

Research on Manufacturing Trade between China and the United States: Based on Global Value Chain

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Abstract: Based on the perspective of global value chain, this paper completely decomposes the export trade volume of manufacturing industries with different technological content between China and the United States, so as to study the trade situation of manufacturing industries between China and the United States. The study finds that the proposed manufacturing relocation in the United States is contrary to the economic logic, which leads to the increase of manufacturing costs and the decrease of consumer purchasing power in the United States. On the contrary, it will hinder economic growth. As a victim of the trade deficit, the U.S. government accuses China of essentially trying to achieve other political and economic goals. For China, the stock of the US-China trade deficit in goods cannot be changed in the short term. It is required to seek breakthroughs in increments to "climb" the global value chain to higher technology and knowledge intensive production links, processes and service processes.

1. Introduction

In the face of the difficult recovery of the global economy and weak growth, the anti-globalization trend of thought has spread all over the world, and trade protectionism has risen. The U.S. government takes the loss of jobs caused by the U.S. trade deficit in goods as its starting point, advocating that the trade deficit in goods only benefits Trading partners, but undermines the recovery of the U.S. economy and advocates radical trade protectionism.

China is the largest source of trade deficit in the United States, according to statistics from the United States Department of Commerce. In 2017, the US-China trade deficit in goods was 347.04 billion US dollars. The US mainly exported transport equipment, mechanical and electrical products, plant products and chemical products to China, accounting for 65.5% of total exports. The US mainly imported mechanical and electrical products, furniture toys, textiles and raw materials and base metals and products to China, accounting for 74.5% of total imports. The U.S. -China trade deficit in goods is dominated by imbalances in manufacturing trade, and the conflict is highlighted by the loss of jobs among manufacturing workers in the United States. Whether trade protectionism can promote the economic growth of the United States and whether the trade balance between China and the United States represents the trade benefit relationship, this paper will analyze it from the perspective of global value chain, and put forward China's corresponding suggestions for Trump's trade protectionism policy.

2. Literature Review

With the development of economic globalization and the deepening evolution of international division of labor, the mode of global factor allocation with transnational corporations as the carrier has led to the innovation of fragmentation production, processing trade and other production and trade modes. The product value chain has been continuously extended between different countries and regions, and the world economy has entered an era of global value chain with division of labor in production processes and trade in intermediate products as the main part. Baldwin et al.(2015) believes that the value-added of products comes from many countries and regions, and the trade gains are not only obtained by the countries or regions that are the final exporters under the traditional trade statistics. Zhang Lei and Xu Lin (2013) believe that the traditional "state-made" has

been transformed into "world-made", and the phenomenon of "surplus" in China's international trade statistics is serious.

Marcel et al. (2015) decomposed and calculated the added value of the final product from two aspects of labor and capital, believing that the ability of capital and high-tech labor to benefit from the global value chain is increasing. Wang Zhi et al. (2015) differentiated and calculated international trade flows according to the source of value, final destination and channel of absorption, and established a one-to-one decomposition framework between traditional international trade statistics and value added of global value chain. Li Xin and Xu Dianqing (2013) measured the value added of trade between China and its trading partners, pointing out that the "statistical illusion" of developing countries exporting large quantities of high-tech products conceals the fact that they obtain lower division of labor benefits.

3. Empirical analysis of manufacturing imbalance between China and the United States

3.1 Analysis Method

This paper refers to the decomposition framework of export trade proposed by Lin Feiting and Zhang Wei (2017), that is, total exports can be decomposed into $E = DVA + RDV + FVA + PDC$. DVA is the domestic added value that is absorbed by other countries. RDV is the value added of domestic return, that is, domestic value added is first exported to foreign countries, but implicitly returned to domestic imports, and ultimately consumed at home. FVA is the added value of other countries in the domestic production and export products. Since there are many cross-border intermediate inputs, such as the production of one intermediate input and another intermediate input, the production does not constitute the ultimate demand of any country, while the traditional trade flow statistics model targeting the final product will lead to the customs authorities to record all transnational transactions, that is, this part is recalculated in the total trade statistics and should be eliminated. And it is recorded as PDC.

3.2 Data Sources

The data used in this paper are from the World Input-Output Database (WIOD). The latest published WIOD database covers 43 countries and 56 departments, with a period of 2000-2014. The manufacturing industry covers 19 industrial sectors. This paper decomposes the bilateral trade flows of two countries manufacturing industry under the framework of global value chain accounting, and classifies 19 industrial sectors involved in manufacturing industry in WIOD database according to the classification of manufacturing technology level by Eurostat. On the basis of classification, the export trade volume of different technology content between China and the United States is completely decomposed to judge the trade profit of manufacturing industry between China and the United States.

3.3 Bilateral Manufacturing Trade between China and the United States

Based on the decomposition of bilateral trade between China and the United States in high and medium-high technology manufacturing Industry, the following characteristics are found:

(1) In terms of export trade volume, due to the impact of the international financial crisis, the volume of high and medium-high technology manufacturing trade exported by the United States to China changed in 2009. From 2000 to 2008, the volume of high and medium-high technology manufacturing trade increased year by year, reaching an all-time high of \$10.684 billion in 2008. After that, it shrank for five consecutive years until it recovered to 10.494.8 billion US dollars in 2014. China's high and medium-high technology manufacturing exports to the United States increased steadily. The international financial crisis only weakly affected exports in 2009, and continued to rise since 2010, reaching 139.367 billion US dollars in 2014.

(2) In terms of trade proportion, the proportion of high and medium-high technology manufacturing trade from the United States to China in total manufacturing trade from the United States to China has declined year by year, from 33.6% in 2000 to 15.0% in 2014. Correspondingly,

China's high and medium-high technology manufacturing exports to the United States account for an increasing proportion of China's total manufacturing exports to the United States year by year, rising from 34.5% in 2000 to 41.8% in 2014. That is to say, the proportion of American high and medium-high technology manufacturing products in bilateral manufacturing trade between China and the United States has declined, whereas China's manufacturing exports to the United States mainly consist of high and medium-high technology manufacturing products. The import and export volume of high and medium-high technology manufacturing industry between China and the United States is also extremely unbalanced. Taking 2014 as an example, the trade volume of high and medium-high technology manufacturing industry exported by the United States to China is 10494.8 billion US dollars, accounting for 7.0% of the bilateral trade volume of high and medium-high technology manufacturing industry between China and the United States. China's high and medium-high technology manufacturing exports to the United States amounted to \$139.367 billion, accounting for 93.0% of the bilateral trade volume of China-US high and medium-high technology manufacturing industry, and the trade surplus of China-US high and medium-high technology manufacturing industry was \$128.8727 billion.

(3) By decomposing the bilateral trade flows of high-tech manufacturing between China and the United States, the proportion of DVA in exports (85.5% in 2014) is higher than that in China (75.0% in 2014). That is to say, the trade profit of U.S. exports of high-tech manufacturing products is higher than that of China. In terms of value-added of other countries, the FVA ratio of the United States (8.6% in 2014) is lower than that of China (22.4% in 2014). That is, the value-added of high-tech manufacturing products exported by China agglomerates the production of other countries, while the value chain of high-tech manufacturing products exported by the United States is dominated by the United States, the core technology is owned by the country, and the value-added degree of other countries' participation is low. In terms of returning domestic value added included in exports, the proportion of RDV in the United States (3.4% in 2014) is higher than that in China (0.4% in 2014). That is to say, American high-tech manufacturing multinationals migrate their production chains and sell them back to the domestic market through international division of labor. The ratio of RDV reflects the situation of home country and host country. As the home country of high-tech manufacturing multinational corporations, the United States still has some unmet domestic consumption demand. As a result, exports include value added returned to China. As the host country of high-tech manufacturing multinational corporations, China's domestic consumption demand is directly met by multinational corporations, so the proportion of value added returned to China is very low.

China and the US bilateral trade in low and medium-low technology manufacturing Industry presents the following characteristics: (1) In terms of export volume, the export volume of low and medium-low technology manufacturing industries of China and the United States has increased year by year, and the trade imbalance has also increased year by year. In 2014, for example, US exports of low and medium-low technology manufacturing to China amounted to US\$12,254.4 billion, accounting for 12.1% of bilateral trade of low and medium-low technology manufacturing between China and the United States. The trade volume of low and medium-low technology manufacturing industry exported by China to the United States is 89.087.4 billion US dollars, accounting for 87.9% of the bilateral trade volume of low and medium-low technology manufacturing industry between China and the United States. China mainly exports to the United States in the trade of low and medium-low technology manufacturing industry between China and the United States.

(2) By decomposing bilateral trade flows of low and medium-low technology manufacturing industry between China and the United States, China's DVA ratio is close to that of the United States in terms of domestic added value in exports, that is, the trade profit gap between China and the United States in low and medium-low technology manufacturing exports is not large. In terms of value added of other countries included in exports, the ratio of FVA between China and the United States is close, reflecting that both low and medium-low technology manufacturing industries in China and the United States have a higher degree of participation in global value chain sub-engineering. Among them, the proportion of FVA in China shows a decreasing trend year by

year, which reflects that China has achieved a "rise" from the traditional "low-end embedding" in low and medium-low technology manufacturing industry, which coincides with China's economic development.

4. Conclusion and policy recommendations

4.1 Conclusion

From the perspective of global value chain, it can be concluded that Trump's claim that the US-China trade deficit caused job losses in domestic manufacturing industry is not valid, and that the relocation of manufacturing industry is contrary to economic logic.

(1) High-tech manufacturing products are the main manufacturing products exported by China to the United States. The proportion of DVA of China's high-tech manufacturing industry is lower than that of the United States in the same period. The export profitability of China's high-tech manufacturing industry is lower than that of the United States, and the proportion of FVA of China's high-tech manufacturing industry is the highest. Combining the proportion of intermediate and final products in exports, it can be concluded that China's high-tech manufacturing industry has the highest degree of participation in global value chain sub-engineering. However, it participates in the division of labor in the middle and low-end links of the global value chain. It is a production activity focusing on the processing and assembly of high-tech manufacturing industry. It mainly relies on cheap and abundant labor to realize the export of the industry sector, but it has not realized the real high-tech.

(2) The manufacturing products exported from the United States to China are mainly high-tech manufacturing products, whose value chain is dominated by the United States, whose core technology is mastered by the United States, and whose export profitability is strong. After the outbreak of the international financial crisis, in order to revive the domestic economy, the United States relocated some production links of high-tech and medium-high-tech manufacturing sectors back to the mainland, and the product value chain retreated, which led to the decline of DVA and the same decline in export earnings. This phenomenon is explained by economic logic. The capital and technology factor endowment of the United States is abundant. The development of high-tech industry and service industry with domestic concentrated resources conforms to the factor endowment theory. The decline in the proportion of domestic manufacturing employment in total employment in the United States is also a long-term trend, reflecting that with the development of high-tech, the automation level of manufacturing industry is constantly improving. The economic policy of manufacturing relocation obviously violates the theory of comparative advantage and the law of industrial structure development, resulting in higher production costs of domestic goods in the United States. For domestic consumers in the United States, purchasing "American goods" needs to pay more expensive prices. Ultimately, American consumers subsidize the manufacturing industry and increase the cost of living of low-and middle-income Americans.

4.2 Policy Recommendations

The United States frequently accuses China of being the "victim" of the trade deficit, demanding that China pay a price. The trade disputes caused by the trade deficit between China and the United States are actually intended to achieve other political and economic purposes. For China, the stock of the US-China trade deficit in goods can not be changed in the short term. We can seek a breakthrough in increment, from relying on the traditional "low-end embedding" model of demographic dividend to relying on the release of institutional dividends to relying on the development strategy of the global value chain, to a higher technology and knowledge-intensive production links, processes and service processes to "climb" the global value chain.

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