

TRADE COOPERATION BETWEEN RUSSIA AND CHINA UNDER THE ONE BELT AND ONE ROAD INITIATIVE

Abstract: This paper examines the characteristics and patterns of trade between China and Russia by calculating RCA index and complementarity index using the relative trade data from 2008 to 2017. The results show that Russia has the comparative advantage in energy field while China gain the comparative advantage in manufactured goods as well as machinery and transport equipment. The economic and trade cooperation between China and Russia has a significant and far-reaching impact on both side's economic development, under the background of One Belt And One Road, China and Russia should actively cooperate on relevant industries.

Key words: Transboundary Trade; One belt and One Road; RCA; Complementarity

1. Introduction

Russia and China, as two superpowers in the world, the bilateral relations between two countries, especially economic and trade relations, will not only affect the economic and social development of both two countries, but also affect the economic prosperity in central Asia and the world. In recent years, economic and trade cooperation between two countries has achieved certain development, however, there are still further room to expand compared with the economic size of China and Russia.

2013, China's president Xi Jinping spoke in Kazakhstan's capital Astana at Nazarbayev University about the concept of building Economic Belt Silk Road. The new Silk Road, which is based on "win-win" principle, aims to cooperate different countries. This new background brings new opportunities for the development of bilateral cooperation between Russia and China.

Current applied researches make comprehensive analyses of the development, current situation and prospect of the trade between Russia and China. Trenin [3] argues that there are many area of energy trade and economic cooperation between two countries by making a comprehensive analysis of the international situation. Armijo[1] argues that China's energy demand urgency, prompting China to take natural resources to lease and with oil-producing countries to sign long-term supply contracts. Malle [2] believes that Political and economic rapprochement is taking place between Russia and China in a number of fields, such as energy, arms production, trade in national currencies and strategic projects in transport and supporting infrastructure. Mou [3] based on the analysis of the current trade situation between China and Russia, proposed to explore the high-level trade in goods, further adjust the trade structure and further strengthen policy communication. Yuan [6] argues the trade between China and Russia is highly complementary. Yao [5] think that China and Russia energy cooperation has huge space to improve because the good development of Sino-Russian energy-industry collaboration has a convenient, short distance, low cost, resource potential and other many advantages.

In summary, the existing papers take more attention to the necessity and possibility of cooperation, and particularly focus on the energy field. Undoubtedly, there is huge room for cooperation in the energy field, Russia is a huge energy exporter, its crude oil and natural gas production accounted for the world total output of 12%and 22% [2], but how strong is the complementarity in the energy field? And are there some other areas have potential for cooperation? In order to find the answers to these question, this paper conducted an empirical analysis of the trade structure between Russia and China, and then analyzed how to further expand economic and trade cooperation under the existing trade situation. The remainder of the paper is organized as follows: Section II retrospects the development of the trade between China and Russia; Section III conducts an empirical analysis. By using the data related to the trade between China and Russia, the revealed comparative advantage index and the trade complementarity index are respectively calculated; Section IV introduces some thoughts about what should we do under

the “One Belt and One Road” strategy; The conclusions are reported in Section V.

2. The development of the trade between China and Russia

Trade between Russia and China remained subdued for long time despite two-digit growth in China after entry into the WTO and robust growth in Russia. Obviously, for decades before and after transformation to market in both countries the economic cooperation between geographically contiguous Russia and China have been lagging behind commercial ties with the rest of the world.

There are a lot of studies on Sino-Russia trade in the 1990s and the early 21st century, this paper focuses on the changes after 2008. Figure 1 reports the bilateral trade volume between China and Russia. Despite the decline in bilateral trade in 2008 as a result of the financial crisis, the status of each country to another has been further strengthened, and from 2008 China became the first trade partner for Russia replacing Germany [2]. In 2010, Russia and China signed 15 agreements on bilateral political cooperation and established a strategic partnership. Economic cooperation, trade cooperation and energy cooperation have promoted the further development of two countries’ relations, and bilateral trade between the two countries has grown rapidly.

After 2013, One Belt One Road initiative brings new opportunities for both Russia and China, the two sides have further made progress in building facilities and channels. In transport infrastructure construction, October 2014, prime ministers of two countries signed the memorandum of high-speed cooperation, Both sides have developed many direct or multilateral international freight routes, such as railways, highways and airlines. In terms of energy transportation, the Sino-Russian natural gas pipeline east-china section was officially started in June 2015. In December 2015, CNPC and Gazprom signed the agreement on the design and construction of natural gas pipeline project, which further promoted the construction of the east-china pipeline. All these development affects positively to the economic potential of the two countries. But one thing worth to note is that, since the "One Belt And One Road" initiative was proposed, after a brief soar in 2014, however the annual average of trade volume of 2015 and 2016 was lower than the scale of the previous year before the initiative was launched, and the bilateral trade volume between China and Russia has not increased significantly. There are two possible reasons for this phenomenon, on the one hand, the time frame for the policy unveiling is short, it takes time for a policy to achieve its anticipated results, on the other hand, exogenous factors - such as the worldwide economic slowdown and relative price shocks have an impact.

In 2017, bilateral trade volume again increased significantly, according to the data released by the Commerce Department of China, the total trade volume between Russia and China rose 31.5% to \$86.96 billion. Russia's exports to China rose by 38.9 percent to \$38.92 billion, accounting for 10.9 percent of Russia's total exports. Imports from China rose 26.1 percent to \$48.04 billion, accounting for 21.2 percent of Russia's total imports.

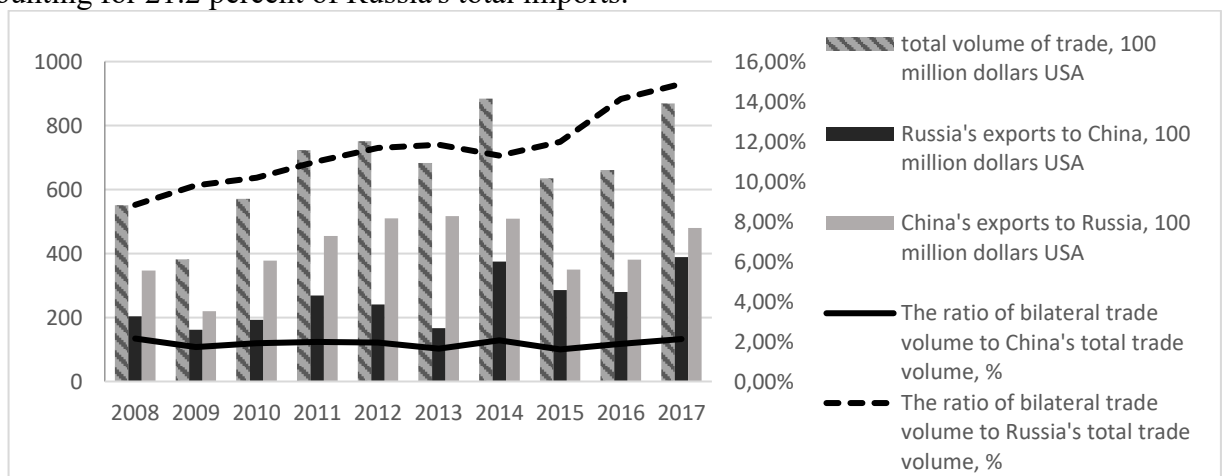


Figure 1. Bilateral trade volume between China and Russia

3. The empirical analysis

This part makes an empirical analysis of the trade between China and Russia by calculating the indicators of comparative advantage and trade complementarity index. The relative data is

gathered from UN comtrade database in 2008-2017.

We use the RCA index to analyze the comparative advantage of Russia and China. The formula (1) is as follows:

$$RCA_k = (X_k / X_t) / (W_k / W_t) \quad (1)$$

Where RCA_k represents the comparative advantage index of the goods k in a country, X_k represents the export volume of goods k , X_t represents the total export volume of all products, W_k and W_t respectively represents the export volume and the total export volume of goods k in the world. If $0 < RCA_k < 1$, it means that a country's commodity k has comparative disadvantage, and the smaller the value, the more obvious the comparative disadvantage; If $RCA_k > 1$, it means that commodity has comparative advantage, and the higher the value, the more obvious comparative advantage. According to the United Nations standard classification of international trade (SITC), goods are divided into 10 categories. Table 1 reports the classification details of SITC(Rev.3) classification standards, and Table 2 and Table 3 respectively show the comparative advantage index of two countries in this standard.

Table 1. SITC(Rev.3) classification standards

classification	Content
0	Food and live animals
1	Beverages and tobacco
2	Crude materials, inedible, except fuels
3	Mineral fuels, lubricants and related materials
4	Animal and vegetable oils, fats and waxes
5	Chemicals and related products, n.e.s.
6	Manufactured goods classified chiefly by material
7	Machinery and transport equipment
8	Miscellaneous manufactured articles
9	Commodities and transactions not classified elsewhere in the SITC

Table 2. RCA index of Russia

year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
0	0.27	0.41	0.28	0.32	0.43	0.40	0.49	0.59	0.70	0.69
1	0.25	0.30	0.20	0.19	0.28	0.30	0.33	0.40	0.44	0.33
2	1.02	0.89	0.78	0.77	0.79	0.78	0.86	1.03	1.25	1.13
3	3.98	4.69	4.37	3.90	4.16	4.22	4.56	6.16	5.45	6.57
4	0.31	0.50	0.28	0.31	0.67	0.73	0.82	0.96	1.31	1.12
5	0.46	0.36	0.37	0.39	0.44	0.42	0.44	0.52	0.49	0.45
6	0.88	0.98	0.87	0.76	0.89	0.84	0.85	1.00	1.19	1.14
7	0.10	0.11	0.08	0.07	0.11	0.12	0.12	0.15	0.14	0.14
8	0.06	0.07	0.05	0.04	0.08	0.10	0.11	0.13	0.10	0.11
9	1.82	1.74	2.08	2.14	0.62	0.62	0.60	0.62	2.60	0.99

Table 3. RCA index of China

year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
0	0.44	0.44	0.46	0.47	0.44	0.43	0.41	0.41	0.44	0.43
1	0.14	0.16	0.16	0.16	0.16	0.15	0.15	0.17	0.19	0.17

2	0.23	0.20	0.18	0.18	0.17	0.17	0.18	0.18	0.18	0.16
3	0.13	0.13	0.11	0.10	0.09	0.09	0.10	0.12	0.15	0.17
4	0.07	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.05	0.06
5	0.53	0.45	0.50	0.56	0.52	0.51	0.53	0.51	0.52	0.54
6	1.34	1.22	1.23	1.30	1.32	1.35	1.38	1.37	1.36	1.30
7	1.37	1.44	1.45	1.47	1.44	1.44	1.35	1.28	1.26	1.26
8	2.26	2.14	2.19	2.29	2.36	2.35	2.26	2.02	1.99	1.96
9	0.03	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.04	0.05

Comparing table 2 and table 3, China and Russia both do not have competitive advantages in category 0, 1 and 5. Products of China's competitive advantage is mainly the category 6, 7 and 8, Russia has the comparative advantage of category 2, 3 and 6, from which competitive advantage of category 3 (Mineral fuels, lubricants and related materials) is huge.

The RCA index analyses a country's comparative advantage over the world, so what about trade complementarity between China and Russia? The trade complementarity index is used to indicate the degree of consistency between a country's exports and the import of another trading partner, which can reflect the complementarity of the trade structure of the two countries and the potential of trade between the two countries. The formula (2) is as follows:

$$C_{ij}^k = RCA_{xi}^k * RCA_{mj}^k \quad (2)$$

Where C_{ij}^k indicates the trade complementarity index of country i and country j on product k . $RCA_{xi}^k = (X_i^k / X_i) / (X_w^k / X_w)$, $RCA_{mj}^k = (M_j^k / M_j) / (M_w^k / M_w)$. RCA_{xi}^k and RCA_{mj}^k respectively represents the comparative advantage index in country i and the comparative disadvantage index in country j on the goods k . The larger the index of C_{ij}^k , the greater the consistency between the export of country i and the import of country j . Table 4 and Table 5 respectively show the trade complementarity index of two countries.

Table 4. Trade complementarity index (Russia as an exporter)

year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
0	0.06	0.10	0.08	0.09	0.15	0.15	0.19	0.28	0.33	0.31
1	0.06	0.07	0.05	0.05	0.09	0.09	0.11	0.17	0.19	0.14
2	4.27	3.67	2.93	2.93	2.89	2.93	3.17	3.72	4.59	4.12
3	3.60	4.29	3.94	3.59	4.24	4.08	4.84	7.14	7.00	9.91
4	0.53	0.74	0.35	0.34	0.83	0.79	0.76	0.88	1.10	0.86
5	0.46	0.35	0.36	0.38	0.41	0.39	0.40	0.48	0.45	0.41
6	0.60	0.83	0.64	0.50	0.58	0.53	0.61	0.64	0.74	0.68
7	0.11	0.13	0.09	0.08	0.12	0.14	0.13	0.16	0.15	0.15
8	0.05	0.05	0.04	0.03	0.06	0.06	0.06	0.08	0.06	0.06
9	0.16	0.10	0.53	1.20	0.43	0.58	0.52	0.55	2.02	0.76

Table 5. Trade complementarity index (China as an exporter)

year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
0	0.80	0.94	0.96	0.84	0.79	0.79	0.74	0.70	0.67	0.61
1	0.28	0.31	0.31	0.29	0.29	0.28	0.29	0.33	0.36	0.30

2	0.19	0.17	0.10	0.09	0.12	0.12	0.15	0.20	0.19	0.15
3	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02
4	0.10	0.08	0.06	0.05	0.04	0.05	0.05	0.06	0.06	0.05
5	0.52	0.52	0.59	0.61	0.60	0.62	0.65	0.69	0.69	0.66
6	1.13	1.12	1.14	1.17	1.39	1.42	1.40	1.34	1.30	1.23
7	1.91	1.56	1.66	1.91	2.07	1.99	1.77	1.47	1.38	1.52
8	1.96	1.89	2.21	2.17	2.52	2.57	2.38	1.88	1.82	1.84
9	0.03	0.03	0.03	0.04	0.00	0.00	0.00	0.00	0.03	0.01

Table 4 reports the complementarities index with Russia as an exporter and China as the importer, from the table we can see that category 2 and 3 have strong complementarities. One of the things that's really remarkable in this table is that index of category 3 has grown very rapidly in recent years from 3.60 in 2008 to 9.91 in 2017, and category 3 mainly concludes coal, petroleum and gas, this suggests that Russia, as a country rich in energy resources, has high complementarities with China, a country has huge energy needs. When China is an exporter and Russia is an importer (can be seen from table 5), while that index numbers have fluctuated in recent years, complementarities remain in the category 6, 7 and 8.

According to the results of empirical analysis, from the actual situation of China, labor-intensive products, such as SITC6 and SITC8, and some technology-intensive products, mainly including SITC7, have relatively strong comparative advantage. The products with a strong comparative advantage in Russia are mainly SITC2 and SITC3. On the whole, Russia and China have their own products with comparative advantages, and there is a strong trade complementarity between two countries.

4. Thoughts on deepening trade cooperation

Based on the above analysis, we find that the commodities which have comparative advantage of Russia and China are different, and the trade complementarity between the two countries is strong. Russia have a huge advantage in the energy field, and in the field of manufactured goods and transport equipment, China has comparative advantage. At present, the external situation of the world is still complicated, so the strengthening of Chinese-Russian cooperation has important theoretical and practical significance, and we should give full play to both sides' advantages, expand the space and pay attention to the economic development brought about by our trade cooperation.

In terms of deepening energy cooperation in the new situation, the two sides can proceed from the following aspects: jointly invest and develop technologies; coordinate China-Russia energy cooperation in upstream and downstream industries; bind the interests of both sides together, enhance the stability and upgrade the level of energy cooperation; attach importance to the innovation of cooperation modes in the energy field, such as financing methods and channels, trade settlement methods and so on, so as to meet the practical demands in energy field between two countries.

China has more experience and advantages in machinery and equipment export and infrastructure construction, China and Russia should take advantage of the "One Belt and One Road" initiative to actively carry out cooperation in information and communication, high-speed railway, cross-border bridge and other infrastructure construction, especially in the field of high-speed railway construction, so as to remove most of the traffic restrictions on manufacturing, retail as well as in the social sphere.

In addition, two countries will further adjust the structure of trade and raise the level of economic and trade cooperation. At present, the bilateral trade between Russia and China is still dominated by secondary industry. Both China and Russia are in the period of domestic industrial structure adjustment, which is a good opportunity to improve the trade structure of bilateral commodities.

5. Conclusion

The objective of the "One Belt And One Road" strategy is to greatly reduce trade costs by the construction of infrastructure interconnectivity and the convenient transportation, so as to promote the free flow of factors of production, give full play to countries which have different comparative advantages, and then achieve efficient allocation of resources.

This research involved analysis of the current trade situation between Russia and China, then calculated the RCA index and complementarity index of both countries, the result shows that Russia and China are highly complementary in trade, especially in the energy field. In the current international situation, the two sides should adhere to the principle of equal consultation, seek common ground while reserving differences, and take full use of the opportunities brought by "One Belt And One Road" strategy, so as to promote the development of bilateral economic and trade cooperation and ultimately achieve mutual benefit and win-win results.

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