

Original Research Article

Sino-Russian Cooperation under Global Value Chain Reconstruction

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Abstract: Since the 1980s, a new international division of labor system characterized by the division of global value chains has gradually emerged. Later, under the influence of the international financial crisis, Sino US economic and trade friction, COVID-19 and other events, the trend of global value chain restructuring gradually emerged, which posed a serious challenge to many countries in the world to deeply participate in the international division of labor. In addition, in recent years, China Russia relations have maintained a healthy development momentum. This article explores how China and Russia can further cooperate and achieve mutual benefit and win-win in the current context through a systematic literature review, investigation, and analysis.

Keywords: Global value chain, Sino-Russian cooperation

1. Introduction

The Global Value Chains (GVCs) have become the most critical link in the world economic cycle. The financial crisis that erupted in 2008 brought many uncertainties to the global economy and triggered a series of problems, including shrinking market size, significant decline in marginal production of enterprises, and leading to the restructuring of the global value chain. Subsequently, the “the Belt and Road” initiative, Sino US trade frictions, the outbreak of global pneumonia and other factors directly or indirectly accelerated the restructuring of the global value chain.

For the two major developing countries of China and Russia, actively participating in the construction of the global value chain will be beneficial for economic and trade cooperation and development between the two countries.

2. Literature Review

2.1. Research on Global Value Chain Reconstruction

Gary Gereffi, a professor at Duke University in the United States, first proposed the concept of global commodity chains based on the value chain theory of management. ^[1] Although this theory revolves around the concept of goods for multinational corporations, it provides ideas for the future spatial layout of global value chains.

Gereffi (2001) proposed the concept of global value chain based on the global commodity chain. ^[2] This concept provides a method for studying the layout of production activities within the global spatial scope, while also deeply revealing the dynamic characteristics of the current world economic operation.

The fragmentation nature of the global value chain has encouraged the participation of different companies in different production stages. Some small and medium-sized enterprises can cooperate with transnational enterprises to enter the global market that may not be possible under the traditional production mode.^[3-5]

However, this does not mean that people in the global value chain will have an easy time, as the various competitions in the global value chain are often fierce. ^[5] In addition, Pomfret and Sourdin emphasize that participation in global value chains exacerbates inequality and volatility, but it does not necessarily mean that

non participation by countries would be better; The absence of global value chains has reduced economic growth.^[6]

Milberg & Winkler (2010) first explicitly proposed the concept and analytical framework of GVC refactoring of Global Value Chains. They analyzed GVC restructuring based on the phenomenon of trade collapse and recovery, dividing it into two forms: vertical and horizontal. And by verifying the changes in the trade structure of the United States, it was found that the manufacturing industry with medium technology was the most affected during the crisis between the United States and the European Union.^[7]

In a report published by the WTO in 2019, several scholars pointed out that the higher the technological intensity of a department, the more significant the increase in its global value chain activities. It is precisely because of this that many developing countries can utilize technological development to deeply participate in global value chain activities and improve their own economic and trade development. ^[8]

2.2. Research on Sino Russian Trade

In recent years, with the promotion of China's "the Belt and Road" initiative and the changes in the international situation, there have been many documents studying Sino Russian trade.

Liu Zhizhong (2017) analyzed the competitive advantages of various export commodities between China and Russia in the context of the "the Belt and Road" initiative through the revealed competitive advantage index, thus pointing out the direction of optimizing the trade structure between China and Russia. ^[9]

Vera Skvirskaja (2018) believes that the continuous increase in trade volume between China and Russia indicates a new stage of trade cooperation between the two countries, which further deepens and promotes China's trade status in Russia to be effectively improved. ^[10]

Olga Alexeeva (2018) proposed that the trade relationship between China and Russia is constantly deepening, and the cooperation between the two countries in financial investment, aerospace, and agriculture is gradually expanding. Due to the endowment advantages of China and Russia in labor and mineral resources, it means that the trade between the two countries is complementary. ^[11]

Tatiana M. Isachenko (2019) believes that "trade sanctions" have had a profound impact on the Russian economy. Tariff liberalization and accession to the World Trade Organization can have a positive impact on Russia's trade flows, and trade cooperation between Russia and the BRICS countries such as China will be more promising. ^[12]

Feng Yujun (2021) analyzed the cooperation between China and Russia in areas such as trade, energy, and investment in a market environment where trade protectionism is rising and regional trade competition is intensifying, and pointed out the key points for the balanced development of the economic and trade relations between the two countries. ^[13]

2.3. The Evolution of the Role of China and Russia in the Global Value Chain and the Manifestation of Global Value Chain Reconstruction

The development of the global value chain can be divided into three stages. The first stage was from the end of World War II to the early 1990s. The main manifestation is the establishment of branches by multinational corporations to achieve global distribution of their internal value. The second stage was from the mid-1990s to around 2018. This stage is mainly driven by technological innovation, marketization, and internationalization, with a focus on improving efficiency. The third phase begins in 2018. At this stage, the AI revolution, the Sino US trade war and the COVID-19 occurred one after another. Affected by this, the global value chain is

undergoing restructuring.

2.3.1. Changes in China's Role and Russia's Role

In the development of the global value chain, China's position is increasingly rising and constantly being impacted. Before World War II, the division of labor in the global value chain was centered around Europe and America. After the “World War II”, a global value chain division system with Europe, America, Germany and Japan as the first echelon and the “Four Asian Tigers” as the second echelon gradually formed. Since the 21st century, China's position in the global value chain division of labor has been increasingly elevated. With its factor endowments and comparative advantages in infrastructure, Chinese manufacturing has sold well worldwide, becoming the “world's factory”.

Before the upheaval in Eastern Europe and the disintegration of the Soviet Union, the Soviet Union mainly formed relatively independent trade modules with former European socialist countries and maintained limited trade exchanges with some European countries. After the disintegration of the Soviet Union, Russia's economy fell into chaos and its foreign trade was relatively sluggish. After Putin took office in 2000, the Russian economy gradually recovered and foreign trade entered a stage of rapid growth. After the Ukraine crisis, the United States and Europe increased their sanctions on Russia, and Russia began actively seeking to improve and strengthen political and economic ties with Asian economies, gradually forming an industrial chain layout that connects Europe and Asia.

2.3.2. Manifestations of Global Value Chain Reconstruction

Technological development trends are digitization, intelligence, and networking, that revolution has led to the growth of productivity, which has led developed countries to transfer their original outsourcing industries to their own countries. For example, in order to improve the quality of its products, Germany hopes to transfer the manufacturing process of its products to its own country through Industry 4.0 technology.

There are two main trends in the development of global industrial chains on Geographical pattern: firstly, vertical division of labor tends to shorten, reducing product production to a single multinational enterprise; Secondly, the horizontal division of labor tends towards regional clustering, which will lead to the production of various companies shrinking from all over the world to one region.

The integration trend in certain industries will strengthen in the future, thereby accelerating the formation of regional and localized value chains.

For the trend of industrial chain layout, “decentralized” refers to multinational corporations' ability to fully replicate all aspects of the industrial value chain, except for design and market, to the host country.” Centralized means that in the process of industrial transfer, only one or more links are participated in by the host country.

After the 2008 financial crisis, the spatial distribution of the world industrial value chain showed characteristics of accelerated dispersion and continuous concentration of production functions. Enterprises in emerging countries are moving towards higher industrial value chains due to the financial crisis.

3. Analysis of Sino Russian Trade Competition and Cooperation Relationship

3.1. Analysis of China Russia Trade Competitiveness

Hungarian economist Balassa (1965) first proposed the Explicit Comparative Advantage Index (RCA), which is used to measure the comparative advantage of a country's certain products. It refers to the proportion of a country's exports of a certain product to its total exports and the proportion of that product's exports in world trade to the world's total exports. The calculation formula is as follows:

$$RCA_{ik} = (X_{ik}/X_i)/(X_{wk}/X_w) \tag{1}$$

In formula (1), RCA_{ik} is the specific value of the RCA indicator for country i on category k products. Among them, k represents the export volume of country i on category k products; X_{wk} represents the total export value of category k products worldwide; X_i represents the total export volume of country i in the world market; X_w represents the total export value of all products in the world market.

It is generally believed that if $RCA_{ik} \geq 2.5$, the country's products of this type have strong competitiveness; If $1.25 \leq RCA_{ik} \leq 2.5$, it has strong competitiveness; If $0.8 \leq RCA_{ik} \leq 1.25$, it has general competitiveness; If $RCA_{ik} \leq 0.8$, then the competitiveness is weak. The calculation results are as follows:

Table 1. RCA of Goods exported from China to Russia.

Code	Kind	2017	2018	2019	2020	2021
1	Machinery	1.43	1.46	1.41	1.42	1.45
2	Electrical machinery and equipment	1.83	1.87	1.86	1.73	1.74
3	Plastics and articles thereof	0.92	0.95	1.01	1.07	1.07
4	Organic chemicals	1.01	1.04	1.03	1.00	1.12
5	Footwear, gaiters and the like	2.70	2.51	2.41	2.02	2.22
6	Articles of apparel and clothing accessories, knitted or crocheted	2.49	2.39	2.24	1.98	2.09
7	Toys, games and sports requisites	3.79	3.69	3.84	3.68	3.85
8	Cereals	0.05	0.07	0.08	0.05	0.05
9	Glass and glassware	1.70	1.68	1.75	1.68	1.75
10	Paper and paperboard	0.88	0.85	0.96	0.88	0.85

The ten categories of items displayed in the table include machinery and daily necessities, all of which are goods exported from China to Russia. From it, it can be seen that China has a strong competitive advantage in related products, and in the past five years, except for the “paper and paperboard”, the competitiveness of the other nine categories of products has continued to strengthen.

3.2. Analysis of complementary trade between China and Russia

The method for measuring the trade gap between two countries is usually the Product Difference Index (PD), which is calculated using the following formula:

$$PD_{ijk} = |X_{ijk} - M_{ijk}|/(X_{ijk} + M_{ijk}) \tag{2}$$

In formula (2), PD_{ijk} represents the product difference index of category k goods between the two countries of i and j . X_{ijk} represents the export volume of k-class goods from country i to country j ; M_{ijk} represents the import amount of k-class goods from country i to country j . $0 < PD_{ijk} < 1$. If the PD_{ijk} tends towards 1, indicating a higher degree of difference in k-class trade products between the two countries; If the PD_{ijk} tends towards 0, indicating the smaller the difference in K-class trade products between the two countries.

When $0 < PD < 0.25$, it indicates that the overall difference in trade products between the two countries is relatively low. When $0.25 < PD < 0.5$, the overall difference in trade products between the two countries is low. When $0.5 < PD < 0.75$, the overall difference in trade products between the two countries is relatively high. When $0.75 < PD < 1$, it indicates that the overall difference in trade products between the two countries is very high.

Table 2. PD of Chin and Russia.

Code	Kind	2017	2018	2019	2020	2021
1	Cork and articles of cork	1.00	1.00	1.00	1.00	1.00
2	Live trees and other plants;bulbs, roots and the like; cut flowers and ornamental foliage	1.00	1.00	1.00	0.98	0.93
3	Arms and ammunition; parts and accessories thereof	0.74	1.00	0.02	1.00	0.96
4	Zinc and articles thereof	0.25	0.39	0.25	0.51	0.98
5	Silk	1.00	1.00	1.00	1.00	1.00
6	Tin and articles thereof	1.00	0.95	1.00	0.95	0.97
7	Vegetable plaiting materials;vegetable products not elsewhere specified or included	0.20	0.64	0.10	0.27	0.28
8	Manufactures of straw, of esparto or of other planting materials; basket ware and wickerwork	1.00	1.00	1.00	1.00	1.00
9	Meat and edible meat offal	1.00	1.00	1.00	1.00	1.00
10	Cereals	1.00	1.00	1.00	1.00	1.00

From the table, it can be seen that most products in the trade between China and Russia have significant differences. Among the ten displayed products, only the seventh category has a low degree of differentiation in vegetable products. And other products have high product differentiation.

4. Conclusion

4.1. The Development Existing Problems of Sino Russian Trade

4.1.1. The scale of bilateral trade between China and Russia is relatively small

In 2005, the total import and export trade volume between China and Russia was 15.776 billion US dollars. By 2018, the trade volume had reached 1068.92 billion US dollars, and the data was still increasing year by year. It can be seen that the trade between China and Russia is still worth joint investment from both countries, with huge growth potential.

4.1.2. Single commodity structure in bilateral trade between China and Russia

China's exports to Russia are mainly concentrated in light industrial products. However, Russia is currently

facing the problem of backward light industry, which hinders the smooth transformation of resource advantages into product advantages. In terms of exports, Russia can only focus on resources. This indicates that both China and Russia have a relatively single product structure in terms of imports and exports. This has brought difficulties to the deepening and development of bilateral trade.

4.1.3. The trade service management system is not sound

At present, the bilateral trade and investment methods between China and Russia are relatively single, mainly due to the imperfect trade service management system. This is mainly reflected in the cumbersome customs clearance procedures, inconsistent inspection standards, and complex settlement procedures between the two countries.

These have hindered the development of trade between the two countries.

4.2. Suggestions

In the context of the reconstruction of global value chain in recent years, the “the Belt and Road” initiative was fully implemented in 2015, but China Russia trade in-depth cooperation is still in its infancy. Due to the advantages of geographical location and political relations, as well as the comprehensive western sanctions faced by Russia in the context of the Russia-Ukraine conflict, China Russia trade has great potential for development. Here are some suggestions.

Strengthen cooperation and enhance economic vitality. China and Russia can strengthen cooperation through strengthening political mutual trust, developing hub cities, constructing free trade zones, and promoting the participation of small and medium-sized enterprises.

Utilize comparative advantages and optimize trade structure. Firstly, the two countries need to further deepen cooperation in the energy sector. Secondly, further tap into the trade potential of labor-intensive products. Once again, focus on enhancing the high-tech industry. Finally, further expand cooperation in the fields of finance and culture.

Improve the trade environment and enhance economic and trade efficiency. Improve the trade clearance environment, steadily promote infrastructure construction, and reduce non-tariff barriers.

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