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The impact of Sino-US trade conflict on international dry bulk shipping market

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THE IMPACT OF SINO-US TRADE CONFLICT ON INTERNATIONAL DRY BULK SHIPPING MARKET

By

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China

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DECLARATION

I certify that all the material in this research paper that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

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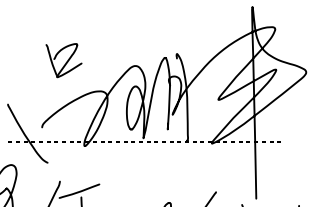
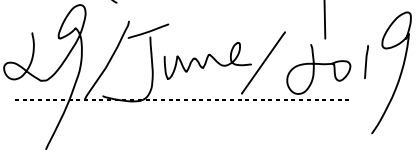
The contents of this research paper reflect my own personal views, and are not necessarily endorsed by the University.

(Signature): 

(Date): 

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ABSTRACT

Title of research paper:
The Impact of Sino-US Trade Conflict on International Dry Bulk Shipping Market

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Trade conflicts happen between countries again and again. The Sino-US trade conflict is the largest trade conflict China confronted with in 40 years, which has a great influence globally. This research paper focuses on the impact of Sino-US trade conflict on international dry bulk shipping market.

Three methodologies – literature research, qualitative analysis and comparative research – are applied to analysis this issue. The literature research provides basic view and concepts for trade conflicts and the impact on shipping market through previous studies. Through qualitative analysis, the change in global dry bulk trade and shipping market are analyzed. The comparative research is implemented to figure out the similarities and distinctions between trade conflicts, and briefly predict the future trend of the Sino-US trade.

The research paper starts with the literature research on reasons of the trade conflict, shipping market principles and relation between shipping and trade. Then, the characteristics of the industrial structure, marine transport and dry bulk commodities involved in Sino-US trade are analyzed. Dry bulk shipping market is described from three aspects, demand, supply and freight rate. Because the shipping demand is a derived demand from the international trade, dry bulk trade should be analyzed before the dry bulk shipping demand. On the supply side, both international shipping market and the Supramax segment, are analyzed. Then, an overview of the process of the Sino-US trade conflict is made.

To find out the impact of the trade conflict on the dry bulk shipping market, a comparative analysis between the Sino-US trade conflict and the US-EU trade conflict. Similarities and distinctions are summarized between two trade conflicts, and a conclusion is made according to the comparative research. In the last part, some suggestions are given to the dry bulk market participants and the government of both sides.

KEYWORDS: Sino-US trade conflict, international dry bulk shipping market, supramax dry bulk carrier, soybean, comparative analysis

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LIST OF ABBREVIATIONS

AD	Anti-dumping Duty
BDI	Baltic Dry Index
BEA	Bureau of Economic Analysis
BHSI	Baltic Handysize Index
BIMCO	Baltic and International Maritime Conference
BPI	Baltic Panamax Index
BSI	Baltic Supramax Index
CBOT	Chicago Board of Trade
Clarksons SIN	Clarksons Shipping Intelligence Network
CVD	Countervailing Duty
DWT	Deadweight Tonnage
ECSA	East Coast of South America
EEC	European Economic Community
EU	European Union
GDP	Gross Domestic Product
GM Corn	Genetically Modified Soybean
IMF	International Monetary Fund
IMO	International Maritime Organization
M.V.	Motor Vessel
MT	Metric Ton
UNCTAD	United Nations Conference on Trade and Development
US	United States
USDA	United States Department of Agriculture
USSR	Union of Soviet Socialist Republics
UTC	Coordinated Universal Time
WTO	World Trade Organization

Chapter 1 Introduction

Chapter 1 introduces the background, objectives, methodology of the research on the impact of Sino-US trade conflict on the international dry bulk shipping market.

1.1 Background

With the development of shipping and manufacturing industry, commodities were exported to other countries. That's the beginning of global trade. However, since there's trade, the trade conflict hasn't taken place once in history. It is always caused by protectionism or the intention for improvement over the export in one country. Trade conflicts in the past result to real war in history, for example the Anglo-Dutch War, the Shimonoseki Campaign, the Opium War, etc. Nevertheless, the trade conflicts or frictions happened in the contemporary age, for instance, the 30-year US-Japan trade conflict and 2002 United States Steel Tariff, didn't result in any real war, but frictions and disputes only in trade between countries.

China's economy was full of uncertainty in the year 2018. The growing speed of China's economy was generally slowing down in recent years, and China's GDP dropped to 6.6-6.7% last year. The continuous changing domestic economic policy, fluctuating foreign exchange rate, the high leverage ratio problems, etc. all brings indeterminacy to the economy. Moreover, China is facing the disputes in intellectual right, for example the patent right, copyright and trademark privilege, and also in subsidies from the government in trade activities. The policy of the One Belt One Road Initiative, especially the Maritime Silk Road, stabilize the dry bulk market and boost the participants' confidence in the market.

In 2018, the economic environment in the US is also quite changeful. One of the uncertainties came from Trump's unpredictable and controversial policies, and brought indeterminations to the market. Also, the relationship between the Federal Reserve and President Trump became hard because of the different opinions on the rate hike and strict financial supervision. The stock market plunge in October and the fluctuation of the US bond yield seemed to make the investors pessimistic towards the future of the market. In addition, in order to practice protectionism in the US, tariff has been added to commodities from various countries and tried to eliminate the huge trade deficit in the US.

From the global perspective, there seems to be various uncertainties in various sections. In the oil section, the oil price enjoyed a rapidly increase to over 86USD/barrel since the beginning of 2018 because of the cuts of oil production, but dropped sharply in November. British's exit from the European Union has brought a high level of economic and financial uncertainty to the world, especially to the corporate sector, due to no agreement on Brexit. It may have an impact on the tariffs between British and the rest of the world, which may result in eliminating participation in global trade and globalization. To see from the world trade, the US envied punitive tariffs on commodities from the EU, Canada, Mexico, etc. besides China, which may trigger risks in the financial market. Due to these reasons, WTO has cut international trade growth expectation from 4% to 3.7%, showing that the global market is still under the depression.

It has been more than a year since the Sino-US trade conflict started. Both the US and China have levied tax on different types of commodities. The US imposed tariff on

electronic goods, manufactured goods, steel products, aluminum, etc., while China levied tariff on agricultural products such as soybeans, sorghums, etc. Among them, a large number of commodities are dry bulk cargoes. Participants in the dry bulk trade were affected by the high tariff between China and the US, and thus the volume of those commodities fluctuated.

On one hand, as shipping provides international trade with service, the change in trade will surely affect the demand for the international shipping market. On the other hand, the international shipping market itself is not under a fit condition, either. The problem of over-supply in shipping still exists 10 years after the global financial crisis took place in 2008. Moreover, with some recent policies carried out by the IMO, the shipping market is facing significant challenges. The IMO 2020 Sulphur cap is forcing shipowners to select a proper measurement to comply with the convention. Not surprisingly, huge investment will be made because of the Sulphur Cap. The IMO Ballast Water Management Convention entering into force in January 22, 2019 in China seems good news for the environment, while it is a challenge for the shipping market. Great money has to be invested into ports and vessels to cope with the new ballast water standard taken into effect.

Under such circumstances, the Sino-US trade conflict seems to be a new challenge and uncertainty to the fluctuating international shipping market.

1.2 Objectives

Those commodities which both the US and China levied tariff on are mainly dry cargoes, therefore the main objective of the research is to figure out the impact on the

dry bulk shipping market by the Sino-US trade conflict.

As the shipping demands derive from the global trade, in order to analyze the dry bulk shipping market, first of all, the change in dry bulk commodities should be studied and then the effect on dry bulk shipping market will be clear. Furthermore, the impact by the trade conflict between the US and China affect not only the dry bulk shipping market of the two countries, but the international dry bulk shipping market. Hence, the research will be on the basis of the global dry bulk shipping market, including the change in volume of the commodities, the transformation of the dry bulk routes, the transport of substituted dry bulk cargoes, etc.

History repeats itself. In order to explore the impact on the dry bulk shipping market, the Sino-US trade conflict is compared with the US-EU trade conflict on agricultural products. After finding out the similarities and distinctions between the trade conflicts happened in history, the impact of the Sino-US trade conflict may be foreseen.

The government and corporations are the main participants involved in the Sino-US trade conflict. Accordingly, the last objective in the research paper is to figure out several methods and policies for participants in dry bulk shipping market and governments to mitigate the risk and uncertainties caused by the Sino-US trade conflict.

1.3 Methodology

Three methodologies – literature research, qualitative analysis and comparative research – are used in the research.

1.3.1 Literature research

Literature research refers to the research or analysis already published in a particular field, and is used in the early stage of research.

In the topic of Sino-US trade conflicts, articles and reports on trade report, trade conflicts or frictions, annual maritime transport reports and review are carried out by BIMCO, Drewry, UNCTAD, Clarksons Research and other organizations and institutions. Also, some small pieces of articles focusing on Sino-US trade conflicts were published in periodicals. Whereas most of those reports mainly emphasized on either trade conflict or maritime transport alone, and only a few of them related with both the trade conflict and shipping.

1.3.2 Qualitative analysis

Qualitative analysis is a research method using subjective evidence based on unquantifiable information.

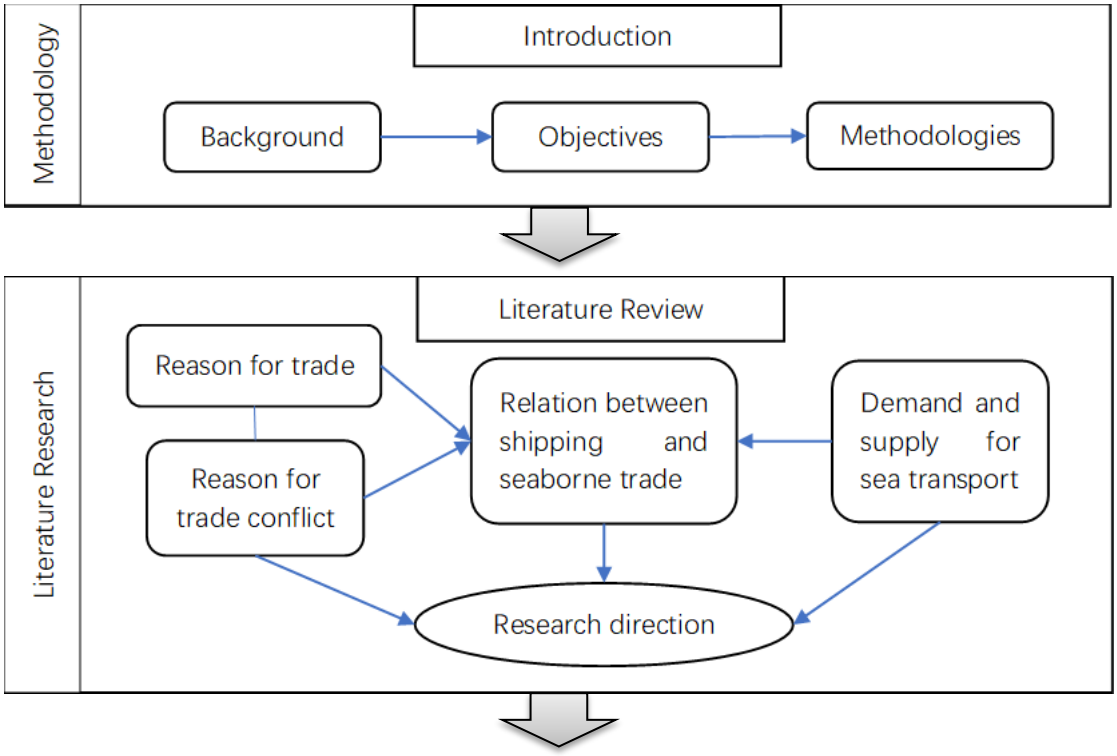
Qualitative analysis is applied to find out the pro and cons the Sino-US trade conflict brought to not only China and the US, but also the rest of the world. The change of volume, ton-miles and freight of various kinds of commodities transported are able to be analyzed through the statistics shown in annual reports or reviews, which may consequently result in the impact of the dry bulk shipping market.

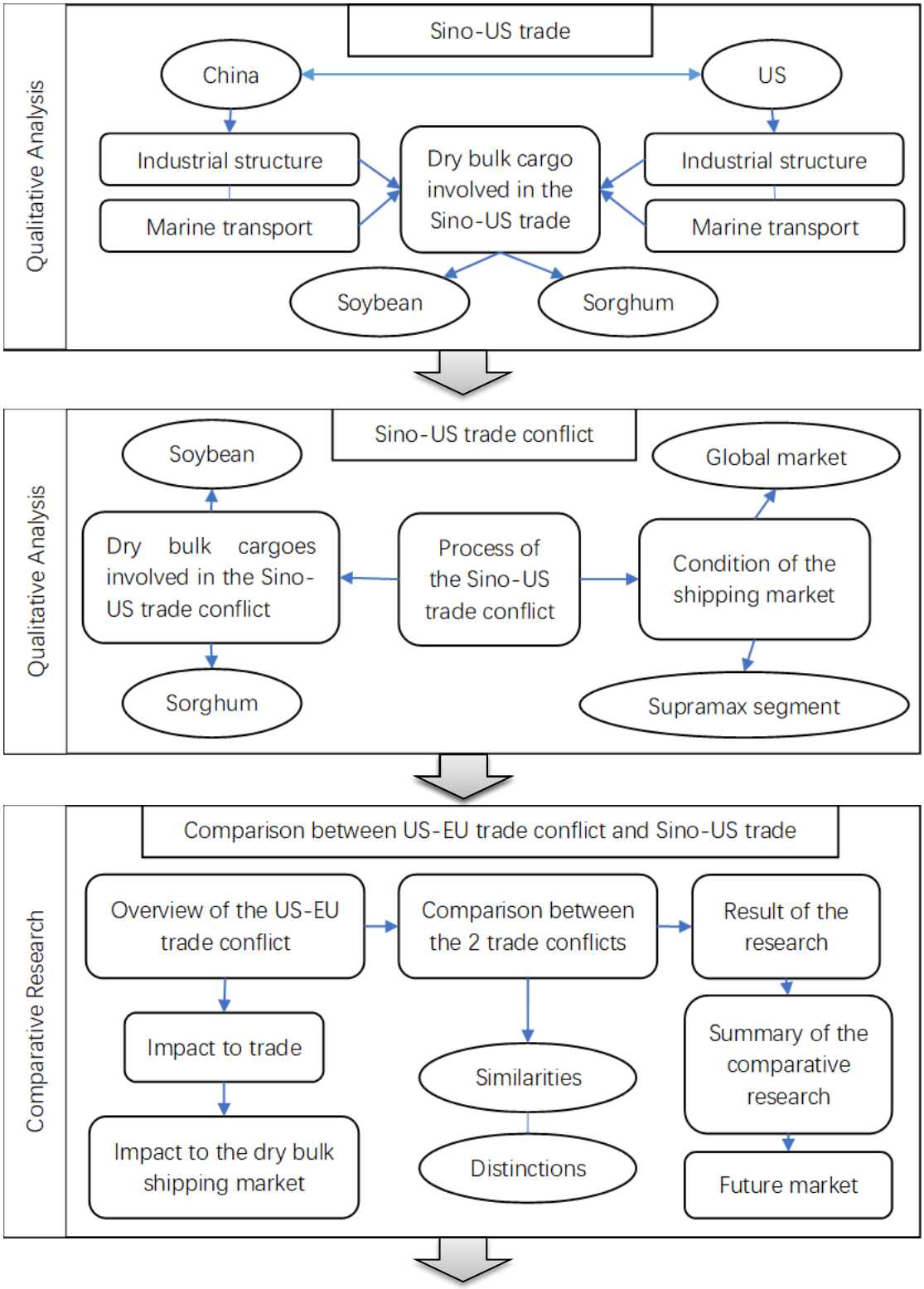
1.3.3 Comparative research

Comparative research is a research method figuring out similarities and differences between two or more related things, and eventually exploring general rules and predicting the future.

In the research paper, the recent Sino-US trade conflict is compared with the US-EU trade conflict happened in the last century respectively. Similarities, differences and even the policies and measurements taken to comply with these situations would be found via the comparison and some impact on the international dry bulk shipping market can be foreseen according to the impact caused by the trade conflict happened in history.

1.4 Layout of the research paper

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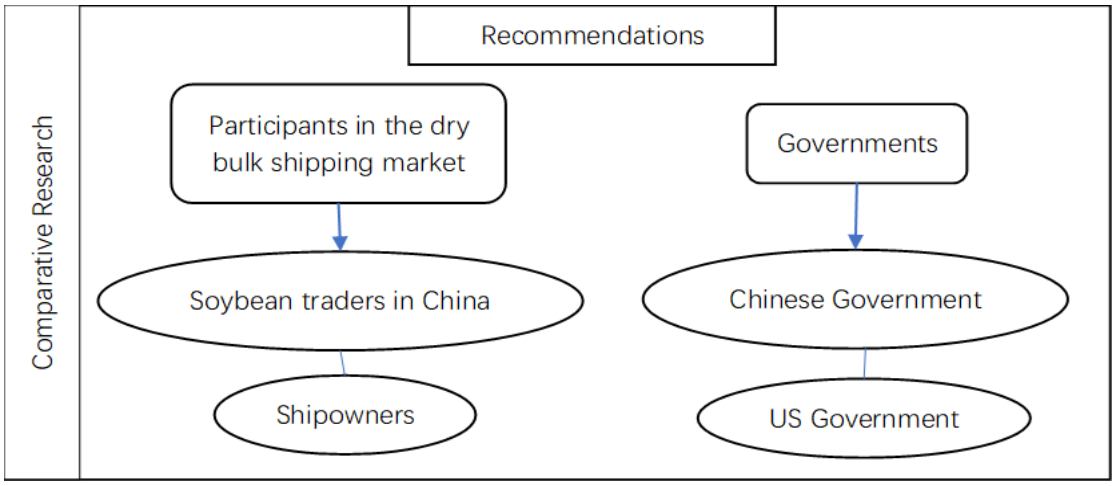
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Chapter 2 Literature review

2.1 Reasons for international trade

For the motivation of the world trade, Adam Smith and David Ricardo explored some reasons for global trade a as a basis for free trade.

A country with an absolute advantage means that the country is better at producing a certain kind of commodity. According to Adam Smith (1776), country A, which has an absolute advantage in producing commodity X over another, will export X to the rest of the world. And country B better at producing another commodity Y than A does may export Y to country A. Nonetheless, the absolute advantage cannot be applied to the country which has an absolute advantage in producing every product over another country.

Then Ricardo's theory of comparative advantage (1871) came. In the theory of comparative advantage, Ricardo explored that it is not the productivity but the opportunity cost that triggered the trade between two countries. A country will export the commodity producing a lower opportunity cost, and will import the commodity producing a higher opportunity cost.

2.2 Reasons for trade conflicts

2.2.1 General reasons for trade conflict

Trade conflict emerges because of several incentives. There're mainly two aspects

found in books and periodicals.

From the aspect of international political economy, Katzenstein, J. K. (1978) concluded form the empirical study that trade frictions often appeared in the change of economic hegemony, and then trade protectionism occurred. Gomory, R. E. and Baumol, W. J. (2000) pointed out that some countries allow their trade partners to compete with domestic industry to raise productivity. The process won't stop until the trade partner becomes so essential in the world trade and may not be good for the country. Hence, the international trade friction is a consequence of the conflicting interests between countries.

From the economic aspect, according to Heckscher-Ohlin Theorem (1930) and the economic distortion, trade friction arises when international economic distortion occurs between countries. Furthermore, Krugman, P. (1986) pointed out that the involvement of the governments from both countries by protecting the interests of the domestic market may induce revenge form another country losing interest in the trade.

2.2.2 Reasons for the Sino-US trade conflict

To analyze the cause of the Sino-US trade conflict, Abdulkareem, Y. A. (2018) compare the isolationist policy applied by President Trump and the political condition of the 1930s in America, and explored that it is the isolationist policy that make the US economics and international trade worse.

Kim, M. (2018) studied the Sino-US trade conflict from another perspective. Two international relations theories – the hegemonic stability theory and power transition

theory – were used and he found out that the competition for hegemony was the cause of the trade conflict and even other types of conflicts between the two countries.

2.3 Demand and supply for sea transport

In order to illustrate the mechanism of the shipping market, Stopford, M. (2007) built up the shipping market model and listed the most essential elements that affect the shipping demand and supply.

The demand function for shipping includes variables such as world economy, seaborne commodity trades, average haul, random shocks and transport costs. While the shipping supply involves the world fleet, fleet productivity, shipbuilding deliveries, scrapping and freight revenues. Another component in the shipping market model is the freight rate, which links the shipping demand and supply together.

2.4 Relationship between shipping and seaborne commodity trade

According to Cole, S. (2005), transport demand is derived from the other economic activities and transport serves for the movement of commodities. Stopford, M. (2007) believed that seasonality affect the short-term shipping demand disproportionately, while in the long-run, the change in demand for a certain commodity, the change in supply sources for the commodity, the change in relocation of processing of raw materials and the change in transport policy may also greatly affect the shipping.

2.5 View from corporations and research institutions towards Sino-US trade conflict

2.5.1 Views from corporations

The CEO of the world's largest container carrier AP Moller-Maersk A/S (2018) said that Chinese exports to the US actually grew 5%-10% last quarter, while the US exports to China fell by 25%-30%, which is quite ironic. He also pointed out that the trade volume between the US and China is so great that the Sino-US trade conflict has already negatively affected their container business and decreased the volume of liner shipping.

Wang, Y. H. (2018) from COSCO Shipping indicated that shipping companies should pay great attention to the Sino-US trade conflict and take active actions to cope with the possible impact of the conflict through it may not affect the maritime service immediately. In any case the situation won't be worse than that of 2008.

2.5.2 Views from research institutions

Sand, P. from BIMCO said that the trade conflict has a limited impact on US trade and China may turn to other trade partners for import commodities. However, the impact of the trade conflict depends on how fierce the conflict is, and it remains an uncertainty to the global trade and the prosperity of the shipping market.

According to Clarksons Research, about 80% of the seaborne cargo the Sino-US trade conflict mainly aimed at is between China and the US, thus it has a great effect on the

trade between China and the US.

Drewry Research (2018) suggested that the highest risk may be the unpredictability and the possibility of knocking down the confidence of the world trade. Although the threat to container demand is relatively low, the situation may still get worse if additional tariffs are added.

Whereas the Industrial Securities Institute of Economics and Finance (2018) concluded from the estimation of the proportion of seaborne volume that the commodities involved in the trade conflict covers only 1.5% of the global seaborne commodity volume, and thus the impact on shipping demand is limited.

Review of Maritime Transport 2018 carried out by UNCTAD suggested that the proposed tariffs will produce and increase in soybeans ton-miles in dry bulk shipping. As the China-US route accounts for only 3% of the world containerized trade, the impact of the Sino-US trade conflict is initially limited depending on the duration of tariffs.

From the view of Drewry Maritime Research (2018), the dry bulk market still faces risks because of the Sino-US trade conflict, so different scenarios are taken into account for dry bulk market forecast and different results are concluded under each scenario.

Same as the conclusion of the Industrial Securities Institute of Economics and Finance, an analyst named Jensen, L. (2018) from the SeaIntelligence Consulting indicated that the Sino-US trade conflict won’t have too much impact on the global shipping industry.

He also set pork as an example, and pointed out that the trade conflict doesn't always mitigate the volume of goods transported, but the direction of transportation may change.

2.6 Research direction in this research paper

Since the Sino-US trade conflict happened last year, there's limited study on it. Accordingly, some news and reports are selected to help review the whole process of the trade conflict. The research is still based on the principle of trade, maritime transport, and the former reports, and plenty of charts and statistics will be used in the research paper to help illustrate the topic.

It can be seen from the above studies that there are few researches applying the comparative research method to study the impact of the Sino-US trade conflict on the international dry bulk shipping market. Thus, in the research paper, I try to compare the influence on shipping the US-EU trade conflict with the impact of the trade conflict bursting out recently, and to predict the future situation and explore methods to cope with the conflict.

The Sino-US trade conflict is still ongoing; therefore, this research paper will keep tracking the incidents happen during the stage of writing and more related material will be added into the research paper.

Chapter 3 The Sino-US trade

The shipping demand is derived from the global trade, thus before analyze the impact by Sino-US trade conflict toward the shipping market, we have to start with the trade between the US and China.

3.1 Characteristics of the industrial structure and trade of China and US

The industrial structure in a country affects the trade of the country. For instance, the trade structure has been changing together with the industrial structure after World War II in Japan, which had a great effect on its trade. China has been developing fast since 1992. After joined in WTO in 2001, the industrial structure has gradually shifted from low value added and labor-intensive commodities to higher value-added manufactured goods.

This part mainly describes the industrial structure of both countries from 3-sector model, and trade is illustrated thereon.

3.1.1 Characteristics of the industrial structure and trade of China

China has a land area of 9.63 million m^2 and a population of 1.4 billion. Up till now, having a gross domestic product of over $13.41 trillion[1], China has become the world's 2nd largest economy in the basis of nominal GDP. The import and export of cargo grow at a speed of 9.7% and 7.1% respectively, and China has a trade surplus of over $347

[1] Source: 2018 Statistical Bulletin on National Economic and Social Development

billion[2].

To describe the China's economy in accordance with the 3-sector model developed by Fisher, A., Clark, C. and Fourastie after the 1978 Reforming and Opening-up Policy, China has experienced significant revolution in industrial structure from the primary-based industry to the secondary-based and tertiary-based industry. In 2018, the proportion among the primary, secondary and tertiary industry is 7.2:40.7:52.2[3] (see Figure 1), which is to say that the secondary and tertiary industry covers over 90% of China's GDP and the primary industry is getting no longer initial in terms of GDP. Figure 2 shows the proportion of the 3 industrial sections in China since 1978.

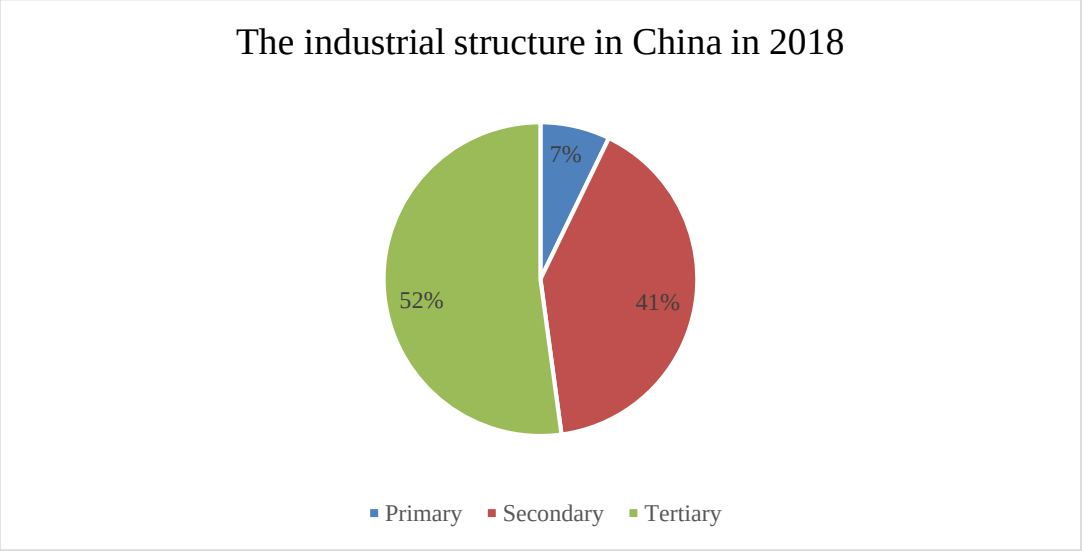

Figure 1 – The proportion of industrial structure in China in 2018
Source: Annual data from National Bureau of Statistics

[2] Source: Annual Data, National Bureau of Statistics
[3] Source: 2018 Statistical Bulletin on National Economic and Social Development

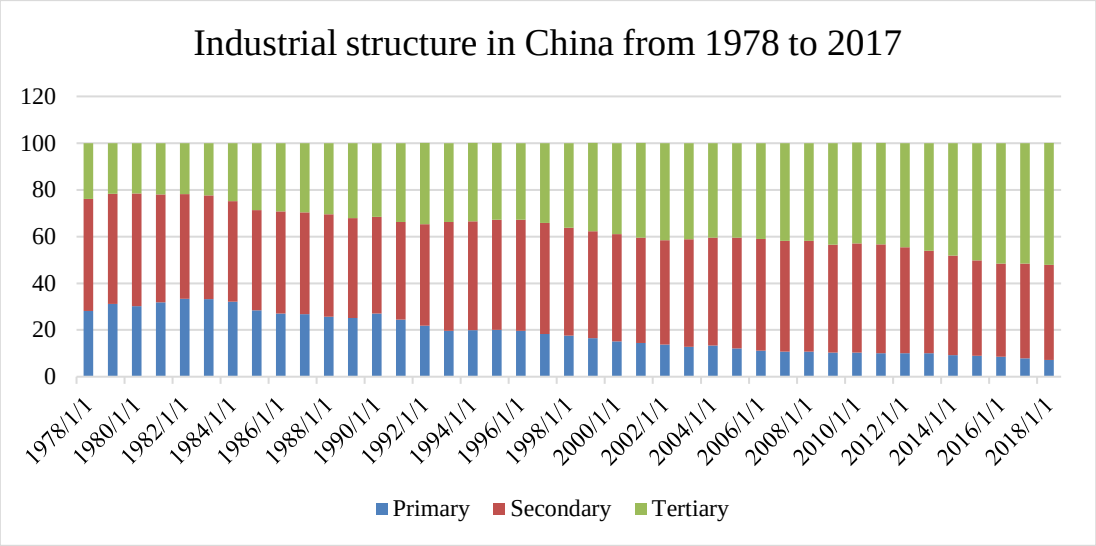

Figure 2 – Industrial structure in China from 1978 to 2017 (%)

Source: National Bureau of Statistics

With the world's largest population, it's crucial for China to have enough food to feed the population. The pressure of food security pushed China to autarky and planting more staple crops, such as rice and wheat. Thus, the production of rice and wheat are always sufficient, while the domestic production of other crops, especially soybean and corn, cannot feed the population and the livestock or meet the demand for oil extraction. Therefore, import of soybeans, corns and other crops from other countries is needed. It can also be seen from Figure 2 that the proportion of primary industry dropped from the 2nd place to the 3rd place in 1985.

In the secondary industry, with the continuation of the China Supply-side Reform, utilization of the steel production capacity has been enhanced and the average daily steel production is rising from 2.57 million tons in 2017 to 2.70 million tons in 2018. The steel market in China is working in a stable condition with little volatility. The aluminum market has also been affected by the Supply-side Reform policies, together

with the stringent environmental regulations carried out in 2015, the aluminum production has been cut to raise utilization and to make the sky blue since July, 2017. Coal is the most used energy source in China, which accounts for nearly 59% of China's energy consumption in 2018. The China's coal market has also been facing the severe over-supply problem. Due to the environmental regulations and the Supply-side Reform, the coal market has experienced a structural reform since 2012. Thanks to the structural adjustment, the coal production growth rate is gradually picking up since early 2018. Demand for coal in China depends on the electricity demand, which may decrease due to the environmental policies.

Nonetheless, the trade of the metal is another story. Being the global largest steel export country, China totally exported 69.34 million tons in 2018. Due to the Section 232 Investigation updated 2018 adding 25% tariff on steel by the US[4], China's steel product net export has decreased over 10% in 2018 compared to 2017[5]. Furthermore, the steel products from China encountered 36 trade remedy investigations by 18 countries and regions in 2018, including anti-dumping (AD) and countervailing duties (CVD). Aluminum product has been levied 10% tariff [6] in the Section 232 Investigation. However, this duty is not aiming at the aluminum products from China but from Russia. Therefore, China's aluminum product export went up by 20% in 2018[7]. In the coal section, the volume of coal exported by China is dropping while the coal imported is increasing because of the strict environmental protection policies.

[4] Source: U.S. Customs and Border Protection
[5] Source: General Administration of Customs, P. R. China
[6] Source: U.S. Customs and Border Protection
[7] Source: General Administration of Customs, P. R. China

Known as the World's Factory, China is now the largest manufacturer in the world. China was the largest manufactured products export country in 2017, and the largest importer for China's manufactured commodities is the US. The export of manufactured commodities covers more than 94% [8] of the whole value of commodities exported, while the import manufactured commodities of China account for about 64.9% of the whole imported value[9].

3.1.2 Characteristics of the industrial structure and trade of US

The US has an area of over 9.37 billion m^2 and a population of 330 million. The US ranks the 3rd in both the term of the population and the area in the world, but it has been the world's largest economy for over a century, which has a GDP of over $20.5 trillion[10]. In 2018, exported commodities of the US was $1672.331 billion which grew 7.66%, while imported commodities was $2563.651 billion which decreased 8.59%, compared to statistics in 2017[11]. Unlike China, there's always a deficit in the US international trade, and the deficit for commodities increased by 10% in 2018.

To see the US from the 3-sector model perspective, the proportion of primary, secondary and tertiary is about 1.3:24.4:74.3[12], which indicates that the US has a mature tertiary industry that nearly covers 3/4 of its GDP (see Figure 3). Besides, the US is very famous for its developed primary industry. Although it accounts for merely

[8] Source: General Profile: China (2017), UNCTADSTAT
[9] Source: Country Profile: China (2017), WTO
[10] Source: World Economic Outlook Database (2018), IMF
[11] Source: International Trade in Goods and Services (2019), BEA
[12] Data organized and calculated from Gross Output by Industry in BEA

1.3% of the US's GDP, because of the high mechanized production and advanced technologies implemented in agricultural industry, it has always been the dominate power in the international agricultural trade.

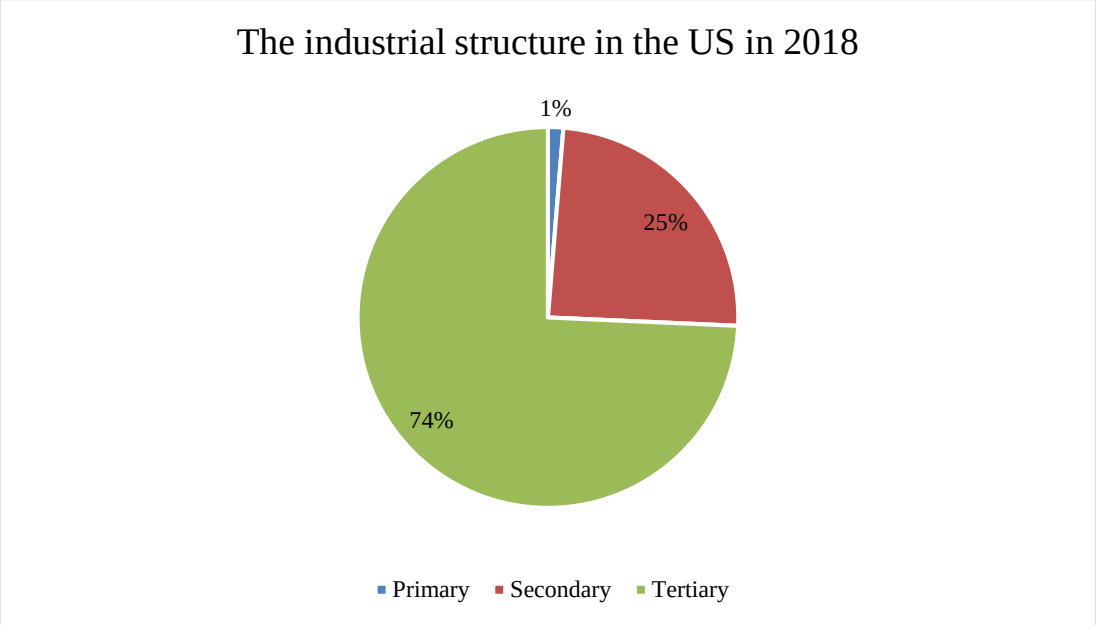

Figure 3 – The proportion of industrial structure in the US in 2018
Source: Data organized and calculated from Gross Output by Industry in BEA

The US is always powerful in the primary industrial sector. With its broad plain and various types of climates suitable for growing different crops, the US grows corn and soybean in the middle and north America, wheat in the Great Plains in north America, cotton in the south, etc. Furthermore, the US has the most advanced agriculture technology in agricultural mechanization, informatization and biotechnology worldwide, which effectively raise the productivity of agriculture, achieve cost-effectiveness and enhance the quality of its agricultural products. The US produced 34.15% of the world's soybean, 32.69% of the world's corn and 15.62% of the world's

sorghum (see Table 1). Also, the US government has issued several trade policies to support its competitiveness in exporting agriculture products.

Compared to China, since the US doesn't have such great population to feed, it became the largest agriculture products exported country in the world. Despite the meat including beef, pork and poultry the US exported, the US also plays a major role in the global grain exports (see Figure 4).

Table 1 – Rank and world share of the US agricultural products

Agricultural products	World rank	World share
Soybean	1st	34.15%
Corn	1st	32.69%
Sorghum	1st	15.62%

Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

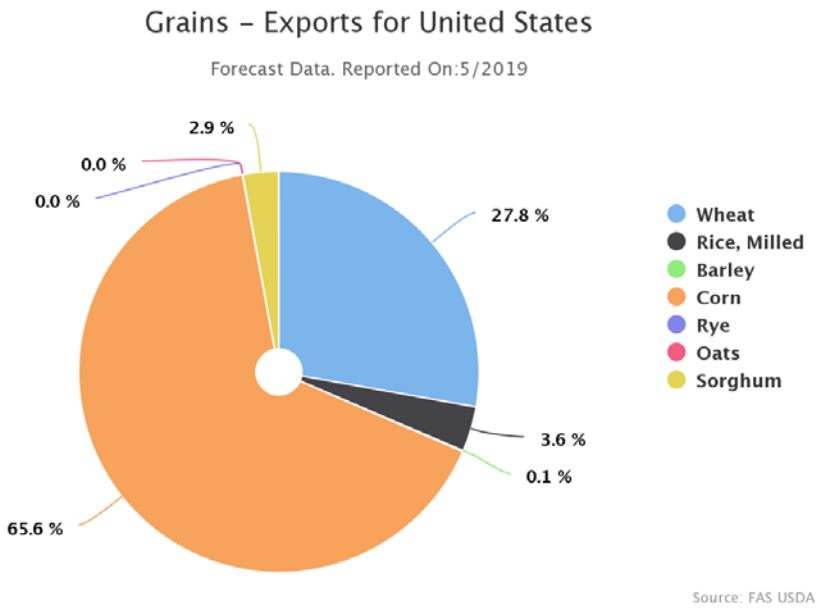

Figure 4 – The proportions for the US grain exported

Source: Graphical Query - Stats by Country in PSD Online, FAS and USDA

The secondary industrial sector of the US accounts for 25% of its total GDP, which is nearly 3 times less than its tertiary industry. This indicates that instead of the secondary industry, the tertiary industry, including finance and information technology, has become the dominate industry in America. The US manufacturers focus mostly on producing high value-added products such as medical instruments, electronic products, pharmaceuticals, etc.

In the metal sector, the US has set great restriction onto steel and aluminum import from other countries including China. With the help of the Section 232 Investigation on steel and aluminum released on March 8th, 2018, the US intended to "protect its national security" and "strengthen internal economy" by rejuvenating its domestic steel industry, especially in steel productivity and employment, and simultaneously restricting the import of steel and aluminum via high tariff and low quota on import steel and aluminum[13]. According to the Steel Report, the US import steel is 4 times than its import, and China is pointed out to be the one who over-supplies steel. In the Aluminum Report, the US is always in need of aluminum products in high quality in military field and infrastructure. Similarly, China is again blamed for several trade cases of dumping and subsidies. However, the actions planned to be taken by the US government may have an impact on other steel and aluminum export countries, such as Brazil, India, Malaysia, Russia, Korea, South Africa, Vietnam, etc.

In the coal trade, the exported coal from the US has risen to a new high in 2018 because of the growth in the global coal demand especially in those Asian countries such as

[13] Source from U.S. Department of Commerce and the Whitehouse

India and China compared to recent years. Besides, the US has found some new markets for steam coal, say, Thailand, Egypt, Ukraine, etc.[14] On the other hand, coal traders in the US were concerned about trade relationship between China and the US. Thus, some coal of $30 million in value were exported to China in case the 25% tax is levied onto the coal from America.[15] Being the 7th largest coal producer to China, the US remains no advantage in the coal trade due to higher cost of coal supplement caused by the trade conflict.

To see trade from the finished products, the US and China are closely combined to each other, seeing that China is both the largest import and also the largest export country of the US. In 2018, the US has imported $77 billion computers, $70 billion mobile phones and $54 billion in clothes and shoes from China, whilst export $16 billion aircrafts, and $10 billion vehicles to China. According to Brad Setser, it's impossible for the US to substitute "made in China" with "made in USA" in the short-term. Because of the more intense relationship with China, the manufactured goods are sold in higher prices, which may further reduce the domestic demand in the US.

3.2 Characteristic of the marine transport of China and US

The growth of trade volume in 2018, which is about 2.7%, much slower than the growth rate in 2017. Because of the Sino-US trade conflict, there is less investment in the shipping market. The growth rate of the world fleet dropped slightly to 2.6% in 2018 and in 2019 the fleet is expected to rise to more than 2 billion DWT. The global

[14] Source: U.S. Energy Information Administration
[15] Source: Institution for Energy Economics and Financial Analysis

ship scrapping volume decreased to about 31 million DWT, but the scrapping for tanker carriers has reached the highest in last 30 years. The volume of newbuilt ship went down by 14% in terms of DWT, while the new orders in specialized ship market went up. To see from ship price, the price of newbuilding and second-hand vessels has gone upward by 10% and 4% respectively[16].

China and the US have different marine transport characteristics, and generate different contributions to the national economy.

3.2.1 Characteristic of marine transport of China

Among all the commodities exported from China by the year 2017, 94% of the goods were finished products, and the US is the largest trade partner of China, which imported over $130 billion of commodities from China. The dry bulk sector accounts for nearly 50% of the total seaborne commodities in terms of ton-miles. Besides, China has generated a transport service export growth rate of 9.7%. To illustrate the fleet structure, China has the largest fleet of bulk carriers in terms of DWT, and is the largest ship owning country in terms of number of vessels. The national connectivity index of China has risen to nearly 170 in 2017[17].

3.2.2 Characteristic of marine transport of US

Different from China, among all the commodities exported from the US, only 72% are

[16] Data collected and calculated from Clarksons SIN
[17] Source: Maritime Profile: China (2017), UNCTADSTAT

manufactured goods, 10% are food items, another 10% are fuels, and the rest 8% are other commodities, which means the US has more competitive advantage on agricultural products and oil products. China is not the largest trade partners. In terms of exports, the US trades more with Canada and Mexico because of geographic reasons. The US exported over $282 billion commodities to Canada and over $243 billion to Mexico, but merely $130 billion to China. The fleet of the US grew by 3.2% in 2017, which was much slower than the Chinese fleet. Also, the most type of vessels the US has in terms of carrying capacity is oil tankers, and the least kinds of ship is bulk carrier. Compared to China, the national connectivity index of the US has never been more than 100 since 2004, which means that China has more connection globally than the US does[18].

3.3 Dry bulk cargoes mainly involved in the Sino-US trade

Compared to commodities stuck in containers, the Sino-US trade conflict didn't affect so many kinds of dry bulk cargoes. The dry bulk cargo mainly involved in the trade conflict this time is the agricultural products.

The US is one of the world's largest agricultural exporters with advanced biotech, high productivity and competitive price, while China has the largest population in the world. Thus, to feed such a great population, China imports agricultural products from the US with low cost. The trade for agricultural products becomes the most important components in the dry bulk trade between China and the US, and the demand for

[18] Source: Maritime Profile: China (2017), UNCTADSTAT

agricultural products in China lacks elastic.

Among all the agricultural products from the US, soybean and sorghum are the first and second largest agricultural products in the Sino-US trade[19] in recent years. China used to import large amounts of corn from the US before 2015, however, the import for the US corn sharply declined due to the potential risk of MIR 162 corn[20] and import quota limitation[21] from China.

Therefore, the dry bulk trade between China and the US mainly insists of agricultural products. Among them, soybean and sorghum are the two typical dry bulk cargoes in the Sino-US trade for analysis in this research paper.

3.3.1 Soybean

The soybean produced by the US accounts for the world's 34.15%[22] (see Table 1) of the total soybean production. Although the US is not the largest soybean exporter in the world[23], it controls over 90% of the world's soybean transaction because it owns 3 of the 4 largest grain dealers in the world. Besides, the price of the soybean is determined in accordance to the CBOT[24], which make the US more powerful in pricing than other soybean exporters do.

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[19] Source: Sorghum Market Trend and Investment Strategy Research Report in 2018
[20] MIR 162 corn is one type of the GM corn.
[21] Source: Chinese Quota Remains a Sticking Point in US Corn Deal, Agri Census
[22] Source: Custom Query, USDA
[23] Brazil has exceeded the US in soybean production and has become the largest exporter to China, who provided over 50% of the total soybean exports to China.
[24] CBOT: Chicago Board of Trade

China is the largest soybean importer in the world, because of the huge population and lacking domestic productivity in soybean. Soybean is one of the most important agricultural products China import from the US because of the high soy oil yield of the US's GM soybeans[25]. Normally, China relies on 2/3 of the world's total soybean exported mainly from Brazil, the US and Argentina. Since the import source is quite simple, China is facing great pressure in finding alternatives towards soybean trade in order to ensure national food safety. Despite used for oil extraction, soybeans are also use to produce bean products, and those soy meals generated during the oil extraction process will be used in feeding industry.

3.3.2 Sorghum

The production of the US sorghum is about 9,271,000 MT in 2018, which accounts for 15.62% of the world's total sorghum production. The US is the largest sorghum production country in the world (see Table 2). The export for the US sorghum in 2018 accounts for 63% (see Figure 5) of the total world's sorghum export.

Table 2 – Sorghum production by different countries from 2015 to 2018 (1,000 MT)

No.	Country	Year			
		2015	2016	2017	2018
1	United States	15,158	12,199	9,192	9,271
2	Nigeria	7,005	7,556	6,939	6,800
3	Ethiopia	4,766	4,752	4,816	5,000
4	Mexico	5,587	4,638	4,545	4,700
5	India	4,238	4,570	4,950	3,750

[25] GM soybean: genetically modified soybean

Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

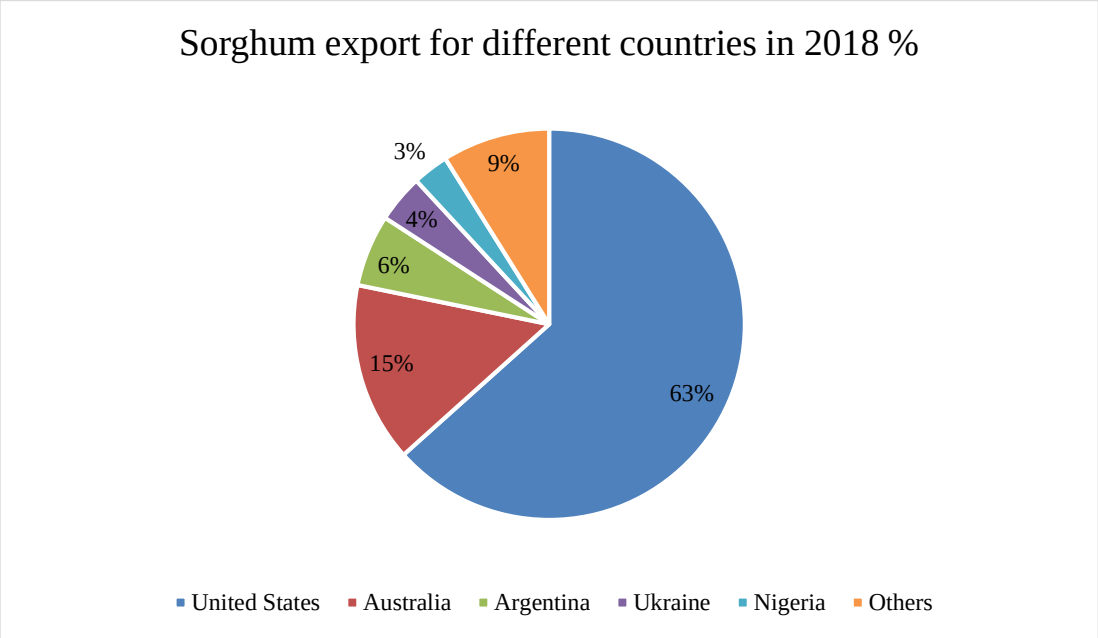

Figure 5 – Sorghum export for different countries in 2018 in percentage
Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

Sorghum used to be regarded as a kind of agricultural product for people to eat, but now it's generally applied in feeding, and especially as a substitute for corn. However, due to the tariff levied on sorghum from the US, the import of the US sorghum by China sharply decreased in just one year, while the import of the EU and Mexico soared (see Table 3).

Table 3 – Sorghum imported by different countries from 2015 to 2018 (1,000 MT)

No.	Country	Year			
		2015	2016	2017	2018
1	European Union	117	168	420	800
2	China	8,284	5,209	4,436	700
3	Japan	649	561	594	600
4	Mexico	661	548	98	500

5	Sudan	200	120	150	200

Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

Chapter 4 Overview of the Sino-US trade conflict since 2018

4.1 Process of the Sino-US trade conflict since 2018

Table 4 – Process of the Sino-US trade conflict

Date	Process of the Sino-US trade conflict
January 23rd, 2018	The US levied maximum 30% and 50% tariff respectively on solar panel and washing machine exported by China.
February 4th, 2018	China conducted Anti-dumping and Countervailing Investigation against US sorghum.
March 22nd, 2018	The US signed a Presidential Memorandum Targeting China's "Economic Practices", claimed to levy taxes on $ 60 billion commodities, and restricted investment in America.
March 23rd, 2018	China carried out a proposed list of 128 imported products from the US worthen $ 3 billion import value.
April 3rd, 2018	The US proposed a list including aerospace, information and communication technologies, etc. and suggest to impose 25% tariff on those commodities.
April 4th, 2018	China decided to levy 25% tariff on US's soybean, corn, wheat, beef, vehicle, plane and part of the chemicals.
April 18th, 2018	The Anti-dumping and Countervailing Investigation was halted by the Chinese Government
May, 2018	Bilateral trade conference was held between the US and China and the two countries finally reached a consensus.
June 14th, 2018	The US announced that 25% tariff would be levied on 1102 types of commodities imported from China, which has a value equivalent to $ 50 billion.
June 15th, 2018	China also claimed to impose 25% tariff on commodities imported from the US for the same value.
July 6th, 2018	The US started to impose tariff on $ 34 billion commodities imported from China, and China imposed tariff on the US commodities of the same value.
July 10th, 2018	The US launched the plan to levy 10% tariff on $ 200 billion commodities imported from China.
August 3rd, 2018	China planned to impose tariff ranging from 5% to 25% on

	US commodities worth $ 60 billion.
August 8th, 2018	The US claimed that tariff would begin to be levied on products from China valued $ 16 billion, and China planned to impose tariff on commodities from the US of the same value.
August 23rd, 2018	The tariff imposed by both sides came into effect.
September 24th, 2018	The US levied 10% tariff on products from China and announced that the tariff would be enhanced to 25% on January 1st, 2019. In response, China started to impose tax on commodities from the US that worth $ 60 billion.
December 1st, 2018	Both the US and China agreed to ceasefire for 90 days.
February 24th, 2019	The US postponed the date to raise tariff on imported commodities from China.
May 10th, 2019	The US raised the tariff on $ 200 billion products from China from 10% to 25%.
June 29th, 2019	The US and China showed the intension of help each other and work together, and agreed to restart the trade negotiation during the G20 Summit in Osaka.

Source: collected from Industrial Securities Institute of Economics and Finance and news

It can be seen from Table 4 that most commodities involved in the Sino-US trade conflict are container cargoes, while dry bulk cargoes involved are mainly agricultural products, such as soybean and sorghum.

4.2 Seaborne dry bulk cargoes mainly involved in the Sino-US trade conflict

Corn hasn't been included in the Sino-US trade conflict in 2018, mainly because the corn trade volume between the US and China isn't large enough to become a threat and China doesn't rely too much on the import corns compared to soybean. Therefore, China has levied tax on soybean and sorghum as a punishment towards the US's import tariff on manufactured goods from China.

4.2.1 Soybean

In 2018, the total export of US's soybeans is about 46.3 million MT, which ranks second behind the export of soybeans by Brazil, who exports 78.5 million MT (see Table 5). Generally, Brazil exports most soybeans in the world soybean trade, and China imports more soybeans from Brazil than from the US.

Table 5 – Export of soybean for different countries from 2015 to 2018 (1,000 MT)

No.	Country	Year			
		2015	2016	2017	2018
1	Brazil	54,383	63,137	76,175	78,500
2	United States	52,870	58,960	57,945	46,266
3	Argentina	9,922	7,026	2,112	7,750
4	Paraguay	5,400	6,124	6,029	5,600
5	Canada	4,236	4,592	4,925	5,400

Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

In 2017, the import of soybeans from Brazil accounted for about 53% of the total soybean import, however, in 2018, the import from Brazil has risen sharply to nearly 76% in terms of volume (see Figure 6 and Figure 7). However, the percentage of import of US soybean shrunk from 34% in 2017 to merely 20% in 2018 (see Figure 6 and Figure 7).

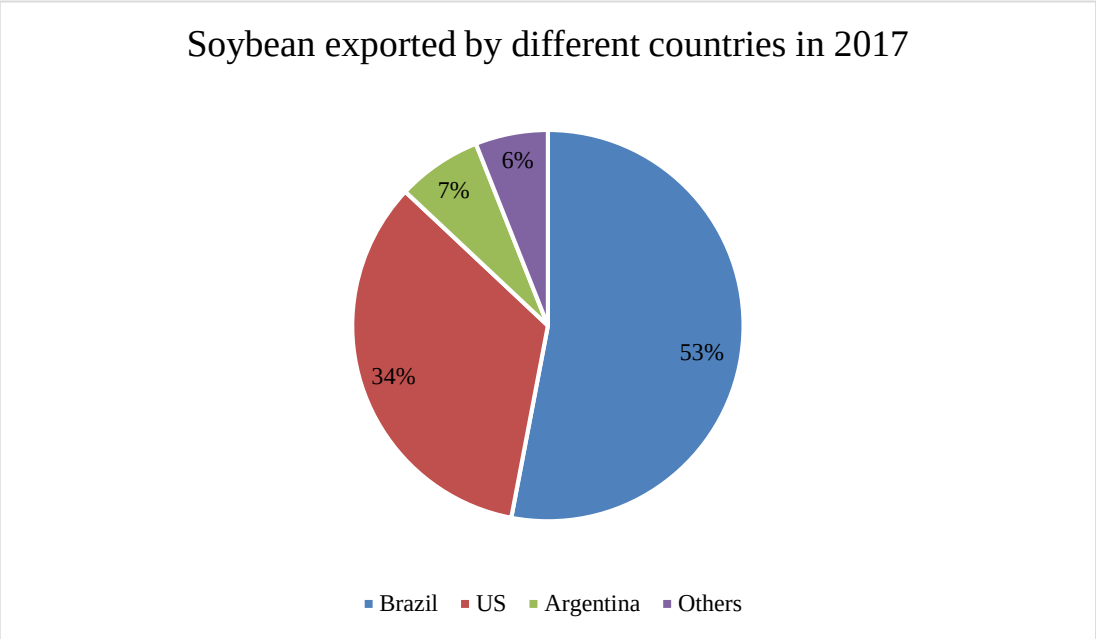

Figure 6 – Soybean exported by different countries in 2017

Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

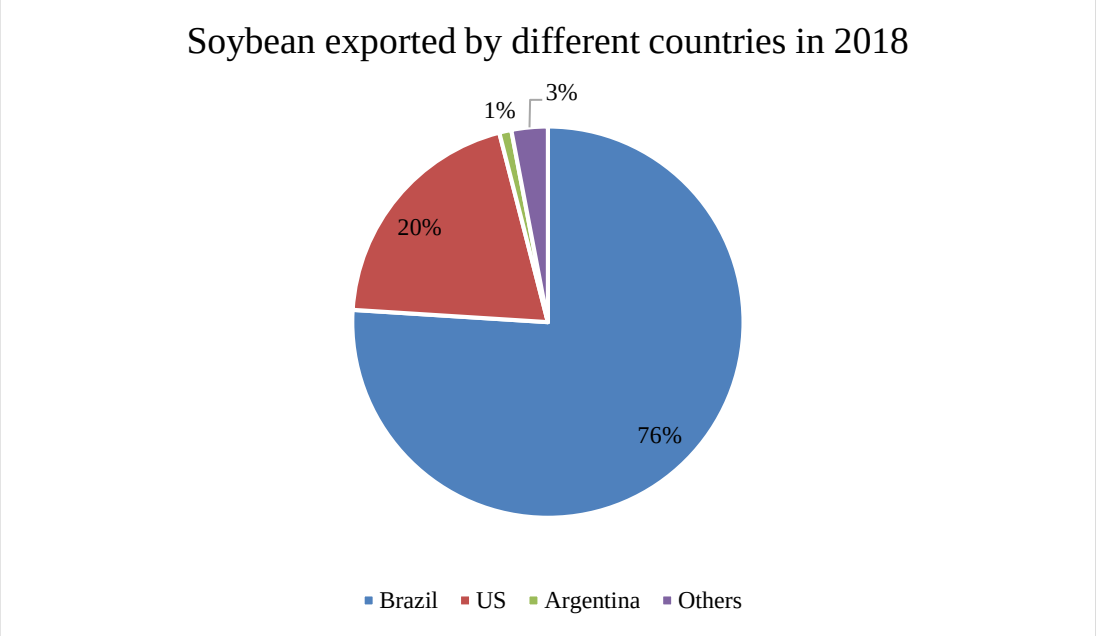

Figure 7 – Soybean exported by different countries in 2018

Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

China imports about 57.22% of the world soybean import, and nearly 90% of the soybean consumption of China are imported from abroad. The soybean demand for China is inelastic and the consumption of soybeans is growing annually, and China will still be dependent on import soybeans in the short term. However, the total Chinese import of soybean in 2018 decreased at least 7.9%.

4.2.2 Sorghum

America is the largest production country for sorghum and it can produce over 9 million MT[26] sorghum each year. As there isn't much domestic need for sorghum in the US[27], over half of the sorghum from the US is exported to other countries. We may see from Table 6 that the US sorghum exported fell greatly in 2018.

To see from Table 7, among the world top 5 sorghum export countries, the volume of export sorghum in 2018 from the US fell more than a half than the volume in 2017. Besides, the volume to export in 2018 is This is mainly because of the Anti-dumping and Countervail Investigation measures by China towards the US sorghum issued on April 18th, 2018.

Table 6 – Change of export US sorghum from 2017 to 2018 (1,000 MT)

No.	Country	2017	2018	Year change
1	United States	5,211	2,159	-3,052
2	Australia	500	500	0
3	Argentina	2	200	198

[26] Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query
[27] The US consumed 2,462,000 MT sorghum in 2017 and 3,937,000 MT in 2018.
Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

4	Ukraine	123	120	-3
5	Nigeria	100	100	0

Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

Table 7 – The percentage of total US sorghum export in total US sorghum production (1,000 MT)

Year	Production	Export	Export/Production
2016	12,199	6,041	49.52%
2017	9,192	5,211	56.69%
2018	9,271	2,159	23.29%

Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

It can be seen from Table 8 that since 2015 China's consumption of sorghum has been reducing year by year, but the reduction rate has risen to its highest (44.87%) in 2018. China's import of sorghum has also been decreasing since 2015, however, the import of sorghum declined nearly 85% in 2018. On the other hand, China's sorghum production is growing annually by 7% to 8%. Briefly, in 2018, there was great plunge in both consumption and import of sorghum in China.

Table 8 – China's consumption of sorghum from 2015 to 2018 (1,000 MT)

Year	2015	2016	2017	2018	Change Rate (2017-2018)
Consumption	11,000	8,300	7,800	4,300	-44.87%
Production	2,750	2,985	3,200	2,450	7.81%
Import	8,284	5,209	4,436	700	-84.22%

Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

4.3 Condition of the shipping market during in the Sino-US trade conflict

4.3.1 International shipping market

The Sino-US trade conflict took place almost 10 years after the 2008 global economic

crisis. However, the crisis 10 years ago was so fierce that the impact still exists today and the ship market is still suffering from the situation of oversupply.

On August 11th, the dry bulk ship M.V. Peak Pegasus, which carried soybeans, berthed in Port Dalian after over one-month's waiting. She has been heading for the destination at full speed as soon as the China's deadline for the US soybean tariff applied at 12:00 a.m. (UTC+8) on July 6th, but finally failed to beat the 25% soybean tariff in time. The case of M.V. Peak Pegasus was a typical example happened in the Sino-US trade conflict[28].

To consider the shipsize, the vessels which are implemented to carry grains are generally handysize, handymax/supramax and panamax vessels[29], and among the three ship sizes, supramax vessels are more often used than the other two types[30].

From the fleet development of the bulk carriers, we can depict from Figure 8 that the number of all the three types of vessels from 2017 to 2019 doesn't change so much even after the Sino-US trade conflict took place in 2018. In the short-term, the trade conflict may not have so much influence on the development of the bulk carrier fleet.

[28] Context collected from news from https://time.com/5330924/china-us-cargo-ship-tariffs/ by Bloomberg
[29] Source: Drewry Dry Bulk Forecaster, 2018 Q1
[30] Concluded from Drewry Monthly and Quarterly Dry Bulk Forecaster

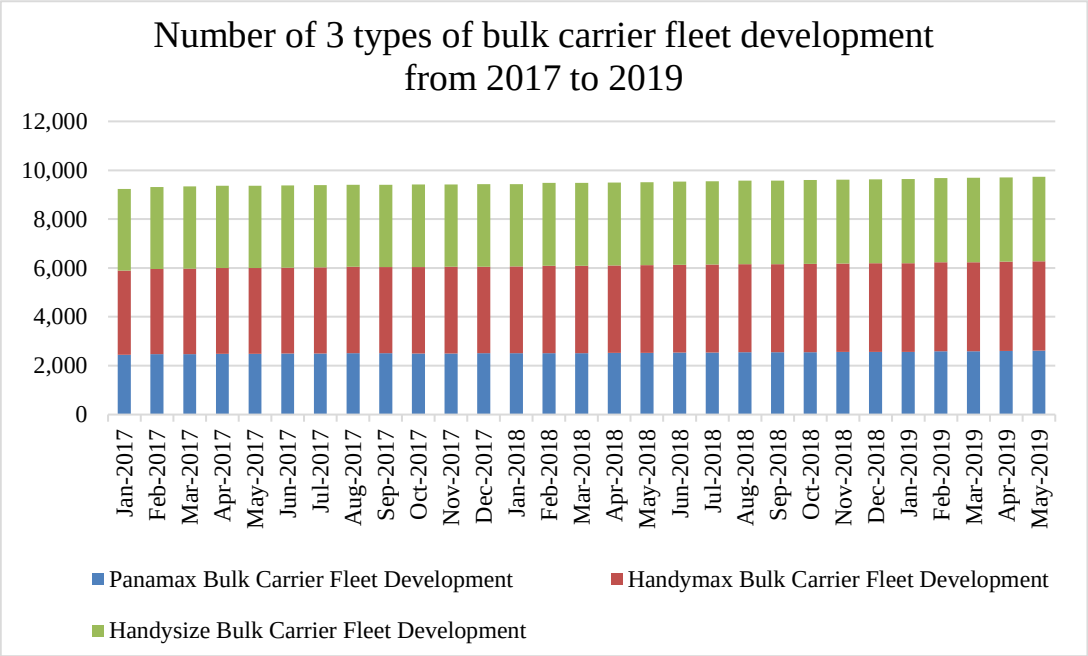

Figure 8 – Number of 3 types of bulk carrier fleet development
Source: Clarksons SIN

It can be seen from Figure 9 that number of all the three types of vessels on orderbook fell since the beginning of 2017, while in the November of 2017, panamax and handymax vessels on the orderbook slightly increased, while handysize vessels went on a decreasing trend until the May of 2019.

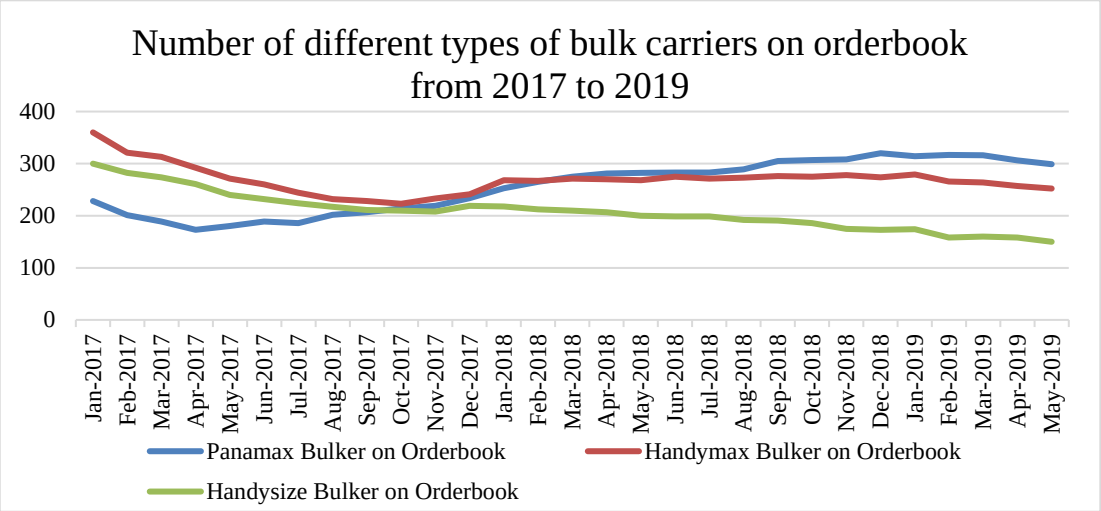

Figure 9 – Number of different types of bulk carriers on orderbook from 2017 to 2019
Source: Clarksons SIN

The number of bulk carriers demolished in 2017 is the most. However, the number decreased since the end of 2017, and the monthly demolition number of the three types of bulk carriers remains under 5 until 2019 during the Sino-US trade conflict (see Figure 10). To analyze from a longer period, (see Figure 11) it's in the period of 2008 economic crisis that the number of demolition ships was the highest.

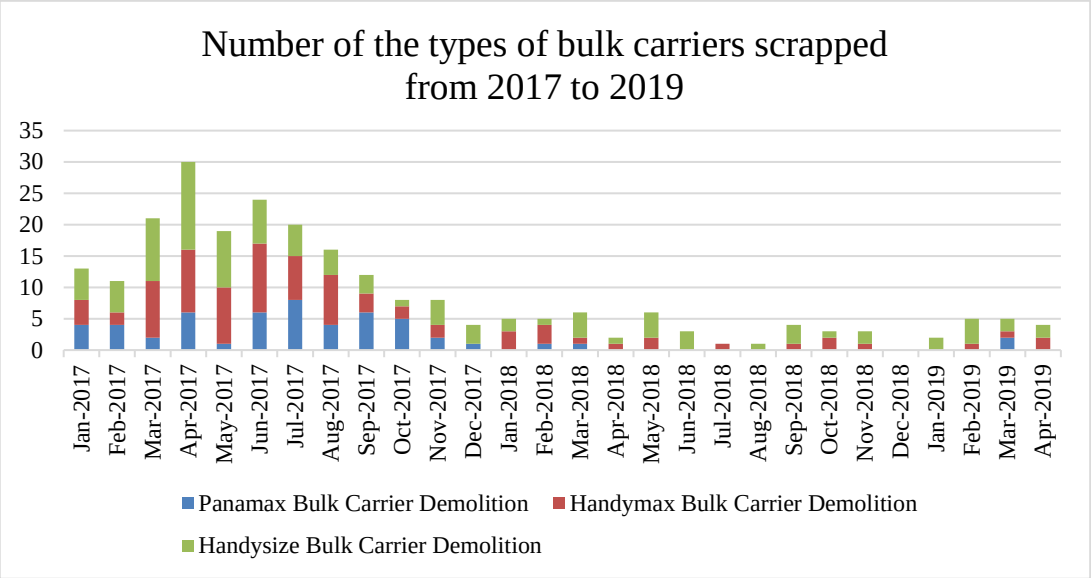

Figure 10 – Number of the types of bulk carriers scrapped from 2017 to 2019

Source: Clarksons SIN

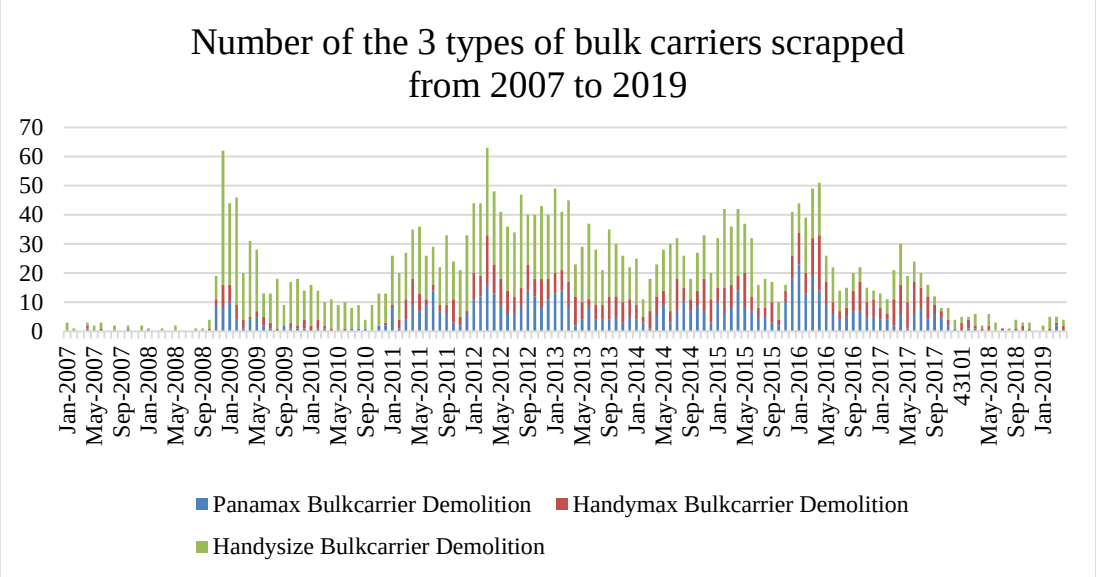

Figure 11 – Number of the 3 types of bulk carriers scrapped from 2007 to 2019

Source: Clarksons SIN

Through the indexes – BDI, BPI, BSI and BHSI – related to dry bulk shipping market, fluctuations can be seen from 2017 to 2019. March 23rd, 2018 is the time when the situation of the Sino-US trade conflict became more serious. Figure 12 shows that both BDI, BPI and BSI were going down from then on. However, the falling trend didn't last long. Those indexes soon went up till the end of 2018.

It can be seen clearly from Figure 12 that all 4 indexes began to fell in November of 2018. From January 18th to February 11th, dry bulk indexes of various shipsizes decreased continuously for about 24 days to only 595, which is the lowest in the recent 2 years, and the decreasing rate over 50%. This shows that the dry bulk market is lacking confidence, though the consequence was partly resulted from some seasonal factors and accidents happened in certain industry, such as the Chinese New Year, the accident happened on the Vale of Brazil, etc.

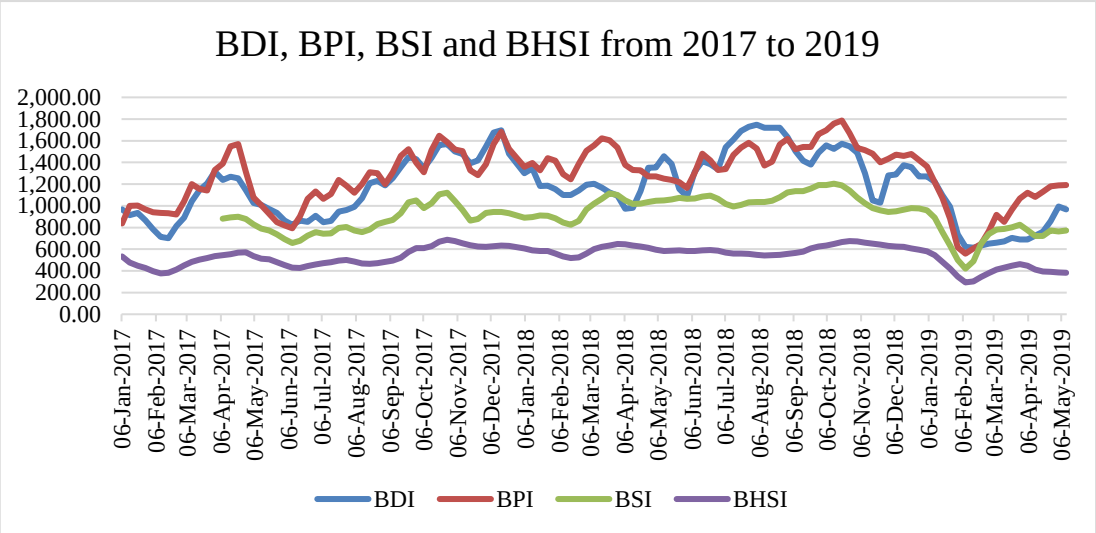

Figure 12 – BDI, BPI, BSI and BHSI from 2017 to 2019
Source: Clarksons SIN

Briefly, there weren't any clues showing that the international shipping market was affected much by the Sino-US trade conflict. However, to see from the volatility in those indexes in Figure 12 that impacts may exist in certain segments shipping market. In those segment markets, Supramax is said to be affected by the agricultural product trade most[31].

4.3.2 Supramax segment

In the first month of 2018, grain importers were expected to have an increasing grain import and there was good harvest in the US and Brazil to support the demand. Compared to last January, the BSI has increased by 40%. The Supramax sector seems to be good in 2018.

While in February, the Anti-dumping and Countervailing Investigation against sorghum imported from the US was carried out by the Chinese Government on February 4th, 2018, and the sorghum imported reduced swiftly. It was not until the Chinese Government halted the Investigation that the US sorghum import started to grow again.

Moreover, China planned to levy 25% import tariff on the US soybean in March, and the tariff would come into effect in July. The time charter rate for Supramax experienced some increase from March to June for two reasons. Some soybean traders in China intended to store more soybeans before the tariff coming into effect. Other

31 Information collected from the Drewry Quarterly Reports

buyers may choose to import soybeans from Brazil and Argentina. Since the average length of haul for the route ECSA-China is longer, ton-miles improved. Because of the reason for the short-term demand in storage and the increasing in ton-miles, the Supramax sector seemed to have a better performance (see Figure 13).

In the sorghum trade, the Anti-dumping and Countervailing Investigation against the US sorghum was ceased by the Chinese Government in April 18th, for the policy wasn't good to the sorghum consumers in China. Therefore, in May, the Supramax segment grew in May. However, the situation didn't last long. After the soybean import tariff came into force in July, the time charter rate for Supramax decreased.

In July, the soybean trade started shifting to the route of ECSA-China, and the time charter rate began to increase at the beginning of August (see Figure 13). Nevertheless, China's total soybean import reduced.

The rate for Supramax kept stable in September because the US soybean traders seemed to find new buyers (viz. Japan and South Korea). On the other hand, the growth of other agricultural products imported by Vietnam, European countries and Egypt offset some of the impact from the reduction in US soybean imported by China.

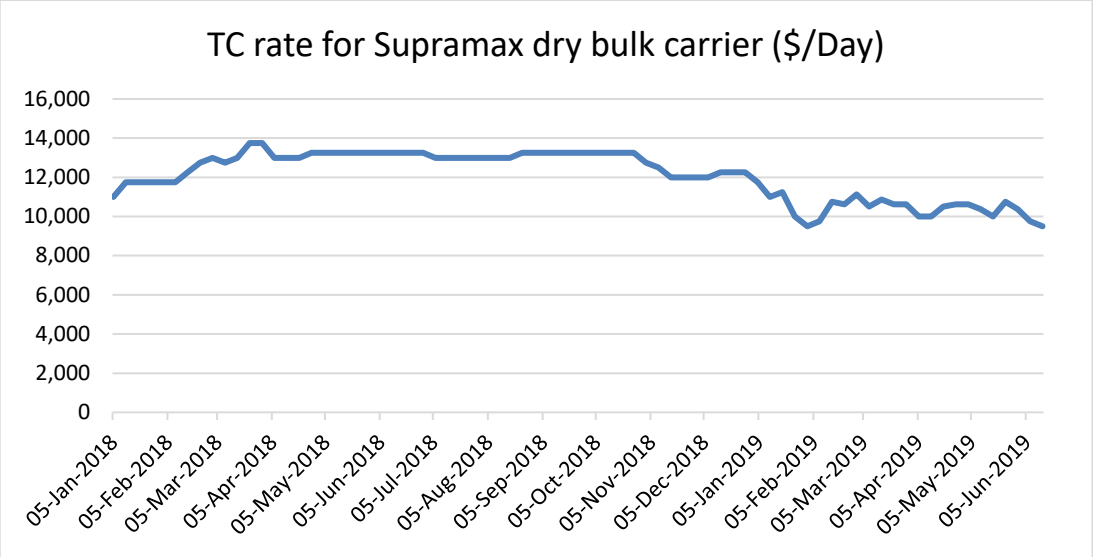

Figure 13 – TC rate for Supramax dry bulk carrier from 2018 to 2019
Source: Clarksons SIN

However, the new buyers can only consume small amount of soybean. As the soybean harvest in winter in the Northern Hemisphere, it's quite hard for the US to find such a large soybean importer like China. With so many soybeans unable to sell, the time charter rate for Supramax decreased again since October.

In December, as the Trade Talk was held between the two countries on 2nd December, a truce of the trade conflict was expected. However, the truce didn't take place and the time charter for the Supramax continued going down.

At the beginning of 2019, with the impact of the swine fever and the import tariff, the rate for Supramax decreased sharply and reached the lowest at the end of January. The postpone of tariff alleviated the tension between the two since February. With the increase of US and Argentina soybean exported to China, the time charter rate for Supramax was expected to rise. Nevertheless, the soybean trade halted due to the large

amount of soybean imported before the tariff came into force in March.

Chapter 5 Comparison between the US-EU trade conflict and the Sino-US trade conflict on agricultural products

The US-EU trade conflict happened in the 1980s was targeting at agricultural products. Thus, in this chapter, it is chosen as an example for comparative research with the Sino-US trade conflict on the impact to the dry bulk shipping market as the two trade conflicts both aimed at agricultural commodities.

5.1 Overview of the US-EU trade conflict on agricultural products

5.1.1 Process of the US-EU trade conflict on agricultural products

The trade conflict between the US and the EU started from the beginning of the 1960s. Since 1945, Western Europe has always been the largest exported agricultural products market for the US. However, as soon as the EEC[32] was founded in 1957, the Common Agricultural Policy was carried out and tariff was imposed onto agricultural products from the US in order to protect the agriculture development within the EEC, which caused the burst of the famous Chicken War in November, 1964.

The EEC countries on one hand applied trade barriers to defend the agricultural products from the US. On the other hand, the agriculture of the EEC member countries grew fast and the productivity not only met the demand of their own countries, but also had a large surplus for export. Besides, the government of the member states subsidize

[32] EEU: European Economic Community
EEU was a regional organization which integrated member states in economic affairs.

the farmers to support the agriculture. The productivity of wheat grew from about 19 quintal/hectare in the 1950s to over 31 quintal/hectare in the 1970s. The EEC began to compete with the US in the agricultural product market. In 1983, the EEC became the 3rd largest country in exporting wheat.

During the period of the trade conflict on wheat, there was an oversupply on agricultural products worldwide. Thus, the EEC and the US started scrambling for the market in the third world countries.

In 1977, the International Dairy Agreement and the International Bovine Meat Agreement were signed to keep the agricultural trade stable, but the agreements were quite useless. In 1982, the agricultural trade conflict became fiercer. Both sides levied tariff on agricultural products such as macaroni, fruit can, wine and sugar.

5.1.2 Impact on the international trade

After the World War II, the US had a competitive advantage in producing agricultural products, and the European countries originally imported the agricultural products from the US. As the development of the agriculture in the European countries, the member states of the EEC started to export their agricultural product surplus and became a rival of the US in agricultural products. The US-EU trade conflict on agricultural products took place mainly because both sides were contesting for the world's agricultural market.

In order to deal with the oversupply of the agricultural products, both the US and the EEC were making efforts on agriculture protectionism and subsidizing domestic

farmers, which made the price of the agricultural products very low, and jeopardized other agricultural products exporters' interests, especially those exporters who didn't have such strong economic power to provide such amount of subsidies.

5.1.3 Impact on the dry bulk shipping market

The situation of the US-EU trade conflict on agricultural products became worse in the 1980s, and it to some extent affected the shipping market. The changes are concluded in Table 9.

a) Demand side

Since 1980, the global grain exporters started to have rich harvest for executive years and there was an oversupply in the grain sector. Therefore, the global grain exporters, for instance, the US and also the new developed grain exporter – the EEC – begin to search for new market for exporting grain. In 1980, the average length of haul and the ton-miles per DWT of the dry bulk carriers increased. There was a great expansion in grain trade, and thus the volumes for grain which means the tonnage carried by per DWT by dry bulk carriers rose in 1980.

In 1981, the global economy stagnated, and the total seaborne trade decreased by 5.1%. However, the grain trade grew modestly by 3%. Unlike 1980, bad climate led to poor impact to the harvest of grain in some main import countries, such as China, India and USSR. The US cut the grain export to the USSR due to political reasons, so the USSR imported grains from EEC, Far East and South America. Thus, both the export tonnages of grain and the average length of haul increased. To estimate the ton-miles,

the total number of ton-miles per DWT was reduced by 6.6%, but ton-miles of the dry bulk carriers rose by 6% due to the expansion seaborne trade in grain. The ton-miles per DWT fell by 3.5% which was the first decline since 1980.

The world still suffered from the recession in economy in 1982, and the grain produced by the EEC harvest in 1982. Both sides set strict import restrictions on agricultural products, and the US-EU trade conflict on agricultural products reached its most serious condition. Though there was better harvest, the world's seaborne grain trade slightly decelerated by 2%. This decelerating trend continued in 1983, but the speed of decreasing was slowing down and a slight upturn occurred in the last quarter of 1983. In 1984, dry cargo had reached its highest volume of 1.9 billion MT since 1980 and the increasing rate was about 10% over 1983. Besides, the total ton-miles of 1984 rose by 3.8%.

The main dry bulk cargoes experienced a decrease in 1985 after the growth in 1984. To estimate the ton-miles of the grain seaborne trade, there was a sharp reduction by 10.1% over ton-miles of grain trade in 1984. The US was exploring new grain markets in the following years. It is said that declining trend had a close relationship with the change of the grain trade pattern from the US Gulf to Japan. The trend of reduction in grain seaborne trade continued in 1986 because of the same reason, but the condition of the grain trade was getting better in the last quarter of 1986.

Dry bulk cargoes grew by 1.3% in 1987 mainly because the strong impetus in the grain trade shipments. A large amount of grain was imported by China and the USSR. Therefore, the volume of grain seaborne cargo carriage increased by 9.6%, and the

ton-miles rose by 0.8%. The trend kept up till 1988, owing to the grain not only in the route from the US Gulf to Japan, but also to Venezuela. 1989 is the 4th executive year for the demand of the seaborne trade growth. The major dry bulk sector increased, but the growth rate was much slower than the previous year, which was 2%.

The global seaborne trade continued to expand in 1990, achieving a 3% growth over the previous year. Seaborne grain trade expanded, with a rise in tonnage and ton-miles by 1.6% and 2.7% respectively. Since then, the seaborne grain trade was developing in a quite moderate pace.

b) Supply side

Not only did the demand side of the shipping market went up, the supply side also responded to the increasing of the grain expansion. Because of the great rising trend in the dry bulk trade sector, the order of dry bulk carriers of 50,000 DWT to 80,000 DWT, which was mainly designed for grain, bauxite, coal and other minor bulks grew.

There was a boom in the supply for dry bulk carriers in 1982 due to the large amount of order placed in 1980. Since additional newbuildings were added to the fleet when the dry bulk sector reduced, the tonnage balance in the world dry bulk carriers turned even worse in 1982. In the following year, the supply tonnage of the dry bulk carriers increased by 6%, which led to the situation of oversupply in the shipping market. Thus, the average volume of laid-up tonnage grew from 6.4 million DWT to 17.8 million DWT in order to keep a better balance of the dry bulk sector.

The whole shipping market was still in an oversupply condition in 1983, however, the

supply side dropped by 16.6%, which made cargo volumes expand much quicker than fleet tonnages.

In 1985, there was a 1.4% decline in the world's fleet size over 1984 because of the increase in the ship scrapping market. The surplus tonnage continued to decrease after 1984 and reduced by 5.5% compared to the reduction rate in 1984, which showed a sign of improvement in the supply side. The improvement went on in 1986 since the scrapping of dry bulk carriers was accelerating. However, the surplus still remained 20.7%.

As the growth in the seaborne grain trade in 1987, shipowners seemed to prefer to have their dry bulk fleet being reactivated rather than laid-up. Therefore, the total surplus tonnage went on decreasing by 5.8% over 1986. The situation remained almost the same in 1988. The problem of oversupply still existed and the supply of global dry bulk carriers increased by 3.5%. Since the number of grain shipments grew, most of the increase in the supply came from the reactivated tonnages. The world fleet had 2.5% surplus tonnages, and 7.6% of the surplus tonnages were in dry bulk sector in 1989.

In 1990, the global fleet expanded by 3.2% due to the growth in new deliveries and the reduction in ship scrapping. The newbuilding dry bulk carriers was increasing and the surplus tonnage of dry bulk carriers reached 8.4%, which was higher than the figure in 1989.

c) Freight market

The freight market depends on the equilibrium between the shipping demand and

supply. Both the growth of average haul and transport volume may make the freight market more prosperous. Besides, less surplus of tonnage improve the freight market.

In the freight market, with the amplified grain for transportation, the rates for the dry bulk carrier rose substantially. The freight rate for heavy grain from the US to the Western Europe reached a high of $33.5/MT to $30.5/MT in 1980.

Because of the poor harvest in certain regions and the increase in ton-miles in the dry bulk sector, the level of the charter rate of dry bulk cargo was even higher than that of tanker cargo in 1981. But the following year, the dry bulk sector went downward. The average charter rate and trip charter rate decreased by 48% and 18% respectively.

The average freight rate of the dry bulk sector rose again in 1983, but it fluctuated every month. The grain rate grew in mid-1983, went down in autumn and increased by the end of 1983. Thus, the freight rate of the vessels carried such commodities – Handysize and Panamax dry bulk carriers – fluctuated with the rate of the shipments.

The dry bulk sector was quite depressed in 1985. With the impact of route changed in the seaborne grain trade, the freight rate of grain was about $14/MT at the beginning of 1985, and rose to over $16/MT at the beginning of the second quarter. However, it reduced to only $10/MT thereon and ended in about $13/MT in December.

1986 was the second executive year affected by the route changing of seaborne grain trade. The rate of grain fell by 11.6% annually compared to the previous year. In the first half of 1986, the freight rate continued falling to $6.35/MT in August, but increased since September to over $12.55/MT and decreased again in December to

less than $11/MT.

The dry bulk freight market grew steadily to $18.25/MT in the first 5 months in 1987. With a slight fluctuate in the following months, it finally reached the highest in December to $19.6/MT, which is a 43.6% growth over 1986. Besides, the average dry bulk tramp time charter rate was 61.9% higher than the rate in 1986. The rising trend continued in 1988, and the impetus of freight rate growing in the grain sector was the 75% increase of grain from the US Gulf to Venezuela.

In 1989, the freight rate reached its highest in 10 years record. All cargo sectors increased except grain. There was 36% difference between the highest rate and the lowest rate of seaborne grain from the US Gulf to China in 1989, which indicates that the freight rate fluctuated a lot.

The average dry cargo freight rate was only 2.9% less than that of 1989, but it was much more volatile than previous years. The dry bulk cargo freight rate had a strong start and the reduction in summer time was greater than usual.

In conclusion, the change in the freight market can be described as shown in Table 9 and Figure 14.

Table 9 – Different stage and change in the shipping market during the US-EU trade conflict

Stage	Period	Change in the shipping market
1	1980-1983	It was the worst period in the US-EU trade conflict on grain trade. The Dry Cargo voyage charter rate index went downward to only 145 in August, 1982. And the annual highest freight rate on the traditional seaborne grain route from the US Gulf to East Asia decreased to

		$15.75/MT in 1983, which was even lower than the lowest freight rate in other years during 1980s.
2	1983-1986	The pattern of global grain trade started to change since 1983 due to the fierce grain trade conflict between the US and EEC. Both sides were searching and competing for new grain markets. Therefore, the grain trade between the US and EEC reduced, while boomed in other routes (viz. US Gulf – East Asia, US Gulf – Venezuela and South America – USSR). When the seaborne route for grain trade reshuffled, the dry cargo voyage charter rate index fluctuated between 150 to 200 during this period because of the adjustment.
3	1986-1990	The global grain trade was again coming to a better situation after 3 years of route adjustment. The lowest freight rate on the route of US Gulf to East Asia rose to over $23/MT and the highest rate rose to over $30/MT. The dry cargo voyage charter rate index increased from to about 200. The significant increase in new markets in East Asia enhanced the whole rate for global grain trade.

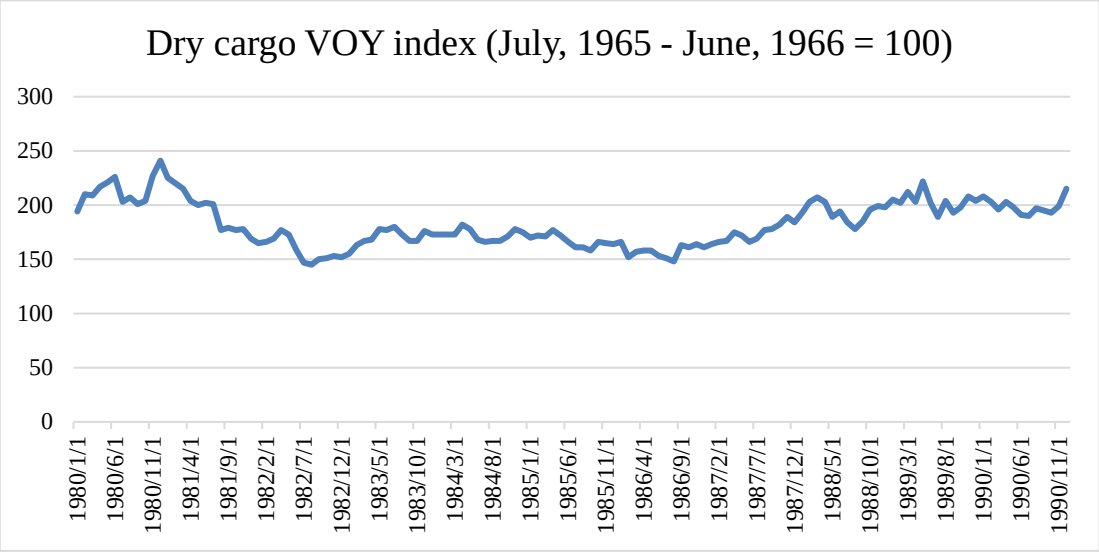

Figure 14 – Dry cargo voyage index

Source: Clarksons SIN

5.2 Comparative research between the Sino-US trade conflict and the US-EU trade conflict on agricultural products

Similarities and distinctions are found via comparative research between the US-EU trade conflict and the Sino-US trade conflict, and the similarities and distinctions are summarized in Table 10.

5.2.1 Similarities of the two trade conflicts

a) Oversupply dry bulk shipping market

During the US-EU trade conflict on agricultural products in the 1980s, oversupply remained the most serious problem in the dry bulk shipping market. Before the 1980s, the demand and supply reached equilibrium in 1973 and 1974. Nevertheless, the surplus tonnage occurred since 1977 and since then the shipping market was under the pressure of oversupply. During the 1980s, the surplus tonnage reached its highest in 1983 to 1985 for the dry bulk sector due to the continuing supply of the new dry bulk vessels delivered in 1983 and 1984 or the growth of laid-up or idle dry bulk carriers. Although the balance for demand and supply in the dry bulk shipping market slightly improved year by year with the rise in dry bulk shipping demand or increase in dry bulk carrier scrapping, there was still 7.6% surplus tonnage in the dry bulk shipping market in 1989.

In the Sino-US trade conflict, the problem of oversupply was also serious, particularly after the global financial crisis. Before the crisis, the market experienced the lowest surplus tonnage in 2004 and the surplus capacity grew since then. In 2009, the world

fleet experienced a 57% growth over the previous year. The growth was mainly caused by the great number of new deliveries before 2008. Steady surplus into an already oversupply shipping market made the situation worse. The increasing of the capacity continued until 2018, but the growth rate gradually slowed down year by year. Though the surplus of tonnage was decreasing, the oversupply still existed in the market.

Briefly, both of the Sino-US trade conflict and the US-EU trade conflict suffered from an oversupply problem.

b) Agricultural products from the US

Agricultural products were involved in both trade conflicts. The US is always a strong exporter of agricultural products, and has involved in both trade conflicts as a major grain seller.

In the US-EU trade conflict, grain (viz. wheat, barley, corn, etc.), fruit (banana), dairy products (viz. butter, cheese, etc.), meat (viz. chicken, beef, pork, etc.) and other agricultural products (viz. wine, sugar, fruit can, etc.) were involved in the trade conflict. However, only grain and part of the other agricultural products can be carried by dry bulk carrier, and the others should be transported in containers vessels or reefers.

It’s the same with the agricultural products involved in the Sino-US trade conflict. The commodity carried by dry bulk carrier involved in the trade conflict is soybean and sorghum.

Different from industrial products, agricultural products have their own characteristics.

The trade of agricultural products is always affected by the seasonality. For example, the grain exported by the US Gulf reaches the lowest point in a year in summer, and climbs to the highest in autumn in the northern hemisphere. As both trade conflicts are related to the US agricultural products exported, it's quite feasible to make comparative research between the two.

c) Change of the trade route

Although the original agricultural product trade route was different between the two trade conflicts, exporters and importers tried to look for new market in both trade conflicts, and thus the trade routes changed in both cases after the conflict took place.

In the US-EU trade conflict in 1980s, as the development in agriculture in Western Europe, which used to be one of the traditional markets for the US, trade routes changed. The US diverted the shipping routes to Asia. Since the Cold War between the US and the USSR, the US ceased exporting grain to the USSR, which gave the EEC opportunity to export grain to the USSR.

In the Sino-US soybean trade, the amount of US soybean exported to China ranked second among the total soybean trade of China, but China now intended to import more proportion of soybean from those South American countries, especially from Brazil, and reduce the proportion of import from the US. On the other hand, the US is going to export its agricultural products to other countries (viz. Japan, South Korea in Asia; the EU member countries; Mexico and Argentina in North and South America, etc.) rather than to China.

d) Shipsize

In the US-EU trade conflict, shipsize of the impetus of growth in the global grain trade was about 50,000 DWT to 80,000 DWT, which indicated that the supramax and panamax dry bulk carriers were more popular for the carriage of grain.

In the Sino-US trade conflict, the US the second largest soybean exported countries to China. Similar to the situation during the US-EU trade conflict, it is said that the Panamax and Supramax bulk carriers will be mostly affected by the change in grain trade route[33]. Actually, the Supramax were affected most.

5.2.2 Distinctions of the two trade conflicts

a) EEC and China

EEC was the largest traditional grain exported market after the World War II. As the agriculture developed in Western Europe, there was a surplus of agricultural products to export to other countries. The reason why US-EU trade conflict took place wasn't simply the market in the Western Europe contracted. The EEC was also competing with the US in the trade market. Briefly, the role of EEC varied from a grain importer to a grain exporter.

Different from the EEC, with great population to feed, China always relies on the agricultural products imported from Brazil and the US. The tariff on US soybean and

[33] Source: Clarksons SIN

sorghum let grain traders in China buy more agricultural products from South American countries instead of the agricultural products from the US. China is still the largest importer of grain in the world. It's the route of the import that changes. With pressure from soybean and sorghum farmers, the US is also actively finding new markets to export the soybean.

e) Speed of progress

It took over 10 years for the US-EU trade conflict on grain to be settled by signing agreements in trade negotiations in 1992, and the trade conflict was temporarily resolved.

However, the progress of the Sino-US trade conflict was far quickly than expected. It has been about one year since the soybean import tariff took place, both sides have entered the stage of negotiation.

Now it's clear that both sides showed the intension of negotiation and cooperation during the G20 Summit held in Osaka. Nevertheless, since many uncertainty issues in various perspectives exist between China and the US, the negotiation seems still long-lasting.

f) Point of conflict

In the US-EU trade conflict, the conflict was between two grain exporters. The point of conflict focused mainly on fighting for the world new grain export markets. While in the Sino-US trade conflict, the dispute was between the exporter and the importer.

China applied tariff to reduce the import of the US soybean. Moreover, there was a 4-month gap before the import tariff implementation. Therefore, the soybean traders hurried up importing soybeans in the 4 months for storage, which made the charter rate for Supramax increased from March to July.

5.3 Results of the comparative research

5.3.1 Summary

The following Table 10 is a summary of the similarities and distinctions of the comparative research between the Sino-US trade conflict and the US-EU trade conflict.

Table 10 – Similarities and distinctions concluded form the comparative research

Similarities	Market condition	Oversupply dry bulk shipping market
	Shipments	Agricultural products from the US
	Changes in trade pattern	Routes shifting
	Shipsize	Supramax
Distinctions	Countries/Regions	China: importer EEC: exporter
	Progress	Sino-US: 1 year and still ongoing US-EU: over 10 years
	Points of conflict	Sino-US: the intention for China to reduce import from the US US-EU: US and EU competing for the same grain market

5.3.2 Impact on the dry bulk shipping market

From the perspective of the world's maritime transport, although the dry bulk

commodities account for more percentage in terms of ton-miles, there is more impact on the manufactured goods stacked in containers in terms of species. Since the demand for agricultural product lacks elasticity, the total demand for those agricultural products doesn't change too much, while the flow of the agricultural products varied a lot.

It has been discussed in 4.3.1 that the impact on the international shipping market isn't obvious, but the impact exists in certain shipping segment market, especially the Supramax segment. The routes for Supramax dry bulk carriers change together with the agricultural products.

Since the Sino-US trade conflict is still on-going and many unstable issues exist between the two countries, the future trend of the trade conflict remains uncertain and may depend on the negotiation between China and the US.

5.3.3 Prediction to the future market

To predict the future development for the Sino-US trade conflict according to the comparative research. As the future of the negotiation between China and the US isn't sure, the conflict can be divided into two scenarios.

a) Scenario A

In the scenario A, suppose that the relationship between the two countries greatly improves and China may no longer imposes so much tariff on the US soybeans.

Therefore, after experiencing several months of shipping routes adjustment, the

demand for US soybeans will begin to rise in a short time. More Supramaxes will be employed on the US Gulf-China and Transpacific routes due to the rising soybean demand. Because the balance in the Supramax segment improved, the rate for Supramax will soon boom.

On the other hand, the Brazil soybean had a good harvest in the 1st half of this year and sold in a competitive price, but it may not remain competitive in the 2nd half of the year because of the harvest of the US soybean. The Brazil soybean may not remain competitive after removing the high tariff levied on the US soybeans. The import of soybean from both countries may become 50-50. The rate for Supramaxes will be strong in the 1st half of the year and lower in the 2nd half because of the longer haulage on the ECSA-China route.

It still takes time for the dry bulk shipping market to adjust and recover from the conflict, however, the progress would be much faster than the US-EU trade conflict and the situation will get better easily.

b) Scenario B

In the scenario B, suppose that the conflict between the two countries is still intense, and the tariff on soybean still exists.

The rate for Supramaxes on US Gulf-China route will remain low, but the ECSA-China route may continue to increase in the 1st half of the year because of the route shifting. The soybean imported from Brazil in 2018 increased 23% over 2017 (see Figure 6 and Figure 7), this situation may be the same in 2019. Nevertheless, more uncertainties

remain compared to scenario A. For instance, whether the export of Brazil soybean is enough to support the soybean demand in China, and whether importing so much Brazil soybean may threat the food security of China, etc.

In the 2nd half of the year, the Brazil soybeans are sold out and the US soybean comes into the market. There's a risk on whether China has enough substitutes for soybeans to provide enough protein. Besides, as the soybean traders in China come to buy Brazil soybean, the price of the Brazil soybean soared and may become as expensive as the US soybean after import tax. It's a dilemma for both the traders to choose whom to buy soybeans from, and Supramax owners to decide which route to operate their vessels.

Since there're so many uncertainties remain in scenario B, the situation will be certainly tougher and more challenging than scenario A if the tension between China and the US continues.

Chapter 6 Recommendations

In Chapter 6, recommendations are given to both participants in the dry bulk shipping market and government to deal with the Sino-US trade conflict.

6.1 Measures for participants in dry bulk shipping market

6.1.1 Soybean traders in China

The Anti-dumping and Countervail Investigation towards the US sorghum started on February 4th, 2018 and halted about two months later on April 18th, 2018 by the Chinese Government, because the policy raised the cost of the Chinese sorghum consumers[34]. Besides, the volume of soybean imported is about 94 million MT by Chinese consumers, which is far more than the sorghum imported[35].

Due to the above two reasons, we focus on mainly the measures soybean traders would choose to avoid the impact by the Sino-US trade conflict.

a) Other soybean importing channels

Finding other soybean importing channels has been the easiest measure to consider to settle the soybean trade problem in a short-term. The soybean traders have raised the import from the South American countries to fill the gap caused by the US soybean

[34] Source: MOFCOM Announcement No.44 of 2018 on Terminating the Anti-dumping and Countervailing Investigation against Imports of Grain Sorghum Originating in the United States, Ministry of Commerce People's Republic of China

[35] Source: United States Department of Agriculture Foreign Agricultural Service – Custom Query

import.

Brazil is the world's largest soybean exporter to China, who has exported 66.1 million MT of soybeans in 2018, which accounts for about 76% of the total soybean imported in China. According to statistics in 2018, the total volume of Brazil soybean exported was 84 million MT, in which Brazil exported 66.1 million MT soybeans to China, and the remaining 17.9 million MT soybeans were exported to other countries.

Nevertheless, the soybean traders in China have to pay attention to two points.

As China imported more and more soybeans from those South American countries, the price of the Brazil soybeans and Argentina soybeans grew swiftly. The price of the Brazil soybean is nearly the same as the US soybean with 25% tariff. Moreover, there is a phenomenon that Brazil and Argentina export almost all the domestic produced soybeans at high price, whereas import cheaper soybeans from the US for local consumption, and benefit from the price spread.

On the other hand, China will depend too much on the soybean from the South American soybeans, which may become a risk to the food safety. Since there is no other country has such large soybean production as Brazil, the US and Argentina do, food safety remains a problem hard to solve. China's domestic soybean production is about 16 million MT, but the consumption is over 110 million MT. It's impossible for China to increase the domestic production for soybean in a short-term, so finding substitutes for soybean may become a better solution.

b) Substitutions

China imports soybean mainly for seed oil expression and livestock feeding industry. And professionals and experts are searching for substitutes having the same features and use as soybean does. Oilseeds such as tiger nut, corn, peanut, cottonseed, rapeseed, etc. have similar functions and can be applied as soybean substitutes.

Soybean used to be a very cheap way to feed animals and gain protein. However, as the price of soybean grew due to the trade conflict, it's quite possible to implement other oilseeds instead of soybeans.

6.1.2 Shipowners

Soybean is mainly carried by the Supramax vessels. Due to the Sino-US trade conflict on soybean, there remains uncertainties in the soybean trade. Different Supramax owners operate their vessels in different directions.

a) Soybean on other routes

As winter in the Southern Hemisphere, which is the harvest season for the Brazil and Argentina soybeans, is coming, more soybeans are carrying from the ECSA. Because of the better harvest than 2018 in South America, Argentina is planning to raise its export to China. Supramax owners may shift their vessels from the US Gulf to the ECSA. The export of Brazil soybean grows very fast, more Panamax vessels may be operated on the route from South America to China. Though the transport by Supramaxes from the US Gulf to China shrunk, the US soybean exported to Japan and South Korea is increasing. Therefore, Supramax owners may also choose to operate their vessels on the route from the US Gulf to Japan or South Korea. As the tension

between the US and China is alleviated, the soybean contracts signed in the 2nd half of 2019 may rise. Supramax owners may still stay in the US Gulf-China route.

b) Other commodities

The shipowners may operate their vessels on other routes carrying commodities other than soybean, for example barley from Canada, sorghum from Ukraine, bauxite from Guinea, nickel ore from the Philippines, spodumene and copper concentrate from the Lithium Triangle (Bolivia, Chile and Argentina), etc.

Because of the bad harvest in Australia, Supramax owners may shift their vessels to Argentina for wheat and to Canada for barley instead of Australia. These routes benefit the ton-miles. Besides, Ukraine has become the largest sorghum country to China, so Supramax owners may choose to carry sorghum from Ukraine instead of US. But it may hurt the ton-miles compare to the US-China route.

For the major bulk, there has been a smooth bauxite flow from Guinea to China of 54 million MT in 2018, and the number is anticipated to grow because a new mine of 20 million MT is to be built. It’s a long haul from Guinea to China, which benefits the ton-miles. Moreover, the demand for aluminum is increasing in the automobile industry, especially on electronic car and lightweight car. Therefore, it’s an opportunity for Supramax to carry bauxite.

For the minor bulk, nickel ore and spodumene can be carried by Supramax.

China is now the world’s largest nickel ore importer and accounted for 85% of the

global total nickel ore import. China used to import nickel ore from Indonesia, but due to the ban on the unprocessed minerals by Indonesia Government, now China imports nickel ore from the Philippines. In 2018, the volume of nickel ore imported from the Philippines was 30.8 million MT. Thus, Supramax owners may operate their ships carrying nickel ore on the Philippines-China route.

China is also the world's largest spodumene importer. China used to import spodumene from Australia. However, due to the limited resources of Australia, China started to import more spodumene from the Lithium Triangle, where contains the world's 75% Li storage. Besides, the route from South America to China is a long-haul route, which may become a potential market for Supramax.

However, for a Supramax owner used to transport grain, the sudden change to ship those minor dry bulk commodities is a tough job required more knowledge in mineral shipping and more cost. Moreover, once the soybean between the two countries rebounds, in order to turn to transport soybeans again, the Supramaxes have to have a hold washing process before carrying agricultural products, which cost shipowners extra money and time.

6.2 Measures for the government

6.2.1 Resolutions for China

Despite changing the soybean trade direction and purchasing more soybean from South American countries, the Chinese Government decided to enlarge the soybean planting area by 40%. Since 2016, the Chinese Government carried out the planting

structure adjustment policy of decreasing the corn planting and increasing the soybean planting. To encourage the planting of domestic soybean, the Chinese Government raised the subsidy for soybean to 200-210 RMB/hectare, while reduced the subsidy for corn to 100 RMB/hectare. However, to enhance the goal of the soybean planting may cost much time and money.

6.2.2 Resolutions for the US

The US soybean had a very good harvest at the beginning of this year, but the US farmers suffered from the problem of export. The price of the US soybean dropped sharply so the US Government started to subsidize the soybean farmers. Nevertheless, the farmers prefer gaining money from selling soybeans rather than subsidy from the Government, as the profits gain from the soybean trade market is sustainable for their development, while the money from the Government may cease at any moment, which is quite unstable.

In conclusion, the Sino-US trade conflict has brought problems to both countries. The above solutions can be applied if the trade conflict goes on, but learning from the history, the best solution for both sides is to cease the Sino-US trade conflict via negotiation.

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