffs, there are many methods that prevent trade. The USA is approaching protection against China 4 times more than trade. In China, where there are 25 measures against the USA, this number rises to 80-100 in the USA, which restricts trade.

Foreign investment initiatives provide 31 percent profit to China. This rate is more than the profits of state-owned enterprises. (Gros, 2019; 21-23)

The increase in trade tariffs had an effect on real income, bilateral trade and sectorial value. Adding tariffs on the products strengthens the producer, but also increases government revenues, on the other hand it will put the consumer in a difficult situation. High tariffs will put the consumer in a difficult situation and reduce the amount of local consumption. If the tariffs for medium products are high, production costs will increase for many other products. In the long term, it will reduce the race internationally and affect the revenues negatively. They will bring negative effects on factors such as breaking consumer and producer confidence, such as uncertainty in the international arena. The value added decreased in both countries. (Felbermayr, Steininger, 2019; 27-29) In short term, tariffs will allow the cheaper domestic products than foreign products. If domestic products are more preferred, the domestic job facilities will increase, and businesses will enlarge. Yet, in long run this situation causes the economic growth to worsen at the same time, the triggering of inflation, as well as worsen the rate of economic growth in the world. (Khan, 2019; 936) The US is in a successful position in the service industry. Tariffs are paid by their own citizens, not from other countries. Therefore, intermediate product goods bring much bigger problems. Recently, profit-making tariffs bring losses in the long run. United states are at risk of retaliation from all over the world. China delays the transportation of American products in the domestic market. (Khan, 2019; 938) The prices of the products directly affect the purchasing power and welfare of the people. But this increase in prices will show its effects not immediately, but later. Months later, consumers become aware of the change in prices and spend their expenses accordingly. With regard to job creation, new jobs will balance each other thanks to the jobs and tariffs that disappeared during the trade war. Therefore, a difference does not arise. The longer it takes, the greater its effects. Firms in the USA will either go to worker inferiority or try to delay their growth plans with the increase in prices. It is also very difficult to attract investment to the country in these negative conditions. (Evans, 2019; 47-48) Trade wars cause the global economy to stagnate or even decline. These tariffs trigger the decline in trade. Therefore, it directly affects consumption and transportation. (Khan, 2019; 934) Trump is leading this nationalist and protectionist approach. Because trade deficits are in bad condition with China. The US have transformed from trade economy to knowledge economy. (Khan, 2019; 936-937)

According to the economies, this rate will cause a loss of 30 thousand dollars in the USA and 60 thousand dollars in China. Chinese companies that trade in the USA will be the

ones most affected by trade wars. US manufacturers will also suffer greatly from this situation and the idea of international trade and liberalism has been trampled. (Khan, 2019; 938) Chinese companies' earnings depend on local labor, low wages and cheap production. China was unprepared for these tough and protective policies of Trump. (Lukin, 2019; 37) China is trying to overcome the economic losses due to the US tariffs with new trade links. (Felbermayr, Steininger, 2019; 29) The impact of this trade war will be negative formany countries. If it continues like this, there is a possibility that similar scenarios may occur for the European Union, Mexico and Canada, and this causes fear to the world. The effect of the US and China trade war on world growth was -0.5%. After the trade war, China, Canada and European countries are trying to make new agreements to supply the products from other countries that had been purchased by the USA. (Khan, 2019; 934) This will lead to following hypothesis:

*$H^1$: Trade war taken by the powerful countries, lower the probability of transformation of world order from unipolarity to bipolarity.*

### 3.2.2 Free Trade

The preference of free trade rather than trade war is expected to affect the transformation of world from unipolarity to bipolarity. Both states are competence of improving economic capabilities in free trade approach. The growth rates of China are higher than the growth rates of the US without trade war thus, the world is likely to change in this stance. China was accepted as a full member of the World Trade Organization in November 2001. This rise of China was unpredictable, and with the increase in its trade to countries, which has increased much above the estimates during this period. (Rafique, 2002; 7) After membership of China in WTO, US imports from China increased more than exports to China. (Scott, 2005; 2)

Froning (2000; 1) emphasized that the USA has been the biggest supporter of free trade for many years. The production race will bring innovation, create new business areas, create new markets, new investments. Free trade caused the prices to fall in the USA and improved living conditions. At the same time, free trade increases the economic growth rates of countries. When we buy a product, every food produced in that product is produced in different places and at the lowest possible price. The USA and China signed the trade agreement in 1999. He brought the Chinese market to the world with his own hands and many investments were made in China (Froning, 2000; 2-8). Yellen (1998; 23) states that the policy of the USA until now has been to reduce the deficits, to make investments and to open other markets of the world to

the USA countries. Free and fair trade was the primary focus. It was important to make trade agreements.

Baggs and Brander (2006 ;207) argue that international trade affects countries' profits and economic data levels. This situation also affects manufacturer companies. Krugman,Obstfeld,Melitz (2012; 1) assert that trade brings profit to everyone that is included. Free trade affects and improves budget, investments and savings. Increasing trade also increases economic growth. This situation makes free trade more compulsory. The increase in international trade pushes countries to a bigger race, so an increase in innovation and technology production is observed. (Yellen, 1998; 24-26) In the past two decades, China's share in world exports has noticeably increased. The factor in the liberation of China was tariff discounts. The inclusion of china in WTO enabled its integration with the world. After the countries' membership to WTO, they are in the process of change and liberalization in trade policies (Ianchovichina, Martin, Fukase, 2000; 1-2). The free trade implication in state is therefore predicted to contribute the growth rates of both countries. Besides, the growth rate of China higher than the US and can pave the way of transformation from unipolority of the US to bipolarity of the US and China by contribution to much better off Chinese economic ratios. This stance lead to the following hypothesis:

*$H^2$: The powerful countries without trade war, the higher probability of transformation of world from unipolarity to bipolarity.*

### 3.2.3 Trade Dependency of the State

The high share of countries' exports in the GDP causes them to be more affected by the trade war. In China, the export-based economy is more dominant, but the US economy is rich in terms of service and financial revenues besides exports. The China exports of technology and electronics transcended more than the export of labor-intensive products. (Scott, 2005; 2) The Chinese economy is an export-oriented economy and technology products make up most of this export. Therefore, it also needs imports for these products (Kuroiwa, 2014; 1). Chinese economic growth is related with its trade (Kuroiwa, 2014; 3). In the past two decades, the Chinese economy has been integrated with the world. Due to the decrease in production costs, it increased its trade in a short time.

Brown (1987; 504) states that protectionist policies change terms of trade, such as trade war and tariffs. This change can be either a good or bad way. The trade elasticity of the country is the factor that will determine the effect on trade. Tariff decreases play substantial role for

welfare gain (Brown, 1987; 524). Affecting the export levels of countries can cause chain effects and as a result, firms may be negatively affected. While there are barriers in trade, the number of export companies is decreasing. It is observed that the profit of the firms decline as well as shrink consumer welfare with increase on tariffs (Jørgensen and Schröder, 2006; 1).

With the application of tariffs to other countries, imports decrease, so consumers' happiness also decreases (Brander, Spencer, 1984; 228). Ossa (2011; 1) stressed that import tariffs are made to disrupt the trade balance of the country in which it is applied. But the latest situation makes trade wars cause a big decline in trade and thus everyone gets worse. The trade war puts pressure on export and import rates. Therefore, the country with higher rates may be more affected by protectionist attitudes. This will lead to following hypothesis:

*$H^3$: The secondary state which its economy is dependent on export is likely to be more affected by trade war, therefore, probability of transition to bipolarity will be lower.*

### 3.2.4 Investment

Foreign direct investments in China and the US can be affected by trade war and the uncertainty atmosphere that caused by the trade war. If this situation continues, it will continue to be affected by investments from other countries to these countries. Krugman, Obstfeld and Melitz (2012; 1) stressed that the intertwined countries are more crucial than before 21st century and flow of money, investments, trade are the most important tools to be linked to the world. Li and Liu (2005; 393) argue that the rise of foreign direct investment can augments the economic growth rate. FDI affects economic growth through technological growth, efficiency growth, and knowledge growth. FDI extends market in country, therefore, increases economic growth. The effects of FDI differs among countries depend on the trade policy of country. FDI can have positive effect on the host country (Li and Liu, 2005; 394-396).

Raff (2004; 2746) emphasizes that free trade agreements ascend the flow of FDI and in this case, the opposite can also be considered true. FDI can increase the welfare of the residents of the country (Raff, 2004; 2748). Tariff barriers also influence foreign direct investments (Culem, 1988; 885). Free trade is a risk-free country, so investment growth can increase with new trade deals. Tariff reductions directly increases the level of foreign direct investments. (Culem, 1988; 896). Tariffs changes the level of trade and also FDI (Culem, 1988; 896). Market, growth rates and determined tariffs affect the investments entering or leaving the country (Culem, 1988; 900).

On the contrary, import tariffs and the unsafe environment created by this will remove or suspend investments. Growth rates will be negatively affected along with investments in both countries, and since these are the two best superpowers in the world, the transformation will slow down and be put on hold. Therefore, while trade is affected, investment rates of countries will be affected. The excessive foreign investment in China can also have negative effects. Inaccurate tax policies affect investment decisions. Investments are negatively affected by the uncertain environment. Uncertainty causes investments to be delayed and pending. (Niemann, 2004; 265-266) Not only trade of the countries are affected by trade wars but also investments could be affected. In this regard, it could be argued that both countries will be affected negatively about investments with the implication of trade war.

*$H^{4:}$ Both countries will lose foreign investment attractiveness by trade war throughout the world therefore the transformation to bipolarity will slow down.*

## 4 Data Collection

### 4.1 Data Collection 2015-2018

The U.S. made tariffs on Chinese products three times in 2018, July, August and September. China, on the other hand, made the same return to all tariffs made this year. The search time period determined to cover from 2015 to 2018 period. It assumes before 2018 period as tariff free period in relation between China and the US and the year 2018 is considered as a tariff period. The data have been used in search is found from World Bank dataset. The confirming the above mentioned hypotheses were provided by using the various economic variables annual GDP growth(%), annual GNI growth (%), annual net foreign direct investments and annual export growth(%). The data gathered to see comparable results. Table 3 illustrates the resources of dataset.

Additionally, the data collected annually to see general picture. It is observed that both countries affected from trade war. However, China tends to be effected negatively in contrast to USA depend on the World Bank data. The four year period from 2015 to 2018 is examined for both countries, China and the US, as well as three categories provided to indicate the effects. 2018 is considered as tariff year due to the three tariff periods started in July 2018 with 34$ bn tariff on imported products, 16$ bn in August 2018 and lastly 200$ bn at 10%.

In table 2, the data of annual GDP growth, GNP growth, export growth and net FDI from World Bank is illustrated. The data is collected for both countries between 2015 and 2018.

In first column, it can be observed that the US annual GDP growth continue to increase even in the year of tariffs 2018 by % 2,927. China GDP growth continue to decrease in 2018 by % 6,566. In second column, annual GNI growth is increased for USA but decreased for China. In third column, annual export growth of China decreased by19, 44 because of the tariffs. On the other hand, the US export growth increased by % 12, 20. In last column, net foreign direct investments rates are demonstrated, both of them affected negatively but the effect on the US was deeper than China in this case.

**Table 2:** World Bank data for difference in difference method

| | (1) | | (2) | | (3) | | (4) | |
|---|---|---|---|---|---|---|---|---|
| Years | Annual GDP growth(%) | | Annual GNI growth(%) | | Annual Export Growth(%) | | FDI net ( billions$) | |
| | USA | China | USA | China | USA | China | USA | China |
| 2015 | 2,881 | 6,9 | 2,746 | 6,365 | 12,44 | 22,07 | -202,031 | -68,099 |
| 2016 | 1,567 | 6,736 | 1,505 | 6,708 | 11,87 | 19,75 | -176,121 | 41,675 |
| 2017 | 2,217 | 6,757 | 2,301 | 7,106 | 12,07 | 19,91 | 29,923 | -27,791 |
| 2018 | 2,927 | 6,566 | 2,985 | 6,243 | 12,20 | 19,44 | -336,846 | -107,02 |

## 4.2 The dependent variable

The dependent variable for all hypotheses is the decreasing the gap between the US and China economies with trade war. Independent variables affect the transformation of the world to bipolarity either positively or negatively. The few years in which the tariffs were applied caused the indicators to be less. Although the observations were low, the results were clearly found. Examination of the results in two groups as negative and positive caused some information to be ignored. We in the beginning accept that world order is in transformation recently. Trade war influenced this transformation and likely to lower pace. Game theory evaluates the transformation of the world and the impact of the trade war on two main topics; protectionist attitude and the protection of the current situation so free trade approach. Yin and Hamilton (2018; 143) stressed that US China trade relations based on either accept status quo or protectionism.

Protectionist perspective such as the trade war hinders transformation of the world from unipolarity to bipolarity. In contrast, free trade approach before 2018 was leading word to

transformation. Furthermore, export dependency of the rising country is likely to decrease transformation during the trade war as well as foreign investment attractiveness will be damaged and lead to lower the probability of transformation. The effects of independent variables on the dependent variable will be tested by using difference in difference method as well as World Bank data base will be used to collect export growth, net FDI, GDP growth and GNI growth. In implementation of the difference in difference method, treatment group described as countries the US and China and time described as two period; before and after 2018. The negative difference in difference results show trade wars negative effect, therefore the transformation is slow, and the positive results illustrate the positive effect of trade war in the country, therefore the transformation is higher pace. The last outcome is if trade war is still on process, the outcome is that world is less likely to transform. The corresponding results can be found in table 2 and in Appendix A: R studio results.

## 4.3 Independent variables

The first hypothesis will test whether or not the countries' protectionist approach is likely to inhibit the transformation of world order. To explain this, China's 2018 data and economic data before 2018 will be compared and the effect of the protective approach that emerged with the war of trade will be reached. In total, we would be compared 32 data (World Bank) to check the effects of trade war on state economy. Thus, it can be understood that rising China will continue to their rise or not.

The second hypothesis tests for the impact of free trade approach in the transformation of the world. Before 2018 period was tariff free period for China and the US. Therefore, countries' before 2018 data will be compared to reach a result as well as the dataset of World Bank is utilized. In total, 24 data will be considered. As emphasized in literature review part China kept rising before trade war and posed threat to the US unipolar world. Difference in difference method is used to test the effect on Countries and the result is calculated.

The third hypothesis export dependent countries will be affected the most from the trade war therefore, the transformation of the world order is likely to be hampered. The export growth ratios of the both countries are used to testify this hypothesis. The 8 World Bank annual export growth data will be used to test. The impacts of tariffs are reflected on 2018 dataset. It can be also useful to look at gross domestic product growth and gross national income growth to confirm the hypothesis which are also linked to production capacity of countries.

The fourth hypothesis will test for the effects of trade war on foreign direct investments and the change of world order to bipolarity. To test this hypothesis, net foreign direct investment rates will be used. The dataset is gathered from World Bank and 8 data will be used between 2015 and 2018. The effects will be described as negative or positive to countries. The more information about the calculations can be found in Appendix A.

## 5 Empirical Results

### 5.1 Binary Variables

The difference in difference methodology will be used to testify hypothesis by using R studio statistics program. Lloyd and Solomou (2019; 6-10) created an example for two group classification on tariffs. Initially, we commentate the impacts of tariffs between China and the US using a two-group classification of countries and data for two time periods (before 2018 and after 2018). As explained before, non-protected period will describe free trade period before Trumps declaration of tariffs and protected period will describe after the declaration of tariffs. The treatment group includes countries the US and China. By controlling differences between control and treatment group we will reach the analysis. All regressions are estimated in linear regression as well as robust standard error.

The two group differences in difference model is provided in the below equation:

$$\Delta y_{i,t} = \alpha_0 + \alpha_1 y18t + \beta \text{country}i + \delta(\text{country}i \times y18t) + \varepsilon_{i,t}$$

Where i =1, 2 indicates countries China and the US in our sample and t =1, 2 demonstrates the two periods; before 2018 and after 2018 periods, respectively. The dependent variable $\Delta yi,t$ symbolize the annual GDP growth, annual export growth and annual GNI growth in country i during the time period t. Time invariant variable countryi is dummy variable is equal to 1 if country i is China and 0 if not. The country invariant variable $y18_t$ is a time dummy variable which is equal to 1 if after 2018 tariff period described and zero otherwise.

The intercept $\alpha_0$ parameter represents the annual GDP growth, annual export growth and annual GNI growth non-protected trade in the US of before 2018 period. $\alpha_1$ represents the annual GDP growth, annual export growth and annual GNI growth non-protected trade in the US after 2018 period. Thus, the sum of $\alpha_0$ and $\alpha_1$ equals to total mean of the annual GDP growth, annual export growth and annual GNI growth for the US for both period. $\beta$ represents the

differential growth rates of the China and the US before 2018 period. The difference-in-difference coefficient $\delta$ shows the average increase in the annual GDP growth, annual export growth and annual GNI growth in the US and China, after and before the 2018 period.

The time dummy y18t indicates the constant across country but changes across time periods. Besides, the country dummy countryi vary between countries but remains constant in time periods. (Lloyd, Solomou ,2019; 7-8) Accordingly, the differences in difference indicator is used to illustrate impacts of tariffs in rising China after 2018, compare to the US. Therefore the difference in difference estimator shows how China affected from the trade war after 2018 period. The augment in annual GDP growth, annual GNI growth and annual export growth difference in countries for two different period. Thus, the aim is to reach difference between the periods.

$$\delta 1 = (E[\Delta yi,t|countryi = 1,y18t = 1] - E[\Delta yi,t|countryi = 0,y18t = 1]) - (E[\Delta yi,t|countryi = 1,y18t = 0] - E[\Delta yi,t|countryi = 0,y18t = 0])$$

$$\delta 2 = (E[\Delta yi,t|countryi = 1,y18t = 1] - E[\Delta yi,t|countryi = 1,y18t = 0]) - (E[\Delta yi,t|countryi = 0, y18t = 1] - E[\Delta yi,t|countryi = 0,y18t = 0])$$

Where E represents the (conditional) expectations operator. (Llyod, Solomou, 2019; 8) In 2018 data, it is observed that there is decrease in China for export growth, GDP growth and GNI growth rates but increase in the US growth. In contrast, net foreign direct investment rates declined for both of them after the trumpet of tariff war.

Table 3 indicates formal economic results for annual GDP growth, annual GNI growth, annual export growth and net annual FDI. In first column, the result is not significant but the trade war affect is negative for after 2018 period in China. Tariffs had a recessionary effect of -0.94 in Chinese gross domestic product growth. However, the effect is not very significant with p-value: 0.0009461. Therefore, we can interpret the effect of trade war for China is negative but the effect is minimal.

In second column, tariff also made recessionary effect of -1.28 on gross national income growth of China after the implementation of tariff. Before the tariff period there was an increase by 2.18 percentage in the US. Before the tariff period China's rise was higher than the US data by 4.54 percent. However, the effect is not very significant with p-value: 0.001511. Therefore, we can interpret the effect of trade war for China is negative but the effect is minimal. The

effect of trade war on GNI growth is bigger than the effect on GDP growth and effect on export growth.

In third column, the trade war affect is observed for export growth. It is an expected result and China export growth is influenced by -1.21 percent after the tariff implementation. Before the tariff period China export growth was higher by 8.45 percent. However, the effect is not very significant with p-value: 0.001226. Therefore, we can interpret the effect of trade war for China is negative but the effect is minimal. The effect of trade war on export growth is bigger than the effect on GDP growth.

**Table 3**: Difference in difference results for two group classification

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Annual GDP growth(%) | Annual GNI growth(%) | Annual Export Growth(%) | Net FDI |
| D in D for China, $\delta$ | -0.9370 | -1.2843*** | -1.21000*** | 131.82* |
| | (0.7656) | (0.8429) | (1.53300) | (160.16) |
| Dummy variable for China, $\beta$ | 4.5760 *** | 4.5423*** | 8.45000*** | 98.00 |
| | (0.3828) | (0.4214) | (0.76650) | (80.08) |
| Period After 2018, $\alpha_1$ | 0.7053 | 0.8010 | 0.07333 | -220.77 |
| | (0.5414) | (0.5960) | (1.08399) | (113.25) |
| Constant $\alpha_0$ | 2.2217** | 2.1840** | 12.12667*** | -116.08 |
| | (0.2707) | (0.2980) | (0.54200) | (56.62) |
| Observations | 8 | 8 | 8 | 8 |
| $R^2$ | 0.9605 | 0.9501 | 0.9551 | 0.4158 |

Estimated regression results for the binary variables classification. The independent variables are annual GDP growth, annual GNI growth, annual export growth and net FDI, respectively. All regressions are estimated by OLS and robust standard errors are reported, where *** p<0.001 **p < 0.01; *p < 0.05.

In fourth column, FDI decresed for both countries but in differnce in difference method we can observe that compare to the US, the effect on China is lower. The US is affected the most in net FDI. The US before 2018 period had negative data by -116.08.The growth after the period 2018 was lower by -220.77 in countries than the period before 2018. Therefore, we can interpret the effect of trade war for China is high by p-value: 0.184.

On the one hand, the trade war effects for rising China is negative and preventive in GDP growth, GNI growth and export growth. On the other hand, net FDI data is positive for China after the trade war compare to the US level. Finally, we can say trade war affected China tremendously by many measure as well as the US is also affected somehow in FDI ratios.

Table 4 indicates formal economic results for annual GDP growth, annual GNI growth, annual export growth and net annual FDI. In first column, the result is not significant but the trade war affect is positive for after 2018 period in the US. Tariffs had an expansionary effect of 0.94 in Chinese gross domestic product growth. However, the effect is not very significant with p-value: 0.0009461. Therefore, we can interpret the effect of trade war for the US is positive but the effect is minimal.

**Table 4**: Difference in difference results for two group classification

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Annual GDP growth(%) | Annual GNI growth(%) | Annual Export Growth(%) | Net FDI |
| D in D for the US, $\delta$ | 0.9370 | 1.2843*** | 1.21000*** | -131.82* |
| | (0.7656) | (0.8429) | (1.5330) | (160.16) |
| Dummy variable for the US, $\beta$ | -4.5760 *** | -4.5423*** | -8.4500*** | -98.00 |
| | (0.3828) | (0.4214) | (0.7665) | (80.08) |
| Period After 2018, $\alpha_1$ | -0.2317 | -0.4833 | -1.1367 | -220.77 |
| | (0.5414) | (0.5960) | (1.0840) | (113.25) |
| Constant $\alpha_0$ | 6.7977*** | 6.7263** | 20.5767*** | -18.07 |
| | (0.2707) | (0.2980) | (0.5420) | (56.62) |
| Observations | 8 | 8 | 8 | 8 |
| $R^2$ | 0.9605 | 0.9501 | 0.9551 | 0.4158 |

Estimated regression results for the binary variables classification. The independent variables are annual GDP growth, annual GNI growth, annual export growth and net FDI, respectively. All regressions are estimated by OLS and robust standard errors are reported, where *** p<0.001 **p < 0.01; *p < 0.05.

In second column, tariff also made expansionary effect of 1.28 on gross national income growth of the US after the implementation of tariff. Before the tariff period the China's data was higher than the US data by -4.54 percent. However, the effect is not very significant with p-value: 0.001511. Therefore, we can interpret the effect of trade war for the US is positive but

the effect is minimal. The effect of trade war on GNI growth is bigger than the effect on GDP growth and effect on export growth.

In third column, the trade war affect is observed for export growth. It is an expected result and the US export growth is influenced by 1.21 percent after the tariff implementation. Before the tariff period the US export growth was lower by -8.45 percent. However, the effect is not very significant with p-value: 0.001226. Therefore, we can interpret the effect of trade war for the US is positive but the effect is minimal. The effect of trade war on export growth is bigger than the effect on GDP growth.

In fourth column, FDI decresed for both countries but in differnce in difference method we can observe that compare to China, the effect on the US is higher. The US is affected the most in net FDI. The US after 2018 period had negative data by -131.82.The growth after the period 2018 was lower by -220.77 in countries than the period before 2018. Therefore, we can interpret the effect of trade war for the US is negaitve and high by p-value: 0.184.

On the one hand, the trade war effects for the US is positive predominantly in GDP growth, GNI growth and export growth. On the other hand, net FDI data is negative for the US after the trade war compare to China level. Finally, we can say trade war affected China and the US. The US has tendenecy to be affected positive generally while China has tendency to be affected negative generally.

## 5.2 Bivariate Analysis

The above mentioned hypothesis and independent variables are tested and outcome of the linear regression model is settled. The outcomes will be predicted depends on the variables collected by difference in difference method.

$$\delta 1 = (E[\Delta yi,t|countryi = 1,y18t = 1] - E[\Delta yi,t|countryi = 0,y18t = 1]) - (E[\Delta yi,t|countryi = 1,y18t = 0] - E[\Delta yi,t|countryi = 0,y18t = 0])$$

The formula indicates difference among the periods to illustrate the effects of tariff implication. The outcome supports the first hypothesis the effects of trade war are negative. The value for the annual GDP is -3.748. The result for annual export growth rate is -4.82. The result for annual GNI growth is -5.1372. Based on these results, we can say that the two

countries have been negatively affected by this protectionist attitude and import tariffs, and the changing world order has the possibility of slowing down, with China being more affected.

$$\delta 2 = (E[\Delta yi,t|countryi = 1,y18t = 0] - E[\Delta yi,t|countryi = 1,y18t = 1]) - (E[\Delta yi,t|countryi = 0, y18t = 0] - E[\Delta yi,t|countryi = 0,y18t = 1])$$

To compare countries, the formula described as above. The value for the annual GDP is 3.748. The result for annual export growth rate is 4.82. The result for annual GNI growth is 5.1372. In this case, we can say that the Chinese values are more than the US values. On the other hand, 2018 values decreased more than China for the USA. It shows us that the US hegemony is already deteriorating in the world in this case, China is still far ahead of the US values. It is shown here that the world is already in a process of transformation. In this case, the opposite can be said. If there was no trade war, China would continue to rise at the same pace, but the trade war prevented the Chinese values from increasing. In this case, it shows that free trade would ensure the continuation of China's rise.

The table 3 reveals that export growth for China after 2018 period is negative. China with high export values, most of its economy is based on exports, it was more affected by the tariffs. On the other hand, the growth rate of exports of the USA increased compared to the previous year. In contrast, the China export growth decreased compared to the previous year.

The table 3 shows the effect of trade war on foreign direct investment is negative both countries but in comparison China is in better situation than the US in this point. The value of Period After 2018, $\alpha_1$ is negative therefore we can interpret that foreign direct investments are affected negatively by the trade war between China and the US for both countries.

After examination of 32 cases to describe the effects of tariffs on both powerful economies, one positive two negative outcome founded for the transformation the world order. The findings of the linear regression support that free trade is likely to change the world order from unipolarity to bipolarity. However, the trade war is likely to hinder the change in world order. Export dependent economy China is likely to be affected by the trade war the most. Both countries for foreign direct investment affected both of them negatively therefore the world change slows down. The finding supported hypothesis 1, 2 and 3.

The foreign direct investment results did not show the expected effect in this case. It was predicted that the foreign direct investment for both countries are affected by the trade war and slow down the change. In the results, it is observed that both countries affected negatively

but the US was the most negatively affected one therefore the change is likely to continue. There were significant results for foreign direct investment, export growth and GNI but compare to them GDP growth result was not significant. However, there was the negative effect for GDP growth.

The results show that in any case one country will be affected badly from the trade war thus, it has negative impact for at least one of them. The results are dominantly indicating that the China will be affected more than the US but the US also affected negatively in some extent. The trade war affects countries which has trade dependent economy tremendously. However, it is observed that China has higher rated in any economic measure than the US. It reveals the change in the world is already started before the trade war and the trade war is an attempt to inhibit the change. Trade war is essential political and economic tool started by the US. The effects for long term period should be observed as well. The short-term effect is described above. All countries that involved in trade war situation will experience negative impacts somehow.

# 6 Conclusion

This work was created to find out whether the trade war between the US and China would help to the bipolar structure or the unipolar structure in the world order, and three independent variables were used to show the effect of trade war on the change of order. Tariffs can have positive or negative effects to change of world order in certain circumstances. This thesis aimed to show how protectionism, free trade, export dependency and foreign direct investments levels of the US and China affect the change of the world order.

Protectionism, free trade or unilateral trade has positive or negative effects on the transformation of the world order. The two countries' adoption of protectionism slows down the transformation, while the free trade of the two countries accelerates the transformation. In the case of reciprocal tariffs applied to each other, as it is practiced in the two countries today, China, which has gained momentum in terms of growth, is slightly more affected by this situation and the transformation of the world will slow down. The trade war being implemented today causes mutual negative results for both countries and loss of both countries' economies, but since China is more likely to be affected by this situation, the chances of changing the world order are decreasing. If we look at the data before 2018, we can clearly see the rapid rise of China against the USA. It is observed that after 2018 data Chinese GDP, GNP and export

growths started to decrease, meanwhile rates of the US started to increase. Large states generally have the power to afford themselves economically. 32 data were analyzed to understand the effects of the trade war. While 3 of hypothesis showed that the situation was more negative for China, one of hypothesis showed that the situation was more negative for the USA. Differences in differences method and linear regression model were used to compare both countries and R studio is used to calculate data. Game theory showed the negative results for both countries as proved in differences in differences.

In the hypothesis 1, the effects of protectionist approach of the countries have been analyzed. If the states can feel safe, they pass on the protective approach. In this case, the USA's desire to decline the trade deficit with China is remarkable. While this is happening, the US economy is also damaged but not on the same level. However, China's growth is relatively decreasing in GDP, export and GNI after the trade war but China's growth levels, in all the cases, are already higher than the US growth levels. The results are reached with comparing the 2018 data and before 2018 data. It was obvious that China's growth levels were in decline. This case demonstrate us that protectionism approach of the US and China, discourage the change of the world from unipolarity to bipolarity. As a result, the adoption of a protective approach in both countries negatively affect the transformation of world order, but China will be more affected by this, and the transformation into a bipolar world slow down.

In the proven hypothesis 2, a non-tariff world order contributes to the economic growth and export-based economy of China and changes the world. China continues to be an attractive address for production with low salaries and costs in the global world but foreign direct investment attractiveness damaged by the trade war. If the free trade continues, the US continues its decline in economic rates compared to China. To demonstrate this, the pre-tariff period was considered, so the years 2015, 2016, and 2017 were evaluated. The uninterrupted increase in GNI is observed while GDP and export growth raised between 2016 and 2017. Thus free trade paves the way for transition from unipolarity to bipolarity. Furthermore, the desire for free trade in both countries will stabilize the world transformation and accelerates transformation into a bipolar world.

In hypothesis 3, the dependency of export of the US and China is examined. China is making an export-based economic growth and promoting export. Therefore, it is affected more by trade war than China. The hypothesis is analyzed by export growth rate of both countries. In 2018, China's export growth started to decrease meantime the US export rate started to increase

so in difference in difference method, it is showed that China affected negatively. Accordingly, the transformation of the world from unipolarity to bipolarity is prevented by trade war with the decline in China's data.

In hypothesis 4, the foreign direct investments attractiveness of the countries are investigated. The uncertain atmosphere in China and the US caused negative effect for attractiveness of foreign investments. After 2018, it was clear that for both countries data was negative. However, the US was affected more than China. Therefore, difference in difference method showed the US in negative position. We can assert that the transformation of the world order from unipolarity to bipolarity slowed down because of both countries decline.

The effects of trade war on countries were minimal and negative for China in three dataset that provided by World Bank. The effects of trade war were minimal and negative for the US in one dataset that provided by World Bank in this research. The transformation of the world is confirmed by different amount between countries for the same datasets. In all the cases, China was far ahead compared to the US. Furthermore, the effect to the world was predominantly negative with creating uncertainty and tension between two big powers of the world.

Finally, we observe that this trade war carried out negatively affects for both countries, but on the other hand, it contributes to lengthening the world order that the USA desires. On the other hand, if the current world order was carried out without the tariffs, we would be watching the China approaching the power of the USA every day. Trade war was such an effective economic and political tool to stabilize world order about unipolarity depend on World Bank data and differences in differences method. With the tariff selection, the US is basically approaching its purpose even if it damages its economy as well. The trade war discourages the world transition from unipolarity to bipolarity.

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# Appendices

Appendix A: R Studio Results GDP Growth

*China = 1 y18 = 1*

```
             Estimate Std. Error t value Pr(>|t|)
(Intercept)    2.2217     0.2707   8.208 0.001201 **
y18t           0.7053     0.5414   1.303 0.262565
countryi       4.5760     0.3828  11.954 0.000281 ***
y18t:countryi -0.9370     0.7656  -1.224 0.288168
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.4688 on 4 degrees of freedom
Multiple R-squared:  0.9775,       Adjusted R-squared:  0.9605
F-statistic:  57.8 on 3 and 4 DF,  p-value: 0.0009461
```

*China = 0 y18 = 1*

```
             Estimate Std. Error t value Pr(>|t|)
(Intercept)    6.7977     0.2707  25.113 1.49e-05 ***
y18t          -0.2317     0.5414  -0.428 0.690741
countryi      -4.5760     0.3828 -11.954 0.000281 ***
y18t:countryi  0.9370     0.7656   1.224 0.288168
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.4688 on 4 degrees of freedom
Multiple R-squared:  0.9775,       Adjusted R-squared:  0.9605
F-statistic:  57.8 on 3 and 4 DF,  p-value: 0.0009461
```

*China = 1 y18 = 0*

```
             Estimate Std. Error t value Pr(>|t|)
(Intercept)    2.9270     0.4688   6.243  0.00336 **
y18t          -0.7053     0.5414  -1.303  0.26257
countryi       3.6390     0.6630   5.488  0.00537 **
y18t:countryi  0.9370     0.7656   1.224  0.28817
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.4688 on 4 degrees of freedom
Multiple R-squared:  0.9775,       Adjusted R-squared:  0.9605
F-statistic:  57.8 on 3 and 4 DF,  p-value: 0.0009461
```

*China = 0 y18 = 0*

```
             Estimate Std. Error t value Pr(>|t|)
(Intercept)    6.5660     0.4688  14.005 0.000151 ***
y18t           0.2317     0.5414   0.428 0.690741
countryi      -3.6390     0.6630  -5.488 0.005369 **
y18t:countryi -0.9370     0.7656  -1.224 0.288168
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.4688 on 4 degrees of freedom
Multiple R-squared:  0.9775,       Adjusted R-squared:  0.9605
F-statistic:  57.8 on 3 and 4 DF,  p-value: 0.0009461
```

Appendix B: R Studio Results GNP Growth

*China = 1 y18 = 1*

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)     2.1840     0.2980   7.329  0.00184 **
y18t            0.8010     0.5960   1.344  0.25012
countryi        4.5423     0.4214  10.778  0.00042 ***
y18t:countryi  -1.2843     0.8429  -1.524  0.20224
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.5161 on 4 degrees of freedom
Multiple R-squared:  0.9715,       Adjusted R-squared:  0.9501
F-statistic: 45.41 on 3 and 4 DF,  p-value: 0.001511
```

*China = 0 y18 = 1*

```
Estimate Std. Error t value Pr(>|t|)
(Intercept)     6.7263     0.2980  22.572 2.28e-05 ***
y18t           -0.4833     0.5960  -0.811  0.46288
countryi       -4.5423     0.4214 -10.778  0.00042 ***
y18t:countryi   1.2843     0.8429   1.524  0.20224
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.5161 on 4 degrees of freedom
Multiple R-squared:  0.9715,       Adjusted R-squared:  0.9501
F-statistic: 45.41 on 3 and 4 DF,  p-value: 0.001511
```

*China = 1 y18 = 0*

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)     2.9850     0.5161   5.783  0.00444 **
y18t           -0.8010     0.5960  -1.344  0.25012
countryi        3.2580     0.7299   4.463  0.01113 *
y18t:countryi   1.2843     0.8429   1.524  0.20224
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.5161 on 4 degrees of freedom
Multiple R-squared:  0.9715,       Adjusted R-squared:  0.9501
F-statistic: 45.41 on 3 and 4 DF,  p-value: 0.001511
```

*China = 0 y18 = 0*

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)     6.2430     0.5161  12.095 0.000268 ***
y18t            0.4833     0.5960   0.811 0.462875
countryi       -3.2580     0.7299  -4.463 0.011131 *
y18t:countryi  -1.2843     0.8429  -1.524 0.202238
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.5161 on 4 degrees of freedom
Multiple R-squared:  0.9715,       Adjusted R-squared:  0.9501
F-statistic: 45.41 on 3 and 4 DF,  p-value: 0.001511
```

Appendix C: R Studio Results Export Growth

```
China = 1   y18 = 1

              Estimate Std. Error t value Pr(>|t|)
(Intercept)   12.12667    0.54200  22.374 2.36e-05 ***
y18t           0.07333    1.08399   0.068 0.949310
countryi       8.45000    0.76650  11.024 0.000385 ***
y18t:countryi -1.21000    1.53300  -0.789 0.474089
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.9388 on 4 degrees of freedom
Multiple R-squared:  0.9743,       Adjusted R-squared:  0.9551
F-statistic: 50.58 on 3 and 4 DF,  p-value: 0.001226
```

```
China = 0   y18 = 1

Estimate Std. Error t value Pr(>|t|)
(Intercept)    20.5767     0.5420  37.965 2.87e-06 ***
y18t           -1.1367     1.0840  -1.049 0.353543
countryi       -8.4500     0.7665 -11.024 0.000385 ***
y18t:countryi   1.2100     1.5330   0.789 0.474089
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.9388 on 4 degrees of freedom
Multiple R-squared:  0.9743,       Adjusted R-squared:  0.9551
F-statistic: 50.58 on 3 and 4 DF,  p-value: 0.001226
```

```
China = 1 y18 = 0

              Estimate Std. Error t value Pr(>|t|)
(Intercept)   12.20000    0.93877  12.996 0.000202 ***
y18t          -0.07333    1.08399  -0.068 0.949310
countryi       7.24000    1.32762   5.453 0.005494 **
y18t:countryi  1.21000    1.53300   0.789 0.474089
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.9388 on 4 degrees of freedom
Multiple R-squared:  0.9743,       Adjusted R-squared:  0.9551
F-statistic: 50.58 on 3 and 4 DF,  p-value: 0.001226
```

```
China = 0 y18 = 0

              Estimate Std. Error t value Pr(>|t|)
(Intercept)    19.4400     0.9388  20.708 3.21e-05 ***
y18t            1.1367     1.0840   1.049  0.35354
countryi       -7.2400     1.3276  -5.453  0.00549 **
y18t:countryi  -1.2100     1.5330  -0.789  0.47409
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.9388 on 4 degrees of freedom
Multiple R-squared:  0.9743,       Adjusted R-squared:  0.9551
F-statistic: 50.58 on 3 and 4 DF,  p-value: 0.001226
```

Appendix D: R Studio Results Net Foreign Direct Investment

*China = 1 y18 = 1*

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    -116.08      56.62  -2.050    0.110
y18t           -220.77     113.25  -1.949    0.123
countryi         98.00      80.08   1.224    0.288
y18t:countryi   131.82     160.16   0.823    0.457

Residual standard error: 98.08 on 4 degrees of freedom
Multiple R-squared:  0.6662,       Adjusted R-squared:  0.4158
F-statistic: 2.661 on 3 and 4 DF,  p-value: 0.184
```

*China = 0 y18 = 1*

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    -18.07      56.62  -0.319    0.766
y18t           -88.95     113.25  -0.785    0.476
countryi       -98.00      80.08  -1.224    0.288
y18t:countryi -131.82     160.16  -0.823    0.457

Residual standard error: 98.08 on 4 degrees of freedom
Multiple R-squared:  0.6662,       Adjusted R-squared:  0.4158
F-statistic: 2.661 on 3 and 4 DF,  p-value: 0.184
```

*China = 1 y18 = 0*

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    -336.85      98.08  -3.435   0.0264 *
y18t            220.77     113.25   1.949   0.1230
countryi        229.83     138.70   1.657   0.1729
y18t:countryi  -131.82     160.16  -0.823   0.4567
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 98.08 on 4 degrees of freedom
Multiple R-squared:  0.6662,       Adjusted R-squared:  0.4158
F-statistic: 2.661 on 3 and 4 DF,  p-value: 0.184
```

*China = 0 y18 = 0*

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    -107.02      98.08  -1.091    0.337
y18t             88.95     113.25   0.785    0.476
countryi       -229.83     138.70  -1.657    0.173
y18t:countryi   131.82     160.16   0.823    0.457

Residual standard error: 98.08 on 4 degrees of freedom
Multiple R-squared:  0.6662,       Adjusted R-squared:  0.4158
F-statistic: 2.661 on 3 and 4 DF,  p-value: 0.184
```