Dependence analysis of Sino-US trade

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Abstract: The growing interdependence between the economies of China and the United States is of great significance to the world economic structure. This paper analyzes the trade scale between China and the United States, the Sino-US trade structure, and the interdependence of Sino-US trade. It explores the effects of Sino-US trade dependence on trade between the two countries, predicts the development trend of Sino-US trade wars, and points out the countermeasures to optimize Sino-US trade behavior.

1. Current status of Sino-US trade relations

1.1. Analysis of the scale of Sino-US trade

In 2015, China overtook Canada and became the largest trading partner of the United States. After the 2008 economic crisis, the trade volume between China and the United States declined in 2009, but it quickly began to pick up again in 2010. The strong economic complementarity between China and the United States is the basis for promoting the continuous development of bilateral trade relations. We must strive to establish a new type of big-nation relationship that is free from conflict, non-confrontation, mutual respect, and win-win cooperation.

Table 1. Annual data on US goods trade for 2009-2015

| Year Project | Total import and export value | Total export value | Total import value | Trade balance |
|--------------|-------------------------------|-------------------|-------------------|--------------|
|              | One hundred million U.S. dollars | growth rate (%) | One hundred million U.S. dollars | growth rate (%) | One hundred million U.S. dollars | growth rate (%) | One hundred million U.S. dollars | growth rate (%) |
| 2009         | 26613.39                       | -23               | 10560.43           | -18           | 16052.96                     | -26               | -5492.53                     | -37.7            |
| 2010         | 32476.79                       | 22                | 12784.95           | 21.1          | 19691.84                     | 22.7              | -6906.89                     | 25.8             |
| 2011         | 37485.32                       | 15.4              | 14825.08           | 16            | 22660.24                     | 15.1              | -76835.16                    | 13.4             |
| 2012         | 38822.27                       | 3.6               | 15457.03           | 4.3           | 23365.24                     | 3.1               | -7908.21                     | 0.9              |
| 2013         | 39086.53                       | 0.7               | 15795.93           | 2.2           | 23290.6                      | -0.3              | -7494.67                     | -5.2             |
| 2014         | 40330.79                       | 3.2               | 16205.32           | 2.6           | 24125.47                     | 3.6               | -7920.15                     | 5.7              |
| 2015         | 38130.19                       | -5.5              | 15049.14           | -7.1          | 23081.05                     | -4.3              | -8031.9                      | 14               |

Source: China Statistics Bureau, US Department of Commerce

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### Table 2. 2009-2015 China-US trade in goods

| Year | Project | Total trade volume | Exports to the United States | Imports from the United States | difference |
|------|---------|--------------------|-----------------------------|-------------------------------|-------------|
| 2009 |         | 2982.00            | 2208.00                     | 774.00                        | 1434.00     |
| 2010 |         | 3853.4             | 2730.7                      | 1122.70                       | 1608.00     |
| 2011 |         | 4465.82            | 3244.53                     | 1221.29                       | 2023.24     |
| 2012 |         | 4846.74            | 3517.77                     | 1328.97                       | 2188.80     |
| 2013 |         | 5210               | 3684.3                      | 1525.8                        | 2158.50     |
| 2014 |         | 5551.2             | 3960.8                      | 1590.4                        | 2370.40     |
| 2015 |         | 5583.9             | 4096.5                      | 1487.4                        | 2609.10     |

Source: China Statistics Bureau, US Department of Commerce

As shown in Tables 1 and 2, the total US merchandise trade in 2015 was 3.8 trillion US dollars, down 5.5% from the previous year. Of this total, exports were 1.5 trillion US dollars, down 7.1%; imports were 2.3 trillion US dollars, down 4.3%; the deficit was 800 billion US dollars, up 1.4% year-on-year. The total import and export trade between China and the United States are 558.39 billion US dollars, accounting for 14.7% of the total US global trade. In 2015, the total volume of US goods trade was lower than that of China ($39.569 billion), with 143.882 billion US dollar s. China ranked the world's largest trader of goods. Among them, the export value of US goods is lower than that of China ($22,749.50 billion), which is 770.036 billion US dollars; the import value of US goods is higher than that of China's 626.154 billion US dollars.

### 1.2. Analysis of Sino-US trade structure

### Table 3. The composition of major US exports to China from 2011 to 2015

| Year Project | 2011     | 2012     | 2013     | 2014     | 2015     | 2016     | 2017     |
|--------------|----------|----------|----------|----------|----------|----------|----------|
| Export value | Export   | Export   | Export   | Export   | Export   | Export   | Export   |
| Proportion (%) | Proportion (%) | Proportion (%) | Proportion (%) | Proportion (%) | Proportion (%) | Proportion (%) | Proportion (%) |
| Transportation Equipment | 13293 | 0.13 | 15551 | 0.14 | 23037 | 0.19 | 27259 | 0.22 | 26420 | 0.23 |
| Electronics | 22349 | 0.22 | 21222 | 0.19 | 23576 | 0.19 | 24498 | 0.20 | 25029 | 0.22 |
| Plant Products | 12198 | 0.12 | 17444 | 0.16 | 16728 | 0.13 | 17493 | 0.14 | 14029 | 0.12 |
| Chemical Products | 10041 | 0.10 | 9476 | 0.09 | 9754 | 0.08 | 9678 | 0.08 | 9815 | 0.08 |
| Base metal and products | 10864 | 0.10 | 9714 | 0.09 | 9089 | 0.07 | 7894 | 0.06 | 5968 | 0.05 |
| Optical table medical equipment | 5756 | 0.06 | 7059 | 0.06 | 7691 | 0.06 | 7556 | 0.06 | 7979 | 0.07 |
| Plastic, rubber | 6089 | 0.06 | 5719 | 0.05 | 5692 | 0.05 | 5959 | 0.05 | 5596 | 0.05 |
| Mineral products | 3861 | 0.04 | 4430 | 0.04 | 4485 | 0.04 | 3520 | 0.03 | 3446 | 0.03 |
| Other | 14568 | 0.14 | 15271 | 0.14 | 19447 | 0.16 | 13523 | 0.11 | 13556 | 0.12 |
| The total value of merchandise exports | 103939 | 1.00 | 110590 | 1.00 | 124024 | 1.00 | 121736 | 1.00 | 116186 | 1.00 |

Source: US Department of Commerce, Global Economic Data
Table 4. Composition of major US imports to China in 2013-2015

| Year | Project                                                                 | 2013            | 2014            | 2015            |
|------|-------------------------------------------------------------------------|-----------------|-----------------|-----------------|
|      | Import value (million dollars)                                          | Proportion (%)  | Import value (million dollars) | Proportion (%)  | Export value (million dollars) | Proportion (%)  |
|      | **Transportation Equipment**                                            | 10836           | 0.02            | 12847           | 0.03            | 14547           | 0.03            |
|      | **electronics**                                                         | 217985          | 0.49            | 232340          | 0.50            | 236997          | 0.49            |
|      | **Light industry products such as shoes and umbrellas**                 | 20248           | 0.05            | 20365           | 0.04            | 20999           | 0.04            |
|      | **Chemical Products**                                                   | 12688           | 0.03            | 13716           | 0.03            | 13634           | 0.03            |
|      | **Base metal and products**                                             | 21696           | 0.05            | 24234           | 0.05            | 24869           | 0.05            |
|      | **Optics, watches, medical equipment**                                  | 10820           | 0.02            | 11759           | 0.03            | 12733           | 0.03            |
|      | **Plastic, rubber**                                                     | 18202           | 0.04            | 19617           | 0.04            | 18696           | 0.04            |
|      | **Textiles and raw materials**                                          | 40680           | 0.09            | 41183           | 0.09            | 42618           | 0.09            |
|      | **Furniture, toys, miscellaneous products**                             | 48304           | 0.11            | 50746           | 0.11            | 55697           | 0.12            |
|      | **other**                                                               | 38989           | 0.07            | 39849           | 0.09            | 41091           | 0.07            |
|      | **Total value of merchandise exports**                                  | 440448          | 1.00            | 466656          | 1.00            | 481881          | 1.00            |

Source: US Department of Commerce, Global Economic Data

The following is data analysis of the main commodity composition of China's imports and exports in recent years, and compares and analyzes the annual import and export value and the proportion of the value in the total. As can be seen from Tables 3 and 4, the main commodities that the United States has exported to China in the past few years have remained almost unchanged, mainly transportation equipment, mechanical and electrical products, plant products, chemical products, and so on. In 2015, the total US trade volume of major commodities to China was US$116.186 billion, a decrease of US$7.49 billion from 2014, a year-on-year decrease of 6.1%. In the same period, the United States imported goods from China's main commodities amounted to 481.881 billion US dollars, an increase of 15.225 billion US dollars from 2014, an increase of 3.2%. Between 2011 and 2014, the US's most exported goods to China were mechanical and electrical products, and the export value of the goods accounted for about 20% of the total value of exports. From $13,293 million in 2011, it surged to $26,420 million in 2015, an increase of 98.8%. Imports of major commodities in the United States have risen regarding mechanical and electrical products, transportation equipment, etc., and most of the imports of major commodities in China are on the rise; the United States has reduced imports of plastics and rubber. As China pays more and more attention to and adjusts its export structure, it may cause the growth of the export volume of labor-intensive industries to slow down. At the same time, China has also increased its support for the technical and information industries.
2. The characteristics of Sino-US trade interdependence

2.1. Sino-US trade volume continues to grow

In this information age, the two countries have increased in investment, consumption, and import and export, and the formation of new economic cooperation organizations such as the United States’ accession to the Trans-Pacific Partnership Agreement and the establishment of the Asian Infrastructure Investment Bank have prompted more trade opportunities between the United States. In 2015, the total import and export trade of the United States was 381.319 billion US dollars, and the total import and export volume of China and the United States accounted for 14.6%. In the same year, the total value of US trade exports was US$150.914 billion, and total exports to China accounted for 9% of its total exports. The total import value of the United States is 2,308.15 billion US dollars, and the total import value to China accounts for 17.7% of the total import value.

2.2. Sino-US trade is structurally complementary

In recent years, the products imported from China by the United States are mainly electromechanical products, furniture toys, textiles and raw materials, and base metals and products. The products imported from the United States in China are mainly transportation equipment, electromechanical products, and plant products. Moreover, the US mechanical and electrical products from China are as high as 50% of the total of the top ten commodities in Sino-US trade. It can also be seen that the technological differences between China and the United States in this field are not very large. On the whole, the technical content of US imports from China is lower than that of Chinese imports from the United States. The dependence on foreign trade between China and the United States can also be clearly shown.

2.3. Negative factors in Sino-US trade interdependence

The outstanding features of China and the United States in terms of trade and capital openness and open structure are: China imports mainly US interdependent products, while the United States mainly imports China's final products; in terms of cross-border capital flows, China The amount of US government bonds and corporate bonds held by investors far exceeds the number of Chinese securities held by US investors. This feature is a typical portrayal of China's export-oriented development strategy. The degree of openness and the open structure determined by this feature increase the sensitivity of the Chinese economy to the interdependence of the Chinese and American economies.

3. The trend of Sino-US trade interdependence

3.1 Advancement of the China-US Bilateral Investment Protection Agreement Process

Due to the increasing dependence on China-China trade, both China and the United States are working hard to negotiate through the Sino-US bilateral investment protection agreement. This negotiation is conducive to the cooperation and exchanges between Chinese and American companies. By mutual benefit, Achieve a win-win goal to promote the adjustment of the industrial structure of the two countries. Once this agreement is completed, it will become a milestone in Sino-US economic and trade cooperation and will bring the two countries' economies to a higher level. Private enterprises and public enterprises in China are gradually moving towards the big market of the world, and the United States will become one of the most willing markets for Chinese companies to invest.

Now China's economy is also adjusting, and measures for industrial upgrading are also underway. Bilateral investment agreements will open up new situations for Sino-US cooperation and investment, thus promoting China's economic reforms. During the "Thirteenth Five-Year Plan" period, China's service industry developed its service industry with the development concept of "innovation, coordination, green, openness, and sharing". This series of measures can not only promote the development of China's domestic service industry but also promote the service trade between China and the United States, so that the service trade between China and the United States will develop on a better track.

3.2. Proposal for new big power relations

China has put forward the idea of building a new type of relationship between major powers. The
United States is also gradually accepting this concept and establishing a new economic structure with China under the trend of the new era. China and the United States should pay attention to communication, exchanges and cooperation in the economic aspect. The United States must treat China with an equal attitude. At the same time, China must respect and take into account the legitimate concerns of the United States. In order to build a new-type relationship between China and the United States, China and the United States need to adapt to each other's global strategies. If China and the United States can take cooperation and mutual benefit as the core, handle the crisis of management and control between China and the United States, and discover the common interests between the two countries, and complete the transition from the "community of interests" to the "community of destiny". Create a new type of big power relationship based on mutual respect, cooperation and win-win.

3.3. China's economic restructuring to promote Sino-US trade

In the context of the global economic surplus, China's economy is facing the problem of overcapacity and insufficient effective demand, and China's industrial overcapacity is particularly prominent. In this case, China has made structural adjustments to ensure economic growth. Moreover, during the "Thirteenth Five-Year Plan" period, the source of China's economic growth will shift, and industry can no longer bear the main force of economic growth. The contribution of investment to the economy will be improved, but consumption will be the main factor driving economic growth.

The change in China's economic structure can greatly reduce trade friction between China and the United States. In particular, China and the United States will promote the process of bilateral investment agreements between China and the United States. This move will greatly promote trade cooperation between China and the United States, promote direct investment by US companies in China, and learn advanced from China to the United States. The management and advanced technology provide opportunities.

4. Optimize the strategy of trade with the United States

4.1. Strive to build a new open economic system and form a new pattern of opening up to the outside world

Since the reform and opening up, China has become more open to the outside world. Reforming the management model of foreign investors in the negative investment list, and creating new ways for China's border opening and inland opening mode, can promote China's development of a higher level open economy process. As China's openness deepens, the trade friction between China and the United States will be reduced to a certain extent, and it can promote trade between China and the United States and promote trade relations between the two countries.

4.2. "One Belt, One Road" strategic measures

China's “One Belt, One Road” concept is not only meeting the needs of countries around the world for investment and development, but also promoting economic growth in China and other countries. Sino-US economic and trade relations are standing at a new historical starting point. The implementation of the "One Belt, One Road" strategy is inseparable from the cooperation with the US economy. The implementation of China's "One Belt, One Road" is not "expansion" or "challenging" the United States, but It is hoped that the implementation of this project will benefit the global economy. If China and the United States can jointly grasp the opportunities brought about by the Belt and Road Initiative, this will have a far-reaching impact on improving Sino-US trade relations and will also promote the economic development of China and the United States.

4.3. Development of online business

"Internet +" is to apply the Internet to various industries, and to combine the two to make the two fits together and create a new development ecology. It represents a new social form, that is, giving full play to the optimization and integration of the Internet in the allocation of social resources, integrating the innovation results of the Internet into the economic and social domains, and enhancing the innovation and productivity of the whole society. A new form of economic development with a broader Internet-based infrastructure and implementation tools. Through the application of "Internet
+, Sino-US trade is more convenient and creates new business models.

References
[1] Editor-in-Chief Wang Yusi, Great Power Relations [M]. Beijing: CITIC Publishing House, 2015, 159–199
[2] Sun Xiaohang. Analysis of US Trade Policy towards China [D]. Master's Thesis of Jilin University, 2013.10–25
[3] Gu Shan. What is the most concerned about Chinese people in 2000 [J]. Jiangxi Reform, 2000, 1:4–6
[4] Zhang Guangkai. Xi Jinping: China and the United States should go ahead without the ancients and the new big power relations road.
[5] Jia Xiudong. The "Olympics" in the spring of 2016 will stimulate the new vitality of Sino-US relations.
[6] Wang Zhengqi, Cui Dong. XV. Promote the construction of a new type of big power relationship with cooperation and win-win as the core [N]. People's Daily, 2016-5-11(9)
[7] Zhang Xingping, Yang Rongguo. A review of the relationship between China and the United States in the study of new major powers [J]. Modern International Relations, 2014, 17:1~2
[8] Liang Yong, Dong Yan. China's response to the Sino-US bilateral investment agreement negotiations [J]. International Economic Review, 2014, 3: 55~56
[9] Guo Jizhong. Strategic Thinking of Comrade Xi Jinping's Important Speeches [J]. Political Engineer Guide, 2014, 3:1~4
[10] Zhang Zhanbin, Zhou Yuehui. Analysis and thinking on some issues of the new normal of China's economy [J]. China Economic and Trade Guide, 2015, 1:2
[11] Tang Wei. Seeing the development of China's service trade in the past ten years after entering the WTO [J]. China Economic and Trade Guide, 2010, 19: 19–20