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**The trade war between the US and China**

In Partial Fulfillment of the Requirements  
for the Bachelor of Science in Finance

By

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May, 2020

**Acknowledgements:** I would like to thank my thesis advisor Prof. Hasan F. Baklaci for his advice and support throughout the thesis writing process. I would also like to thank other friends for their helpful guidance.

# Table of Contents

<b>ABSTRACT .....</b>	<b>1</b>
<b>1. INTRODUCTION .....</b>	<b>2</b>
<b>2. LITERATURE REVIEW .....</b>	<b>4</b>
<b>2.1 The reasons of the trade war .....</b>	<b>4</b>
<b>2.2 The most significant effect of trade war .....</b>	<b>5</b>
2.2.1 On the stock market .....	5
2.2.2 On trade .....	6
<b>2.3 The advantages and disadvantages of the trade war .....</b>	<b>6</b>
2.3.1 The advantages of the trade war .....	6
2.3.2 The disadvantages of the trade war .....	7
<b>2.4 Measures to mitigate the damage and suggestions for future.....</b>	<b>7</b>
<b>3. METHODOLOGY &amp; DATA.....</b>	<b>9</b>
<b>3.1 Dataset &amp; Sample .....</b>	<b>9</b>
3.1.1 Dataset.....	9
3.1.2 Sample .....	9
<b>3.2 Methodology &amp; Model .....</b>	<b>10</b>
3.2.1 Methodology & Hypotheses.....	10
3.2.2 Model .....	11
<b>4. ANALYSIS &amp; FINDINGS.....</b>	<b>12</b>
<b>4.1 Cause of the trade war .....</b>	<b>12</b>
4.1.1 China Trade Surplus or The US Trade Deficit.....	12
4.1.2 Exchange rate of RMB.....	14
<b>4.2 The effects of the trade war .....</b>	<b>15</b>
4.2.1 On the stock market .....	15
4.2.2 On trade.....	16
<b>4.3 The disadvantages and advantages.....</b>	<b>17</b>
4.3.1 Disadvantages.....	17
4.3.2 Advantages .....	17
<b>4.4 The advice and suggestions .....</b>	<b>17</b>
<b>5. Conclusion .....</b>	<b>19</b>
<b>6. REFERENCES .....</b>	<b>21</b>
<b>7. TABLES AND FIGURES .....</b>	<b>.....</b>
<b>Figure 1. The US-China stock market correlation.....</b>	<b>.....</b>
<b>Figure 2. The US trade balance with China from 2014 to July 2019(in billion U.S. dollars) .....</b>	<b>.....</b>
<b>8. APPENDIX.....</b>	<b>.....</b>
<b>Appendix A .....</b>	<b>.....</b>
1. Trade between the US and China.....	.....
2. The regression results of the US trade deficit and the value of imports.....	.....
3. The regression results of the US trade deficit and the value of exports .....	.....
<b>Appendix B.....</b>	<b>.....</b>
1. The imports price index for the US .....	.....

2. The regression results of the US imports price index and the value of imports .....
3. The regression results of the US imports price index and the value of exports .....

**Appendix C**.....

1. The imports price index for China .....
2. The regression results of China imports price index and the value of imports.....
3. The regression results of China imports price index and the value of exports .....

**Appendix D** .....

1. The exchange rate of the US dollar against RMB .....
2. The regression results of the exchange rate with the value of imports .....
3. The regression results of the exchange rate with the value of exports .....

**Appendix E**.....

1. The RMB volatility .....
2. The China exports to the US .....
3. The China imports from the US.....

**Appendix F**.....

1. Trade Balance with China .....
2. Change in Region's share of world's total exports to China.....

## ABSTRACT

The recent trade war between the US and China started because the U.S. imposed a 25 percent tariff on Chinese imports. This paper proposes four explanations: the causes of the recent trade war, the impact of the trade war the stock market and the trade, the advantages and disadvantages of the trade war, and some suggestions given to the US and China. I collect data mainly about tariff war between the US and China, China's trading surplus and US's trading deficit, and the exchange of the quantity of the export and import between the US and China. Because of my research is a descriptive research study and I collect the historical time-series data from Bloomberg, I will use regression and correlation analysis as my methodology. After analyzing, the results are the trade deficit between the US and China mainly lead to the trade war. And the trade war has a significant impact on the trade, while the US and China's stock markets are not moving together during the trade war. Moreover, there are many strategies the US and China can take to make up for the loss during the trade war.

Keywords: trade war, trade deficit, tariff, the exchange rate, trade, export, import, stock markets

## 1. INTRODUCTION

In this day and age, armed warfare is no longer common, people prefer to fight with economic weapons. No matter what era or country you live in, people will experience financial crisis or trade war. That's because every country is trying to move forward, to become one of the top economies.

Such economic struggles are most evident in the world's two largest economies, the United States and China. The effect of the trade war between the US and China not only appears in this two countries, but also affects all the world.

Trade wars happen frequently between China and the United States, but the last one was in March 2018. US President Donald Trump has signed a memorandum, ordering the US trade representative's office to impose massive tariffs on US \$60 billion worth of imports from China and restrict Chinese companies' investment and acquisitions in the US (Ren, 2018). This event is the trigger for the recent trade war between China and the United States. However, this study will find some reasons behind it, such as China is the desire to get ahead in 5G, China's labor cost advantage leads to the trade imbalance of labor-intensive products, and the trade surplus.

Many people will be interested in what will the trade war brings. There are many good things will bring to China, for instance, it is a good time for China to build a competitive manufacturing industry (Liu, 2018). The United States also takes time for improving the supply-chain network (Amiti, Redding, & Weinstein, 2019). On the other hand, it also will bring many disadvantages especially in stock market, for example, the U.S. stock market is at an all-time high, and investors are already at risk of losing their holdings (Dong, What's the difference between the impact of a trade war on the U.S. and Chinese stock markets, 2018).

In order to win in the trade war between China and the United States, both sides have taken a series of measures to mitigate the damage caused by the trade war and try to make some progress. For example, they can improve the level of innovation. This thesis do study on useful strategies and suggestion on future development.

My study is going to analyze the trade war between the US and China based on the causes of

the trade war, and the most significant effects of trade war on the stock market and the other indicators in China and the US. I also will discuss the advantages and disadvantages of trade war in the US and China. Finally, some advice and suggestions will be given to China and the US to protect them from dilemmas in this trade war and for future development.

In the next section, I will give my literature review I have found that related to my thesis.

## 2. LITERATURE REVIEW

With time going by, the US becomes more and more dissatisfied with its trade imbalance with China and has taken protectionist measure to change the situation (Jiming & Yangmei, 2019). The U.S. imposed a 25 percent tariff on Chinese imports on July 6, 2018, up from \$34 billion in 2017, and plans to impose a 25 percent tariff on \$16 billion worth of Chinese imports on August 23, 2018 (Liu & Woo, 2018). The move marks the beginning of a trade war between China and the United States.

### 2.1 The reasons of the trade war

Macroeconomic imbalances, such as the trade deficit, have put great pressure on the US and intensified its vigilance against China. The US trade balance has contracted sharply since 2006 and the bilateral trade deficit has widened since then. The bilateral trade deficit between the United States and China has grown from an overall trade deficit of about 17 percent in 1993-1994 to 46 percent in 2016-2017 (Liu & Woo, 2018). In 1981, China's share of global exports exceeded 1% and reached 1.09%. In 2015, China's index peaked 13.76 percent. In 2016(13.09%) and 2017(12.77%), China's index, though down slightly, was still far ahead of the rest of the world (LTD, 2018). As China has become the second largest trading partner, the third largest export market and the first largest source of imports of the United States, the economic and trade between the two countries has been deepening and the trade surplus has been increasing, which has seriously affected the healthy and harmonious development of the trade relations between China and the United States (Ge, 2017).

In addition, China issued the "made in China 2025" plan, which aimed to significantly improve the competitiveness of China's manufacturing industry and make China a world manufacturing power (Liu K. , 2018). This plan also gave the US huge pressure.

Exchange rate of RMB also closely connected with the trade war (Ge, 2017). He said that The United States has been pressing for an appreciation of the RMB to narrow its trade surplus with China.

China's labor cost advantage leads to the trade imbalance of labor-intensive products plays an important role in the reasons of trade war (Ge, 2017). Labor-intensive products produced in

China are the necessities of life, and there is a large market in the United States, because there is a huge demand. However, most of the technology capital intensive products produced in the United States are high-end products, which are not in great demand for low-income, frugal Chinese residents.

One of the reasons for the trade war between China and the United States is that the United States imposes strict export restrictions on high-tech products exported to China under the pretext of protecting national intellectual property rights and information security (Ge, 2017). China has to import high-tech products from other countries or develop high-tech products on its own, resulting in a growing China-US deficit in high-tech products. Arjun Kharpal claimed one of the key reasons for the U.S. trade war with China is the desire to get ahead in 5G (Kharpal, 2018). The US and China are racing to become leaders in 5G and set the standard that will define the next generation of mobile Internet. So, Huawei is under siege. The Google barred the Chinese telecom technology giant from acquiring parts of the android operating system, and US chipmakers are also preparing to suspend supplies (Li & Zhang, 2019).

## 2.2 The most significant effect of trade war

### 2.2.1 On the stock market

Since the US provoked the trade war, there has been a marked decline in global capital markets. Most of international stock indexes fell sharply again and the A-share market was also down (Li & Ruan, 2018). The major reason leads to the decline of A-share market was oil prices falling and investors worried about an escalating trade war between the U.S. and China (Zhou, 2019). A trade clash between the world's two largest economies has given investors a degree of pessimism about the outlook for the world economy (Li D. , 2018).

Trump's trade policy has boosted investors' expectations of the US economy and risk tolerance of the US stocks in the short term, leading to a continuous rise in the value of the US stock market and rapid accumulation of risks (Dong, 2018). However, after China imposed tariffs related to a \$34 billion retaliatory list, U.S. companies with high sales to China showed poor stock prices compared with their counterparts in other international markets (Li & Zhang, 2019). In addition, the U.S. stock market is now 5.14 times the size of the Chinese stock market, and if the decline were the same, the U.S. stock market would lose more value than China

(Dong, 2018).

### 2.2.2 On trade

A tariff trade war would seriously hurt China on all indicators, including welfare, GDP, manufacturing employment and trade. Especially on trade, China exports to the US accounted for 20% of its total exports, whereas US exports to China accounted for only 8.4% of its total exports (Jiming & Yangmei, 2019). Nevertheless, even if the U.S. imposes high import tariffs on China, the negative impact on China will be tolerable, which means a trade war won't seriously hurt China's economy. According to a study by the International Monetary Fund, tariffs have led to less trade between China and the US, but the bilateral trade deficit has remained largely unchanged. U.S. importers bear almost all of the costs of rising tariffs (Li & Zhang, 2019). However, when China retaliates, U.S. manufacturing production will decline, the U.S. gains will decrease and losses will increase (Chunding, Chuantian, & Chuangwei, 2018). For example, China has announced tariffs of 15 or 25 percent on 128 items imported from the United States (Zhou, 2019).

With the progress of the times, all countries begin to advocate a circular economy. However, with the outbreak of the trade war between China and the United States, the development of a circular economy of the two countries has also been affected. It especially reflects in the paper market, recycled paper has been a major U.S. export to China, but China recently tightened restrictions on the amount of paper it can import because of continuing trade tensions between the two countries (Schröder, 2019).

According to Mary, Stephen and David, standard economic methods helped them find that the full incidence of the tariff falls on domestic consumers, with a reduction in the U.S. real income of \$1.4 billion per month by the end of 2018 (Amiti, Redding, & Weinstein, 2019).

## 2.3 The advantages and disadvantages of the trade war

### 2.3.1 The advantages of the trade war

A trade war between China and the United States would hit the existing industrial chain in the Asia-pacific in the short term, but in the medium term it would help China adjust its industrial structure (Bo, 2019).

Trade war can promote the building of a new type of international relations between major countries to some extent. The new model of major-country relations is an important part of the new model of international relations. The bottom line is no conflict or confrontation (Shen, 2018).

### 2.3.2 The disadvantages of the trade war

In a trade war, a company like Wal-Mart might feel the most direct impact, because Wal-Mart imports billions of dollars of cheap goods, and almost all of those goods will quickly soar in price beyond the lower economy, not because of manufacturing costs but because of tariffs (Nie, 2017).

In addition, the importance of the U.S.-china relationship has been challenged by other players. For example, Apple's iPhone sales in China are being challenged by local manufacturers, and Samsung is happy to fill a void that China cannot cope with (Nie, 2017).

The action by the US to politicize market issues will affect the building of a new model of major-country relationship between China and the US, and is not conducive to the long-term development of bilateral relations (Shen, 2018).

On the other hand, with the trade war, the U.S. economy will continue to decline, the unemployment rate will climb from 4.9% to 8.6% (Shen, 2018).

The most obvious downside of a trade war is rising prices because of tariffs (Li & Zhang, 2019). In addition, a trade war will not only adversely affect the domestic economy, but also cause a devaluation of the domestic currency, because the strength of a currency depends largely on the state of the economy (Five pros and cons of a US-China trade war, 2018). As the trade war affects the stock market, when the price of financial assets falls, those who hold them are more likely to see their value fall (Five pros and cons of a US-China trade war, 2018).

### 2.4 Measures to mitigate the damage and suggestions for future

In order to make up for the loss in the stock market, China should enhance resilience, China needs to maintain steady economic growth and deepen reform of the capital market to make it more stable and inclusive (Dong, 2018).

It is good for China to develop Cross-border e-commerce industry. Because the products are sold all over the world, the price is not necessarily related to the sales volume. If the US government raises taxes, what the e-commerce companies should do is to raise the sale price (Li & Ruan, 2018). However, it means the US customers should bear a higher price.

Yifan Gao pointed out some suggestions for China and the US to ease the trade war, China and the US could request WTO intervention to regulate the trade behavior of the two countries and call on the US side to negotiate to address the cognitive bias between the two countries (Gao, 2018). It is a good approach for the US to import goods to China through various intermediaries from other countries (Onyusheva, Naing, & Zaw, 2019). In addition, China can deepen the "Belt and Road" construction, improve the level of innovation, negotiation, and apply international regulations (Zhu, Yang, & Feng, 2018).

In the next section, I will start to collect data for my analysis and introduce my methodology. In order to answer my research questions and test my hypotheses, I will establish some models in the next part.

### 3. METHODOLOGY & DATA

In this study, descriptive research study is applied. I will use a historical time-series data, because the study is trying to describe the trade war between the US and China, and its effects on the stock market. My dataset is designed to describe the variables, but not examine relationship among variables. Therefore, in this section, I will discuss what is my dataset, and what kind of variables will effect and reflect the trade war.

#### 3.1 Dataset & Sample

##### 3.1.1 Dataset

I obtained the dataset mainly from Bloomberg. My dataset will include the data about import price index between the US and China and the exchange of the quantity of the export and import between the US and China. The exchange rate of the US dollar against RMB will be collected. In order to test whether the China stock market and the US stock market will move together during the trade war, S&P 500 and Shanghai stock change composite index data will be collected.

One of the most important reasons that caused the trade war was China's exports to the US have grown rapidly and been in a trade surplus for a long time. The US wanted to change that position so that waging a trade war. Therefore, I find the US trade deficit from the 2018. One of the limitations is the trade war happened in 2018 and the number of the trade deficit showed in quarter basis. There are only six observations in this analysis.

Based on my study topic, I also find the data about the effect of the trade war between China and the US on the stock market. Since the start of the trade war in early 2018, the performance of market indexes of China and the United States has diverged greatly. In addition, I compared the index of Shanghai stock exchange composite index and S&P 500 at the date of the trade war to show how the stock markets in China and the US reflected the trade war.

##### 3.1.2 Sample

I divide my sample as before and after the US-China trade war by March, 2018. The U.S. imposed a 25 percent tariff on Chinese imports on July 6, 2018. This is a cut-off date, which

shows the beginning of the trade war between the US and China. And this analysis is based on secondary historical time-series data.

That month, the U.S. imposed 25% tariffs targeted at \$34 billion worth of Chinese goods. In response, Beijing hit back with higher duties on \$34 billions of American products. Tariffs have continued to climb since. The data of the US-China tariff war showed how the US and China fought with each other by raising tariff. Moreover, I find the data about the quantity of export and import between US and China. In addition, the data from Jan 2018 to Sep 2019 also be provided to compared with the quantity before the trade war to show whether the trade war would affect the export and import.

The trade war had a significant influence on the stock market of China and the US. Index performance from Jan 2018 compared the percentage change on MSCI emerging markets, Hang Seng, S&P 500 and Shanghai composite. And at the date of the trade war happened, the Shanghai stock exchange composite index and S&P 500 showed the reflection of the stock markets in China and the US on trade war.

### 3.2 Methodology & Model

#### 3.2.1 Methodology & Hypotheses

I will use correlation analysis and regression analysis as my methodology. I will put my data into the Microsoft Excel to make charts to show very variables' trend before and after the trade war. The regression analysis will be used to test my four hypotheses:

H0: The US trade deficit is affected by the value of the exports and imports.

H0: The tariff is not affecting the value of imports and exports.

H0: The exchange rate of U.S. dollar against RMB has no significant impact on the value of the US's imports and exports.

H0: The US and China's stock markets are not moving together during the trade war

And then, I will use the correlation analysis in the data analysis to find out the relationships between the stock markets in China and the US whether these two stock market moving together during the trade war.

### 3.2.2 Model

Firstly, I collect the data about the US's value of exports and imports with China and the US deficit, these figures are calculated on a quarterly basis from the beginning of the 2018. Here, I establish a model to test whether the value of exports and imports will impact the value of deficit, where  $Y1$  represents the value of the imports and  $X1$  represents the value of the US trade deficit, and  $Y2$  represents the value of the exports.

$$Y1 = \alpha X1 + e1$$

$$Y2 = \beta X1 + e2$$

Secondly, I use the import price index to test the relationships between tariff and the value of imports and exports. I also establish a model where  $Y3$  represents the value of the imports and  $X3$  represents the import price index, and  $Y4$  represents the value of the exports.

$$Y3 = \gamma X3 + e3$$

$$Y4 = \delta X3 + e4$$

Thirdly, I establish a model to test the exchange rate of the U.S. dollar against RMB whether has significant impact on imports and exports.  $Y5$  represents the US imports from China and  $Y6$  represents the US exports to China, while the  $X4$  represents the exchange rate of the U.S. dollar against the RMB.

$$Y5 = \vartheta X4 + e4$$

$$Y6 = \mu X4 + e5$$

I have collected all dataset that I needed, therefore, I will do the analyze next. I use the data and models to analyze all my research questions and test my hypotheses in the next section.

## 4. ANALYSIS & FINDINGS

According to the cut-off date of the US-China trade war which is March 2018, the data sample has been divided into before and after this cut-off date. In order to analysis the causes of the trade war and its significant effects on stock markets and trade between China and the US, I collect data mainly about tariff war between the US and China, China's trading surplus and US's trading deficit, and the exchange of the quantity of the export and import between the US and China.

I come up with four research questions with four null hypotheses, and regression and correlation analysis will be used to test whether the variables I selected have relationships and how strong the relationships are.

### 4.1 Cause of the trade war

#### 4.1.1 China Trade Surplus or The US Trade Deficit

Because the recent trade war happened on March 2018, there is a limitation of enough data I can get. I collect the data about the US's value of exports and imports with China and the US deficit, looking at Appendix A.1, these figures are calculated on a quarterly basis from the beginning of the 2018. Here, I establish a model to test whether the value of exports and imports will impact the value of deficit.

$$Y1 = \alpha X1 + e1$$

$$Y2 = \beta X1 + e2$$

where Y1 represents the value of the imports and X1 represents the value of the US trade deficit, and Y2 represents the value of the exports.

Therefore, my first hypothesis is:

H0: The US trade deficit is not affected by the value of the exports and imports.

Through the regression analysis in Appendix A.2 and Appendix A.3, the first equation when the dependent variable is the value of the import has the p-value of 0.00034, which is lower than 0.1. Therefore, the null hypothesis will be rejected. And for the second equation when the dependent variable is the value of the exports has the p-value of 0.886, which is higher than 0.1. So, I do not need to reject my hypothesis. In conclusion, I need to reject my null

hypothesis that the US trade deficit is only affected by the value of the imports.

However, the multiple R of the relationship between the US deficit and the value of imports is 0.984838151, which means there is a very strong positive correlation between the US deficit and the value of imports.

In addition, I use the import price index to test the relationships between tariff and the value of imports and exports. See the data in Appendix B.1. I come up with my second hypothesis: H0: The tariff is not affecting the value of imports and exports.

I also establish a model where Y3 represents the value of the imports and X3 represents the import price index, and Y4 represents the value of the exports.

$$Y3 = \gamma X3 + e3$$

$$Y4 = \delta X3 + e4$$

Firstly, I use the US's imports and exports value and the US import price index, through the regression analysis in the Appendix B.2 and Appendix B.3, the p-value of the first equation when the dependent variable is the value of the imports is 0.00064, which is lower than 0.1. And the p-value of the second equation when the dependent variable is the value of the exports is 0.1398, which is higher than 0.1. I should reject my hypothesis and conclude that tariff is only affecting the US's value of imports. Secondly, I use the same model to test the China's imports and exports value with the China import price index, see the data in Appendix C. After the regression analysis, the p-value of the first equation is 0.000064 and the p-value of the second equation is 0.00789. These two numbers are very close to zero. For China, I also reject my hypothesis, and tariff is affecting the China's both values of imports and exports.

My analysis results can explain the Liu and Woo mentioned before that macroeconomic imbalances, such as the trade deficit, have put great pressure on the US and intensified its vigilance against China (Liu & Woo, 2018). The trade war leads to the higher import price which impact the value of the total imports and exports. The trade deficit is growing which put more pressure on the US.

#### 4.1.2 Exchange rate of RMB

According to the research of international finance, when a country's currency depreciates, it can promote the export of domestic commodities and restrain the import of foreign commodities. When a country's currency appreciates, it will restrain the export of domestic goods and promote the import of foreign goods (Ge, 2017). In order to confirm the trend of the RMB, I collect the RMB exchange rate from 2018 to 2019 and find out the volatility of the yuan against the dollar, see it in Appendix D.1.

Therefore, I come up with my third null hypothesis :

H0: The exchange rate of the U.S. dollar against RMB has no significant impact on imports and exports.

And I establish a model to test it. Y5 represents the US imports from China and Y6 represents the US exports to China, while the X4 represents the exchange rate of the U.S. dollar against the RMB.

$$Y5 = \vartheta X4 + e4$$

$$Y6 = \mu X4 + e5$$

I collect the data about the value of the US's imports and exports with China and the exchange rate of the U.S. dollar against RMB from 2017-2019 in the Excel. I use the regression analysis and get the results of the p-value of the first equation is 0.094, which is lower than 0.1. And the p-value of the second equation is 0.2185, which is higher than 0.1. See the results in Appendix D.2 and Appendix D.3. Obviously, for the first equation I will reject my hypothesis, and do not reject for the second equation. In conclusion, the exchange rate of the U.S. dollar against RMB has significant impact only on imports. However, the third null hypothesis will also be rejected.

Looking at the figures in Appendix E about the RMB volatility, the exports from China to the US and the imports from the US to China. It is clear the RMB volatility is downward trend except the sharply increased at the beginning of the August 2019. Generally, after 2018, the value of the imports from the US to China is increased, and after the March 2018, the value of the exports from China to the US has decreased. That does explain why the US is pressing for a stronger yuan. My research results are the same as Weiwei Ge mentioned.

In conclusion, I will reject my null hypothesis. It is actually having relationships between the value of the imports and exports with the change of the exchange rate of the RMB. The exchange rate of RMB has significant impact on imports and exports.

#### 4.2 The effects of the trade war

##### 4.2.1 On the stock market

In order to find out whether the US and China's stock market will move together during the trade war, I come up with my fourth hypothesis:

H0: The US and China's stock markets are not moving together during the trade war.

Through the analysis of the Shanghai stock exchange composite index and S&P 500, I do the correlation analysis to find out whether these two stock market have relationships. I find the data about S&P 500 and SHCOMP index from 2017-2019, and use data analyze in Excel of correlation to do the analyze. I take the correlation coefficient out and make a figure to see the results clearly. If the absolute coefficient of correlation is below 0.3, I think they have no relationships, and if the absolute coefficient of correlation is between 0.3-0.8, I think they have weak relationships. When the absolute coefficient of correlation is higher than 0.8, they have strong relationships.

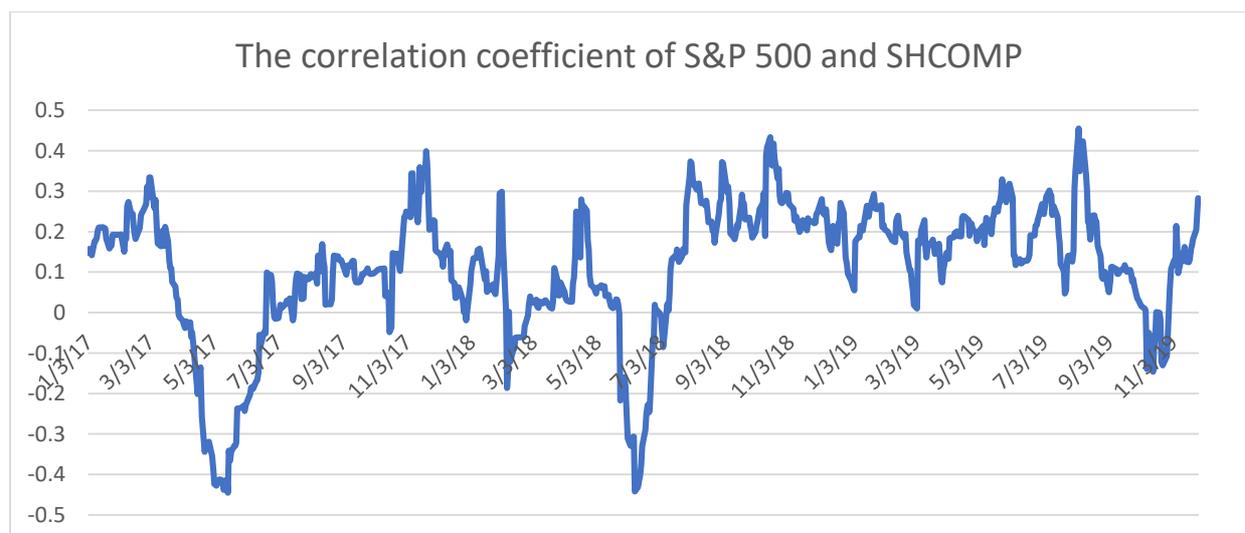


Figure 1. The US-China stock market correlation

According to Figure 1, almost range of the US-China stock market correlation coefficient is between -0.3~-0.3, which means there is no relationships between the US-China stock market.

Even if some parts higher than the absolute 0.3, it is regarded as weak relationships.

In conclusion, I will not reject my null hypothesis, the US-China stock markets are not moving together during the trade war.

Although there is no relationship between the US and China stock markets, the trade war actually has impact on these two stock markets. As I mentioned in my literature review, there has been a marked decline in global capital markets and most of international stock indexes fell sharply again and the A-share market was also down (Li & Ruan, 2018).

#### 4.2.2 On trade

Using the result I have tested before that the tariff will impact the amount of the imports and exports while the value of the imports and exports will impact the US trade deficit or China trade surplus, the trade war will hurt China and the US. I compare the total exports and imports value from 2014 to 2019, because the recent trade war happened in 2018. It is hard for me to get enough data to compare.

Figure 2 shows the US sharply decrease the value of the imports and exports in 2019 compared with 2018. According to Chris Devonshire-Ellis mentioned in Appendix F when tariffs are added to imports, it can further widen the trade gap between China and the United States (Devonshire-Ellis). The trade war has a significant impact on the trade between the US and China.

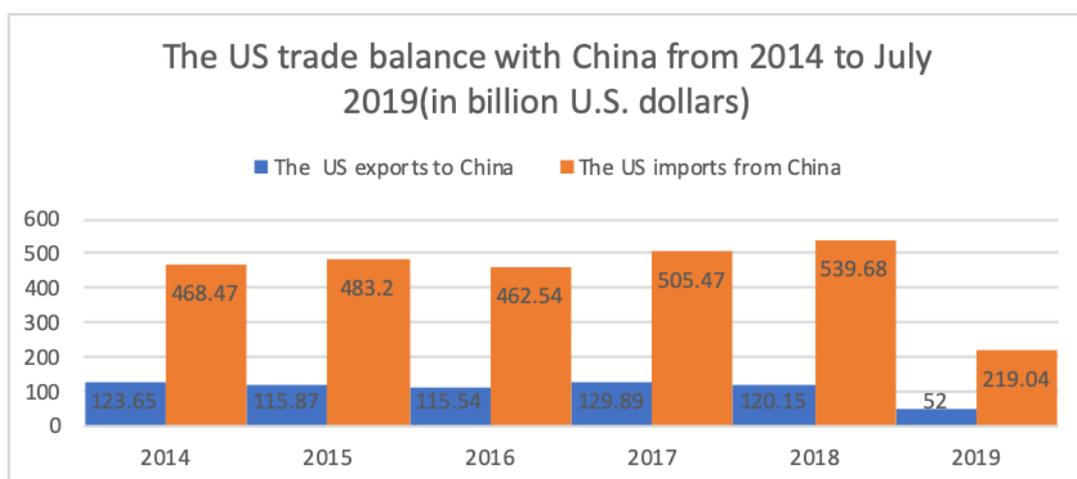


Figure 2. The US trade balance with China from 2014 to July 2019 (in billion U.S. dollars)

### 4.3 The disadvantages and advantages

#### 4.3.1 Disadvantages

At first, as I have tested before, the trade war has a significant impact on the trade between the US and China. The increased price of the imports, the value of the US imports has decreased. In addition, the depreciation of RMB leads to hardly exports from the US. As the International Monetary Fund, tariffs have led to less trade between China and the US, but the bilateral trade deficit has remained largely unchanged. U.S. importers bear almost all of the costs of rising tariffs (Li & Zhang, 2019).

Secondly, it is obviously when tariffs are imposed on imported goods, its lead to higher prices for imported goods. When national income is not rising but prices are rising, this puts pressure on national consumption.

Thirdly, I do the research on the stock markets in the US and China, the trade war will hurt the stock markets, in a way. As the trade war affects the stock market, when the price of financial assets falls, those who hold them are more likely to see their value fall (Five pros and cons of a US-China trade war, 2018). The investors will lose much during the trade war.

#### 4.3.2 Advantages

The trade war between China and the United States reflects the strong background advantages of the United States. The stable market and development make it much easier than China to face the trade war. However, as Bo mentioned a trade war between China and the United States would hit the existing industrial chain in the Asia-pacific in the short term, but in the medium term it would help China adjust its industrial structure (Bo, 2019). It is a good opportunity for China to develop and promote its industrial structures.

### 4.4 The advice and suggestions

As I mentioned in literature review, China can deepen the "Belt and Road" construction, improve the level of innovation, negotiation, and apply international regulations (Zhu, Yang, & Feng, 2018). Chris Devonshire-Ellis came up with the same idea. The trade war leads to the big trading gap between the US and China, but China can exports and imports with any other countries through "Belt and Road".

Looking at Appendix C, it shows China imports a lot of goods from other countries who signed in Belt and Road Initiative. Therefore, the US tariff will not hurt China as they expected. By contrast, it makes the trade deficit more growing. It is very useful for China to deepen the “Belt and Road” construction. In addition, it is a good approach for the US to import goods to China through various intermediaries from other countries (Onyusheva, Naing, & Zaw, 2019).

Developing Cross-border e-commerce industry has the similar idea as the “Belt and Road” construction. As the Li and Ruan said that if the US government raises tariffs, what the e-commerce companies should do is to raise the sale price. Because the products are sold all over the world, the price is not necessarily related to the sales volume. (Li & Ruan, 2018). The products are not only sell to the US but also all over the world. However, it means the US customers should bear a higher price. Therefore, developing Cross-border e-commerce industry is a good strategy for China. There is no doubt that the trade war has some impact on trade. Obviously, the trade war will impact the value of the imports.

## 5. Conclusion

Trade wars happen frequently between China and the United States, but the recent happened in 2018. Start with the President of the United States Donald Trump imposing tariffs on Chinese imports. In my thesis analysis, I have a big limitation that some data are only presented quarterly, so I do not have enough observations for the regression analysis.

There are many causes lead to the trade war. In my analysis, the US trade deficit or China trade surplus and the exchange rate of the US dollar against RMB are two mainly reasons. The US trade deficit has a significant impact on the US imports from China. The long term trade difference between the US and China, in other words, the United States has a chronic trade deficit. This led to the US launching a trade war to try to change the situation. In addition, the exchange rate of the US dollar against RMB also plays an important role in the reasons of the trade war. After my regression analysis, the exchange rate of the U.S. dollar against RMB has significant impact on imports. The depreciation of the RMB has led to an increase in China's exports and a decrease in imports. The US imports goods from China but has a hard time selling them to China. The US is demanding a stronger RMB to change their predicament.

In my thesis, I main consider two important effects of the trade war. One of the effects is on the stock market and the other is on trade. I am curious about the situation of Chinese and the US stock markets under the trade war, whether they will move together during the trade war. After the correlation analysis, I come up to the answer that these two market have no strong connection. They are not moving together during the trade war, the trade war has small impact on the stock markets. The US suffers a sharply decrease in the value of the imports and exports. The trade gap between the US and China also has increased.

The trade war has some disadvantages and advantages. Firstly, it is obvious that the trade war has made trade worse between the US and China, the trade gap is increasing. The value of the imports and exports are decreased. Secondly, the tariff imposes on the imports makes the price higher for the consumers, which puts a lot of pressure on consumers. However, it is a good opportunity for China to develop and promote its industrial structures, and the US should take some strategies to keep their stable development.

Finally, there are some advices and suggestions are gave to the US and China. On the one hand, the trade war leads to the big trading gap between the US and China, but China can exports and imports with any other countries through “Belt and Road”. On the other hand, developing Cross-border e-commerce industry has the similar idea as the “Belt and Road” construction. The products are not only sell to the US but also all over the world to make up for the loss on the trade between the US and China.

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## 7. TABLES AND FIGURES

Figure 1. The US-China stock market correlation

Figure 2. The US trade balance with China from 2014 to July 2019(in billion U.S. dollars)

## 8. APPENDIX

### Appendix A

#### 1. Trade between the US and China

trade between the US and China(\$ bil)			
	US exports to China (\$ bil)	US imports from Chin	US trade deflcit with China (\$ bil)
Q1'18	32	123	91
Q2'18	32	127	95
Q3'18	29	145	116
Q4'18	27	145	118
Q1'19	26	106	80
Q2'19	26	113	87

#### 2. The regression results of the US trade deficit and the value of imports

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.984838151							
R Square	0.969906183							
Adjusted R Square	0.962382729							
Standard Error	3.126776088							
Observations	6							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	1260.393085	1260.393085	128.91767	0.00034308			
Residual	4	39.10691482	9.776728705					
Total	5	1299.5						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	27.33759	8.826344874	3.097271905	0.03631707	2.83172798	51.843452	2.83172798	51.843452
X Variable 1	1.013585111	0.089269684	11.35419174	0.00034308	0.76573273	1.26143749	0.76573273	1.26143749

#### 3. The regression results of the US trade deficit and the value of exports

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.075870962							
R Square	0.005756403							
Adjusted R Square	-0.242804496							
Standard Error	3.126776088							
Observations	6							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	0.226418512	0.226418512	0.02315892	0.88641193			
Residual	4	39.10691482	9.776728705					
Total	5	39.33333333						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	27.33759	8.826344874	3.097271905	0.03631707	2.83172798	51.843452	2.83172798	51.843452
X Variable 1	0.013585111	0.089269684	0.152180562	0.88641193	-0.2342673	0.26143749	-0.2342673	0.26143749

## Appendix B

### 1. The imports price index for the US

The US import price index		The US import from China		The US exports to China	
Date		Date		Date	
2019/9/30	125	2019/9/30	37045	2019/6/30	41974
2019/8/31	124.9	2019/8/31	38934	2019/5/31	41559
2019/7/31	125.6	2019/7/31	38981	2018/12/31	36550
2019/6/30	125.6	2019/6/30	39753	2018/11/30	36550
2019/5/31	127	2019/5/31	39849	2018/10/31	44659
2019/4/30	126.8	2019/4/30	37876	2018/9/30	48294
2019/3/31	126.6	2019/3/31	37556	2018/8/31	48454
2019/2/28	125.9	2019/2/28	39380	2017/12/31	48172
2019/1/31	124.6	2019/1/31	40337	2017/9/30	48142
2018/12/31	124.4	2018/12/31	46093	2017/6/30	46411
2018/11/30	126.2	2018/11/30	43588	2017/3/31	45069
2018/10/31	126.3	2018/10/31	45758	2016/12/31	45136
2018/9/30	127.7	2018/9/30	46694	2016/9/30	43629
2018/8/31	127.6	2018/8/31	44803	2016/6/30	41906
2018/7/31	128.1	2018/7/31	45194	2016/3/31	39785
2018/6/30	128.2	2018/6/30	44684	2015/12/31	39786
2018/5/31	127.1	2018/5/31	44131	2015/9/30	42166
2018/4/30	126.5	2018/4/30	42711	2015/6/30	42155
2018/3/31	126.5	2018/3/31	45274	2015/3/31	40776
2018/2/28	126.8	2018/2/28	44992		
2018/1/31	126.5	2018/1/31	45664		
2017/12/31	125.5	2017/12/31	45128		
2017/11/30	125.3	2017/11/30	44759		
2017/10/31	124.1	2017/10/31	43258		
2017/9/30	123.9	2017/9/30	41543		
2017/8/31	122.9	2017/8/31	42396		
2017/7/31	122.2	2017/7/31	42396		
2017/6/30	122.4	2017/6/30	41897		
2017/5/31	122.7	2017/5/31	41369		
2017/4/30	122.8	2017/4/30	42056		
2017/3/31	122.2	2017/3/31	40260		
2017/2/28	122.7	2017/2/28	40280		
2017/1/31	122.5	2017/1/31	39879		
2016/12/31	121.6	2016/12/31	39492		
2016/11/30	121.1	2016/11/30	39471		
2016/10/31	121.2	2016/10/31	39003		
2016/9/30	120.6	2016/9/30	38092		
2016/8/31	120.5	2016/8/31	38854		
2016/7/31	120.8	2016/7/31	39069		
2016/6/30	120.7	2016/6/30	37967		
2016/5/31	119.9	2016/5/31	37817		
2016/4/30	118.5	2016/4/30	36256		
2016/3/31	117.7	2016/3/31	35048		
2016/2/28	117.8	2016/2/28	34247		
2016/1/31	117.8	2016/1/31	39203		
2015/12/31	119.3	2015/12/31	37460		
2015/11/30	120.8	2015/11/30	39422		
2015/10/31	121.5	2015/10/31	39690		
2015/9/30	123.2	2015/9/30	40643		
2015/8/31	123.2	2015/8/31	42019		
2015/7/31	125.4	2015/7/31	39723		
2015/6/30	126.6	2015/6/30	39992		
2015/5/31	126.5	2015/5/31	39762		
2015/4/30	125.1	2015/4/30	38838		
2015/3/31	125.3	2015/3/31	49345		
2015/2/28	125.5	2015/2/28	36428		
2015/1/31	126	2015/1/31	40080		
2014/12/31	130.1	2014/12/31	40108		
2014/11/30	129.2	2014/11/30	40265		

### 2. The regression results of the US imports price index and the value of imports

SUMMARY OUTPUT										
<i>Regression Statistics</i>										
Multiple R	0.30854704									
R Square	0.09520128									
Adjusted R Sq	0.08746795									
Standard Err	4365.47698									
Observations	119									
ANOVA										
	df	SS	MS	F	Significance F					
Regression	1	234606511.3	234606511.3	12.31052735	0.00064013					
Residual	117	2229714540	19057389.23							
Total	118	2464321051								
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	Lower 95.0%	Upper 95.0%
Intercept	60501.5064	6494.852318	9.315301327	0.00000000000000893453246	47638.7917	73364.2211	47638.7917	73364.2211		
X Variable 1	-174.17058	49.64053744	-3.50863611	0.000640128	-272.48107	-75.860099	-272.48107	-75.860099		

### 3. The regression results of the US imports price index and the value of exports

SUMMARY OUTPUT										
<i>Regression Statistics</i>										
Multiple R	0.36210215									
R Square	0.13111796									
Adjusted R Sq	0.07681284									
Standard Err	2.90678432									
Observations	18									
ANOVA										
	df	SS	MS	F	Significance F					
Regression	1	20.4007898	20.4007898	2.4144675	0.13977409					
Residual	16	135.190321	8.44939508							
Total	17	155.591111								
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	Lower 95.0%	Upper 95.0%
Intercept	109.844903	8.95713508	12.2633969	1.5012E-09	90.8566245	128.833181	90.8566245	128.833181		
X Variable 1	0.00031835	0.00020488	1.55385569	0.13977409	-0.000116	0.00075268	-0.000116	0.00075268		



## Appendix D

### 1. The exchange rate of the US dollar against RMB

The US import price index		The US import from China		RMB against U.S. dollar
Date		Date		
2019/7/31	125.6	2019/7/31	38981	6.88
2019/6/30	125.6	2019/6/30	39753	6.87
2019/5/31	127	2019/5/31	39849	6.91
2019/4/30	126.8	2019/4/30	37876	6.73
2019/3/31	126.6	2019/3/31	37556	6.72
2019/2/28	125.9	2019/2/28	39380	6.68
2019/1/31	124.6	2019/1/31	40337	6.71
2018/12/31	124.4	2018/12/31	46093	6.87
2018/11/30	126.2	2018/11/30	43588	6.94
2018/10/31	128.3	2018/10/31	45758	6.97
2018/9/30	127.7	2018/9/30	46694	6.88
2018/8/31	127.6	2018/8/31	44893	6.83
2018/7/31	128.1	2018/7/31	45194	6.82
2018/6/30	128.2	2018/6/30	44684	6.62
2018/5/31	128.2	2018/5/31	44131	6.41
2018/4/30	127.1	2018/4/30	42711	6.33
2018/3/31	126.5	2018/3/31	45274	6.28
2018/2/28	126.8	2018/2/28	44992	6.32
2018/1/31	126.5	2018/1/31	45664	6.32
2017/12/31	125.5	2017/12/31	45128	6.52
2017/11/30	125.3	2017/11/30	44759	6.61
2017/10/31	124.1	2017/10/31	43258	6.64
2017/9/30	123.9	2017/9/30	41543	6.63
2017/8/31	122.9	2017/8/31	42396	6.57
2017/7/31	122.2	2017/7/31	42396	6.74
2017/6/30	122.4	2017/6/30	41897	6.8
2017/5/31	122.7	2017/5/31	41369	6.84
2017/4/30	122.8	2017/4/30	42056	6.81
2017/3/31	122.5	2017/3/31	40260	6.86
2017/2/28	122.7	2017/2/28	40280	6.85
2017/1/31	122.3	2017/1/31	39879	6.88

### 2. The regression results of the exchange rate with the value of imports

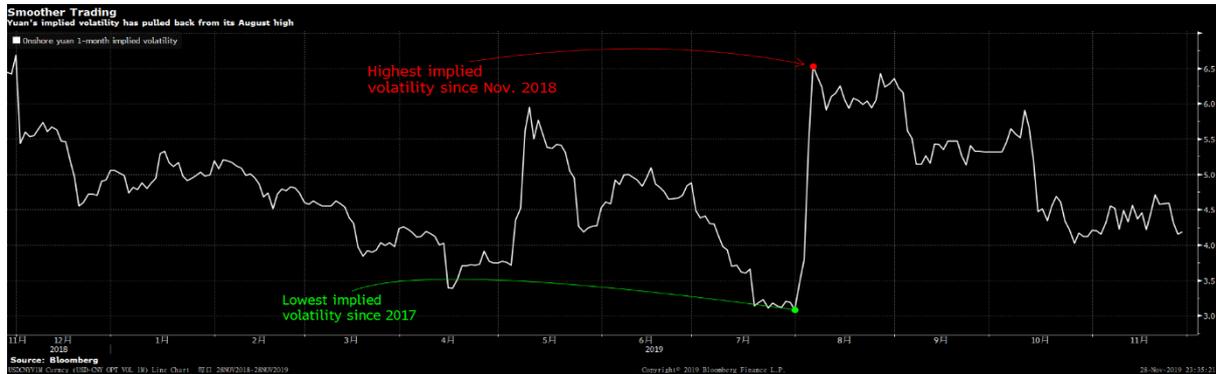
SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.3059601							
R Square	0.0936116							
Adjusted R S	0.0623568							
Standard Err	2537.4341							
Observations	31							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	19284254	19284254	2.9951136	0.0941455			
Residual	29	186718589	6438572					
Total	30	206002844						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	69280.233	15459.857	4.4812984	0.0001069	37661.275	100899.19	37661.275	100899.19
X Variable 1	-3988.925	2304.8849	-1.73064	0.0941455	-8702.944	725.09375	-8702.944	725.09375

### 3. The regression results of the exchange rate with the value of exports

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.22743							
R Square	0.0517244							
Adjusted R S	0.0190252							
Standard Err	2.0310483							
Observations	31							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	6.525283	6.525283	1.5818266	0.2185316			
Residual	29	119.62956	4.1251571					
Total	30	126.15484						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	140.94394	12.374593	11.389784	3.18E-12	115.63506	166.25283	115.63506	166.25283
X Variable 1	-2.320353	1.844908	-1.257707	0.2185316	-6.093614	1.4529071	-6.093614	1.4529071

# Appendix E

## 1. The RMB volatility



## 2. The China exports to the US



## 3. The China imports from the US



# Appendix F

## 1. Trade Balance with China



## 2. Change in Region's share of world's total exports to China

