

# Current Situation Analysis and Countermeasures of the Commodity Structure of Sino-German Bilateral Trade

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**Abstract:** The year 2022 will mark the 50th anniversary of the establishment of diplomatic relations between China and Germany. China-Germany trade has always been highly complementary, and with China's continuous promotion of industrial structure upgrading in recent years, the competition in China-Germany bilateral trade has become more and more intense, and the intra-industry trade has been developing. Examining the trade structure of Sino-German bilateral trade can clearly and intuitively understand the development of Sino-German trade. In this context, this paper mainly distinguishes the development stage of China-Germany trade and summarizes the current situation of import and export volume of sub-industries of China-Germany trade by combing and analyzing, and comes to the conclusion that the degree of intra-industry trade between China and Germany has been strengthening, but China still does not have an advantage in the production of capital- and technology-intensive industrial products, and finally puts forward the corresponding countermeasures on the basis of this foundation.

**Keywords:** Sino-German trade; current development; commodity structure

## 1. Introduction

Sino-German trade has been in a constant state of flux over the past 100 years, with the economic and political relations between the two countries stabilizing and making great strides due to the reunification of China as well as the two German states.

Before the establishment of diplomatic relations between China and Germany (before 1972), the two countries had not yet formally established diplomatic relations, so bilateral trade was in its infancy. The period between the establishment of diplomatic relations between China and Germany (1972) and the reunification of Germany (1990) was the initial stage of exchange. With the establishment of diplomatic relations between China and Germany on October 11, 1972, an ambitious plan for bilateral trade and economic relations between China and Germany was developed. Starting with the German reunification in 1990 and continuing until China's accession to the WTO in 2001, economic and trade relations between China and Germany developed. Since the reunification of Germany in the 1990s and the gradual liberalization and expansion of its internal market, Germany's demand for imported goods has grown rapidly, leading to a significant increase in China's exports to Germany and a further improvement in the structure of bilateral trade between China and Germany.<sup>[1]</sup>

At the beginning of the 21st century, China's accession to the World Trade Organization in 2001, the substantial reduction of tariffs and the further opening of the national trade market led to the dramatic expansion of foreign trade, at the same time, the international financial crisis and the European debt crisis as well as the outbreak of the New Crown Epidemic in 2019, the bilateral trade relations between China and Germany have been affected to varying degrees, accompanied by the concurrent emergence of shocks and crises, there are new opportunities for development. At this stage, China's awareness of industrial upgrading gradually increased, and the structure of goods was further optimized, gradually shifting from labor-intensive products to capital- and technology-intensive products, and shifting from relatively significant complementary goods to trade in goods with both complementarity and competition.

## 2. Analysis of the current situation of the commodity structure of bilateral trade between China and Germany

This section analyzes and discusses the commodity structure of China-Germany bilateral trade from four aspects: firstly, to look at the overview of China-Germany bilateral trade in the 22 years from 2000 to 2022 as a whole, and analyze the trend of its change; secondly, to analyze the difference between the export value of each industry according to the principle of classification of SITC; secondly, to analyze the difference between the share of export value of each type of product under the SITC two-digit classification principle of primary products and manufactured products; lastly, to select machinery and transport equipment SITC7, which has the highest share of Chinese exports to Germany, for detailed analysis, and to calculate the difference of the share of each type of product under SITC two-digit. Thirdly, according to the classification principle of primary products and industrial manufactured products in SITC, analyze the difference in the proportion of export value between primary products and industrial manufactured products; finally, select the machinery and transportation equipment SITC7, which accounts for the highest proportion of China's export value to Germany, to be analyzed in detail, and calculate the export value of each type of products under the two-digit number of SITC, so as to reflect the main commodities of the export value between China and Germany.

### 2.1. Current development of bilateral trade in import and export volume between China and Germany

After 50 years of trade development, the current stage of trade between China and Germany is also noteworthy. Bilateral trade between China and Germany has developed rapidly and reached a high growth rate between 2000 and 2022. The bilateral trade volume in 2022 is 11.5 times higher than that in 2000, reaching 227.625 billion dollars. China's exports to Germany will reach US\$116.227 billion in 2022, 12.5 times higher than in 2000, and imports from Germany will reach US\$111.398 billion in 2022, 10.7 times higher than in 2000. This figure shows that import and export trade between China and Germany has grown significantly since China's accession to the WTO in 2001.

First of all, the growth rates of exports and imports of bilateral trade between China and Germany are roughly the same, but the growth rate of trade varies greatly from year to year. The overall growth rate of trade between the two countries declined markedly in 2008 and 2009, reflecting the large global impact of the international financial crisis and the European debt crisis. At the same time, the rapid recovery of import and export growth rates between China and Germany in 2010 indicates that the efforts of the two countries to jointly counteract the negative impacts of the deteriorating trade environment have achieved significant results.<sup>[2]</sup>

Secondly, the outbreak of the new crown epidemic in 2019, to the world's traditional trade have caused a heavy blow to the bilateral trade between China and Germany, for example, China's import growth rate in 2019 was -1.16%, the export growth rate, although relative to imports is less affected, but also fell to 2.97%, the total trade growth rate has also fallen from 9.36% before the epidemic to 0.58%. It can be seen that China-Germany trade is affected by the new crown epidemic, but its imports are more affected than its exports; however, the growth rate of China-Germany trade rebounded to 22.50% in 2021, indicating that the two countries are fighting against the epidemic and restoring the economy and trade with remarkable effect.

Although the overall trend of the growth rate of import and export between China and Germany is basically the same, there was a difference of 27.21% and 35.71% in 2001 and 2005 respectively, which indicates that the growth rate of import and export between the two countries is not consistent in some years.

Figure 1 is bar charts reflecting the trend of the current situation of China-Germany trade. In the past 22 years, the highest growth rate of China's exports to Germany was 53.38% in 2003, which was 69.07% higher than the lowest growth rate in 2009; the highest growth rate of China's imports from Germany was 47.98% in 2003, which was 16.56% higher than the lowest growth rate in 2005; and the highest growth rate of China's imports from Germany was -16.56% higher than the lowest growth rate in 2005, which was -65.53%. This suggests that the growth rate of China's exports to Germany is somewhat more volatile than the growth rate of China's imports from Germany.<sup>[3]</sup>

On the whole, the growth rate of bilateral trade between the two countries during the 20 years selected from the data shows a decreasing trend, except for 2009, which was affected by the economic crisis, and from 2012, the growth rate fluctuates roughly between -10% and 10%, which reflects that

the growth rate of bilateral trade between China and Germany is slowing down, and its development is subjected to a greater degree of resistance, and it is necessary for the two countries to further cooperate to optimize the structure of trade and to fully exert the potentials of trade. It is necessary for the two countries to cooperate further to optimize the trade structure and give full play to the trade potential.



Source: UN Comtrade database

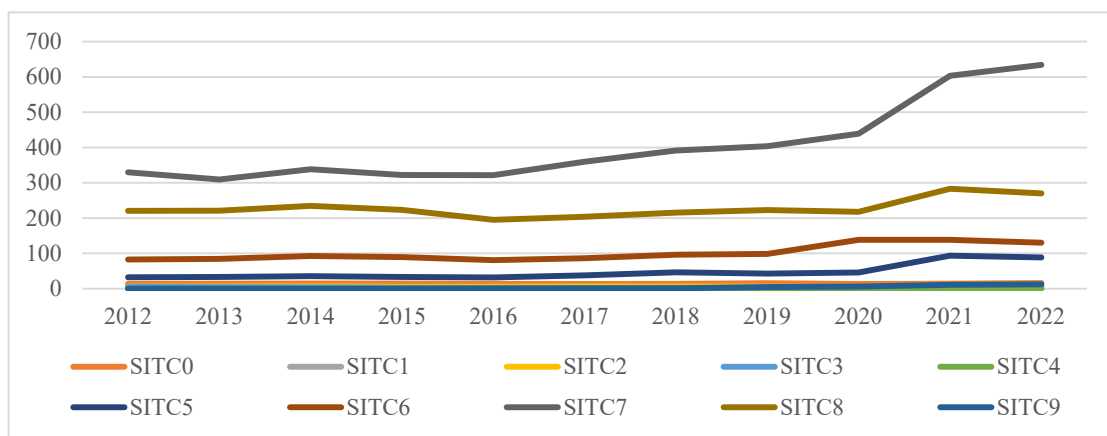
Figure 1: Status of China's Trade with Germany, 2000-2022 (in billions of dollars)

From the viewpoint of the data affected by the epidemic in the past three years, the trade volume briefly recovered in 2020, and the bilateral trade developed rapidly in 2021, with the large volume rebounding to 22.50%, and then declining to -3.18% in 2022, which can be seen that due to the epidemic and the differences in the epidemic prevention policies of different countries, the development of bilateral trade between China and Germany is relatively unstable, and in the context of the gradual relaxation of epidemic prevention policies and the restoration of the pre-epidemic normal level. In the context of the gradual relaxation of the epidemic prevention policy and the return to the normal level before the epidemic, China and Germany need to strengthen the mechanism construction to promote the recovery of trade and make the development to a higher level.<sup>[4]</sup>

**2.2. Export value of Sino-German SITC by sector**

This part refers to the Standard International Trade Classification (SITC), Third Edition, Level 1 Classification Mode: SITC0-SITC9 goods. The statistical data of China's export value with Germany according to SITC by industry from 2012 to 2022 is shown in Figure 2.

From the perspective of factor endowment, the subsequent analysis will all be based on the classification principle that the SITC-5 category of products and the SITC-7 category of products are capital- and technology-intensive products, and the labor-intensive products are SITC-6 and SITC-8.



Source: UN Comtrade database

Figure 2: Sino-German SITC Exports by Sector, 2012-2022 (US\$ billion)

As shown by the results in Figure 2, the category with the highest value of China's exports to

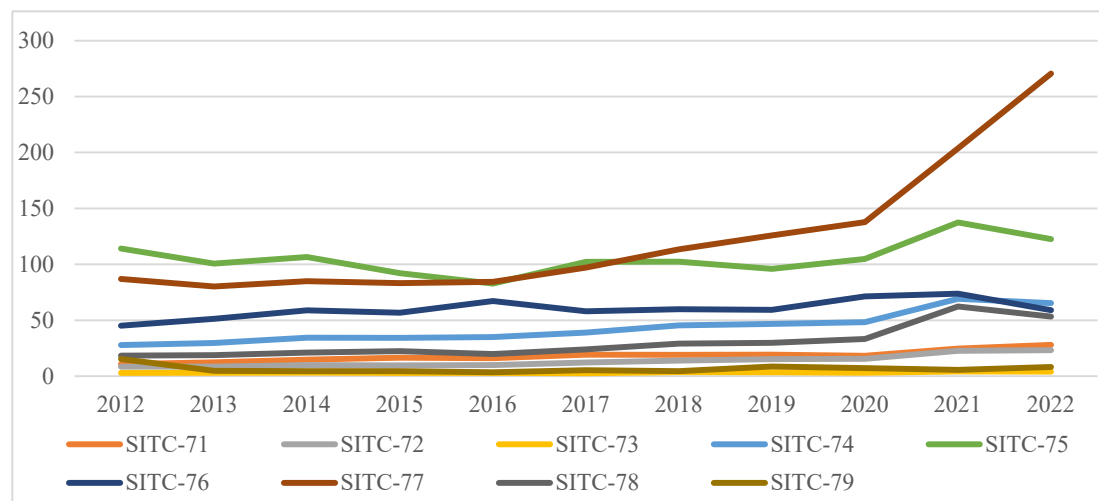
Germany is SITC-7 machinery and transport equipment in the category of capital- or technology-intensive industrial products, the second is SITC-8 miscellaneous manufactured goods in the category of labor-intensive manufactured goods, the third is light textiles, rubber, and metallurgical and mineral products and manufactured goods in the category of SITC-6, and the fourth is chemicals and related products in the category of SITC-5. The total exports of these four categories accounted for nearly 95% of China's exports to Germany, illustrating the fact that Chinese and German exports are mainly concentrated in the two major categories of labor-intensive and capital- or technology-intensive products, while the total exports of primary products and unclassified products are relatively low. [5]

### 2.3. Structure of Sino-German trade in primary commodities and manufactured goods

The commodity structure of bilateral trade between China and German exports from 2012 to 2022 can be summarized as follows: First, the trade volume of primary products has not changed much in this decade, but the proportion of the total trade volume it occupies is gradually decreasing, which indicates that, for primary products, Germany's demand for China is slowly decreasing. Secondly, the category of industrial manufactured goods occupies the vast majority of the proportion in the bilateral trade between China and Germany, and is an important mainstay of the bilateral trade between China and Germany. Thirdly, the proportion of labor-intensive commodities and capital- and technology-intensive commodities in manufactured goods is basically the same, but the overall trade volume of capital- and technology-intensive commodities is higher than that of labor-intensive commodities, and at the same time, the proportion of capital- and technology-intensive commodities exported in trade is increasing year by year, which shows that in the category of capital- and technology-intensive commodities, the demand of Germany for China is increasing slowly, and it also reflects that the competitiveness of China is gradually improving. It also reflects the fact that China's competitiveness is gradually improving.

### 2.4. Product structure of SITC-7 exports from China and Germany

China's exports to Germany accounted for the highest share of category 7 machinery and transport equipment for more detailed analysis, calculate the SITC two-digit under the export value of each category of products, the results are shown in Figure 3.



Source: UN Comtrade database

Figure 3: Product Structure of Sino-German Exports of Machinery and Transportation Equipment, 2012-2022 (US\$ billion)

From the analysis of Figure 3, the highest share is in the category of SITC-77 Electrical Machinery and Parts from 2012 to 2022, the second highest share is in the category of SITC-75 for Office and Automatic Data Processing Equipment, the third is in the category of SITC-76 for Telecommunications and Sound Recording and Reproducing Equipment, and the fourth is in the category of SITC-74 for General Industrial Machinery, Equipment and Parts. Among them, the export value of SITC-77 category of electrical machinery and parts has risen significantly, from \$8.694 billion in 2012 to \$27.061 billion in 2022, accounting for 42.7% of the total export value of SITC-7, which is the backbone supporting China's total exports to Germany.

Compared with 2012, it can be clearly concluded from Figure 3 that the export value of SITC-77 electrical machinery and parts category in 2020 increased steeply, which may be attributed to the fact that German automobile manufacturers and suppliers were active in the Chinese market and invested in the construction of production facilities or R&D bases during the epidemic shadow period. So Sino-German exports in areas such as electrical machinery increased rather than decreased during the epidemic. At present, the new crown epidemic in China and Germany has been well controlled, and is working to restore to the pre-epidemic trade status and level, the future of the two governments and enterprises to promote the trade of machinery parts goods, and strive to get rid of the impact of the epidemic.

After the above research and analysis of the current situation of the commodity structure of China-Germany bilateral trade, the following conclusions can be drawn:

Overall, the bilateral trade volume between China and Germany is on an upward trend, and both the total trade volume and the import and export volume have been growing steadily in the past 10 years. It shows that the trade relationship between China and Germany is getting closer and closer, the trade between China and Germany is getting more and more mature, and the industrial reform and upgrading is also quite effective.

The structure of primary products exported by China to Germany in the old trade pattern has been gradually changed, and according to the analysis of the commodity trade structure of primary products and industrial manufactured goods, it can be seen that the trade volume of primary products is gradually declining, and the important force of Sino-German trade at present is the trade of industrial manufactured goods.

At present, China's exports of capital- and technology-intensive commodities have not reached the role of the main force, although its production during the epidemic did not decrease but increased, but the development of mechanical products after the epidemic is still worthy of thought.<sup>[6]</sup>

### **3. Policy Recommendations for Optimizing the Commodity Structure of Trade between China and Germany**

According to the above analysis, at present the development trend of China and Germany is better, but the technical level of Germany as a whole is much higher than that of China, at this stage, the two countries still have a greater potential for the development of domestic trade within the industry.

#### ***3.1. Promoting diversified commodity development and industrial upgrading***

For China, it is necessary to further promote the diversification of goods traded in the bilateral trade between China and Germany and to utilize the complementary advantages of trade between the two countries; at the same time, it is necessary to increase the diversification of goods in order to satisfy domestic and foreign consumption demand, which is increasing with the average income level. Therefore, China currently also needs to continuously improve its technology level, increase the technological content of China's export goods, ensure the quality of China's export goods to Germany, and utilize its technological advantages and brand effect to promote the diversification of trade goods within the industry.

#### ***3.2. Adjustment of investment policies to promote bilateral investment between the two countries***

China's traditional advantageous industries have always been primary products and labor-intensive industries, and there is a gap with the old industrial powerhouse Germany, therefore, the two countries still have strong potential for development and cooperation in the field of investment. By strengthening the guidance of German investment in China, we can increase the high quality of German investment in China, and through direct investment, we can introduce German advanced technology and management mode to China, and promote the development of Chinese enterprises' management and operation.

#### ***3.3. Strengthening economic and trade exchanges between China and Germany***

Although China and Germany have different systems, there is no fundamental conflict of interests between them. The Chinese and German economies are highly complementary in terms of market, capital, research and development, and raw materials; there is great potential for cooperation in

electrical and electronic, automotive, machinery and equipment; and there are broad prospects for cooperation in service trade and digitalization. China should further promote the construction of a new development pattern and strive for high-quality development.

#### 4. Conclusion

Through the analysis of this paper, it can be found that the economic and trade relations between China and Germany are close and in a state of continuous development and change, but at the same time there are hidden problems of potential exploitation, the main conclusions can be drawn as follows:

First, since the reform and opening up of China-Germany bilateral trade has experienced many political and economic tests, the trade between the two countries shows strong complementarity, and there is a convergence of the trade structure of the two countries. With the rise of China's economy and the further adjustment of industrial structure, China's exports to Germany have further concentrated on capital- and technology-intensive commodities.

Secondly, there is still a need to optimize the commodity structure of China-Germany trade, which can be done mainly by increasing the diversity of commodities, promoting outward foreign direct investment and strengthening economic and trade exchanges between the two countries. Its optimization requires the transformation of China's own industrial structure to high-tech industries, and at the same time, outward foreign direct investment between China and Germany has a greater impact on the level of intra-industry trade in manufactured goods between China and Germany.

Standing at the node of 2023, the three-year New Crown epidemic has deeply affected the trade of all countries, but Sino-German trade has climbed to new heights amidst the epidemic, and the change in industrial structure has brought not only challenges, but also opportunities for innovation, and grasping the opportunities to improve the competitiveness of China's trade as a whole.

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