Current State and Prospects of Russia – China Trade Development in the BRICS Format

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Abstract: Motivation: The substantiation of the scientific problem and the practical value of the study are determined by the enhanced cooperation of the BRICS countries, in particular the growing weight of Russia and China on the world stage. The main objective of the study is to analyze the problems of the development of bilateral trade between China and Russia and to provide a statistically proven forecast for this trade for 2019-2020, as well as to develop recommendations for the improvement of bilateral trade relations. Novelty: The author's statistical model was developed and its testing was presented through confirming the 24-month forecast of bilateral trade between Russia and China. The model involves solving various problems of bilateral trade. Recommendations for improvement of bilateral trade relations are proposed through formation of an investment and innovation model of bilateral trade. Methodology and Methods: The work used the method of forecasting time series, which suggested the use of a model to predict future values based on previously observed values. To evaluate the modern prospects of the trade between the countries, the authors produced a forecast of the goods turnover trend for 2019-2020. The forecast was issued via the software tool Statgraphics Centurion 18. A reasonable model of the 24-month forecast based on the statistical model Random Walk is developed. The adequacy of the proposed forecast model was subjected to statistical tests. To verify the statistical adequacy of the model the relevant tests were done to determine the compliance of the model with the informational criteria ME (Mean Error), MSE (Mean Squared Error), MAE (Mean Absolute Error), MAPE (Mean Absolute Percentage Error), MPE (Mean Percentage Error). However, it should be noted that the forecast was issued in accordance with the trends which had been identified in the preceding periods. Data and empirical analysis: The factors influencing bilateral trade are analyzed, as well as examples of implemented projects of international cooperation between Russia and China are presented. The current dynamics of sales turnover between Russia and China for the period of 2010-2018 with the use of various statistical and analytical methods is studied, and a reasonable model of the 24-month forecast based on the statistical model Random Walk is developed. The adequacy of the proposed forecast model was subjected to statistical tests. The basic hypothesis is suggested for the upward trend based on reference time series. Policy considerations: It can be said with certainty that the level of technological development of BRICS countries will help Russia and China to start building their cooperation in many fields at a completely new level, taking into account their joint experience in overcoming global crises and Western sanctions. International cooperation between Russia and China in the innovation field will help them unite their efforts and achieve significant synergy. Coordination of countries on this issue will help to reduce production costs, cooperation of production, joint research and development, as well as increase bilateral trade turnover.

Keywords: Key indicators of BRICS countries development, the structure of trade between Russia and China, a forecast of mutual trade development for 2019-2020, an investment and innovation model, trade development prospects.

1. INTRODUCTION

Influence of the BRICS countries on the world economy has been growing stronger over the recent years. The BRICS countries, i.e. Brazil, Russia, India, China and South Africa, claim the place of new world leaders. These countries are now vigorously trying to strengthen their authority in international organizations, participate in solving global problems, support the current trend of reforming the world financial architecture, defend the ideas of economic and political influence of developing countries. Although, even the most advanced association of new players, which BRICS is, does not show much efficiency of their consolidated actions on the world economic arena in comparison with the seemingly "conflicted" West (Abramova and Fituni 2018). Nevertheless, it has become more obvious at the modern stage of global economy development that the BRICS countries have a great potential for development and are growing.
more powerful in the modern trade due to their colossal natural and raw material resources, their territory making up over one fourth of the planet's land, their financial resources which contribute to the GDP exceeding the GDP of the most developed countries. The population of the BRICS countries accounts for more than 3 bln people. The challenge today is to release that potential, in particular, by way of developing mutual trade. In order to face the challenge, the factors influencing the mutual trade need to be analyzed, and the examples of implemented projects of international cooperation of Russia and China as well as the organizational and administrative procedures of trade relations inside the BRICS countries need to be studied.

The rationale and the practical value of this research are determined by the strengthened cooperation of the BRICS countries, an increasing weight of Russia and China on the world arena in particular, which, within the current geopolitical situation, gains the ever growing significance as the global economy development driver.

The key purpose of this article is to analyze the problems in the development of the mutual trade of China and Russia and provide a statistically supported forecast of that trade for 2019-2020, as well as to elaborate recommendations for improving the mutual commercial relations.

Thus, the authors of the article have aimed at researching the modern Dynamics of Sales Turnover between Russia and China for the period of 2010-2018 using various statistical and analytical methods and at developing a reasonable model of a 24-month forecast. The adequacy of the forecast model has been subjected to statistical tests and verified in terms of its correlation with the selected hypothesis. The authors have suggested the main hypothesis on the upward trend based on the reference time series.

2. LITERATURE REVIEW

The problems and prospects of BRICS development in the world economy are studied in the works of numerous analysts and economists. In his publication, Nikonov (Nikonov and Toloraya 2013) analyzes the purposes and prospects of Russia within the informal association of the BRICS countries. The problems and prospects of BRICS development are generally analyzed by Toloraya and Chukov (2017), O’Neel (2013), Fituni (2013), Rasoulinezhad and Jabalameli (2018), Beeson and Zeng (2018). A quantity analysis of the statistics regarding BRICS trade was done by De Mello-Sampayo (2017).

Brakman et al. (2019) look at the specific aspects of the implementation by China of its strategy within the framework of the Belt and Road Initiative.

There are numerous publications on the trade relations of Russia and China, including, in particular, the one by Suslov (2018) which provides the analysis of the current state of the Sino-Russian economic relations. New ideas in the sphere of the economic cooperation of Russia and China have been analyzed by Xiaojing (2017); the matters of coordinating the economic policy have been investigated by Malle (2017).

According to Tsepelev and Serikov (2017), a particularly important role is played by the trade near the border with the participation of the Far East regions and the regions of the PRC. Tourism is a significant element of the economic cooperation of Russia and China. Blinova (Blinova and Manteifel 2016; Blinova, Dedusenko and Kulgachev 2018) analyze factors and conditions which shape the high potential of incoming tourism from China to Russia.

Oil and oil derivatives are an important component of the trade between Russia and China. Gao and Liang (2018) analyzes factors influencing the trade of oil derivatives between Russia and China.

3. METHODOLOGY

The work used the method of forecasting time series, which suggested the use of a model to predict future values based on previously observed values.

The authors had summarized the key indicators characterizing the development process of BRICS at the end of 2017, which can be seen in the table below.

The group of BRICS countries unites economies, which differ greatly in their level of development and their models of economic growth. China, whose population is almost the same as the population of India, generates the GDP four times higher than the GDP of the other BRICS countries. The value of the savings ratio is one of the key indicators of economic growth in a country. Brazil and South Africa have a very low savings ratio (15.5% and 18.6% respectively whereas the indicator of developing countries is over 20%). Besides, these countries have the gravest
problem of unemployment (12.8% in Brazil, 27.5% in South Africa). In China, on the other hand, the ultra high savings ratio (44.4%) ensures almost two-digit indicators of economic growth and the unemployment rate is steadily low (3.9% to 4.1%). The level of unemployment in Russia (5.2%) is higher than in India and China, but significantly lower than in Brazil and South Africa (Astahova and Wang 2017).

Today BRICS is seen as a strategic, long-term association of countries based on a mutually reinforcing cooperation and common safety. This alternative to the western forex and financial system is a kind of an attempt to create a multi-polar world of modern relations. The economic cooperation of BRICS countries is mainly aimed at extending the possibilities of accessing the markets and at stimulating the links between markets, achieving mutual trade and investments, creating an environment conducive to investors and entrepreneurs, diversifying trade and investment collaboration.

The Governments of Russia and China have by now determined 70 priority projects of the fourth round of their investment cooperation with about $100 bln. of total investments from both sides. The Governments and financial institutions of both countries have agreed to launch a number of cooperation funds. A representative office of the Russian Central Bank has been opened in China and an RMB clearing bank has been launched in Moscow (Hui 2018). Building up cooperation between BRICS countries in different spheres contributes to the sustainable development of each of them as well as a stronger position of the group as a whole in their position as a global economic and political association. Mutual trade in this respect may be confidently put first in the development of that cooperation.

3.1. Analysis of Dynamics, Structure and Complementarity of Trade between Russia and China

In this section we will look more closely on the trade development between Russia and China. Since 2010

### Table 1: Key Indicators of BRICS Development at the End of 2017

<table>
<thead>
<tr>
<th>Item</th>
<th>Brazil</th>
<th>Russia</th>
<th>India</th>
<th>China</th>
<th>South Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population, mln people</td>
<td>207.7</td>
<td>144</td>
<td>1,316.9</td>
<td>1,390.1</td>
<td>56.5</td>
</tr>
<tr>
<td>Labour force, mln people</td>
<td>110.4</td>
<td>77.4</td>
<td>513.7</td>
<td>805.9</td>
<td>21.7</td>
</tr>
<tr>
<td>Gold and forex reserves, bln. $</td>
<td>364.9</td>
<td>377</td>
<td>361.6</td>
<td>3,097.6</td>
<td>47.1</td>
</tr>
<tr>
<td>GDP (nominal), trn $</td>
<td>2.1</td>
<td>1.5</td>
<td>2.6</td>
<td>12.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Savings ratio, % GDP</td>
<td>15.5</td>
<td>24.3</td>
<td>31.7</td>
<td>44.4</td>
<td>18.6</td>
</tr>
<tr>
<td>Unemployment, % of labour force</td>
<td>12.8</td>
<td>5.2</td>
<td>3.5</td>
<td>3.9</td>
<td>27.5</td>
</tr>
</tbody>
</table>

Compiled by the authors based on the data provided by the Federal state statistics service (2018), Information portal (2017, 2018).

![Figure 1: Dynamics of Sales Turnover between Russia and China, $ bln., 2010-2018.](image-url)
China has been the largest trading partner of Russia. Nowadays Russia and China have established stronger trading and economic links. The relations between Russia and China, now of all their mutual history, are better than ever in all spheres. According to Federal customs service of Russia (2018), there is a stable upturn in the mutual trade between 2010 and 2018 which reached the record volume of $108.1 bln. in 2018. The Figure 1 shows that the sales turnover in 2015 dropped by 28% and amounted to $63.5 bln. due to the decrease of export from China to Russia by 35.2%.

The negative dynamics in 2015 was caused by the events happening in the global economy, the introduction of sanctions against Russia by the Western countries, the deterioration of the foreign trade environment in the world, the volatility of the global financial market (Kovaltchuk et al. 2016). Oil prices had been falling since June 2014 and plummeted by December 2014 to their half value (from 115 to 55 dollars per barrel). Besides, as it is stated by Information Agency Banki.ru (2018), the ruble was devalued during the year, the exchange rate of USD to RUR increased from RUR 33 in January to RUR 56 at the end of December; the exchange rate of EUR to RUR soared from RUR 45 to RUR 70. Consequently, according to TASS news Agency (2016), the import to Russia was reduced and became more expensive, including goods imported from China, which did not impose any economic sanctions. In 2016 the mutual trade relations overcame the crisis in the global economy and the turnover increased by 0.3% reaching $63.7 bln. Later in 2017-2018 there was a clear growing tendency in the mutual sales turnover. In 2017 the increase was $23.3 bln. By the end of 2018, the volume of the mutual trade between the countries was $108.1 bln according to the Federal state statistics service (2018).

Export from Russia to China are 1 – oil and petrol products (75.8%), 2 - wood and derivatives (7.1%), 3 – metal and derivatives (2.7%), 4 – machines, equipment and vehicles (2.5%), 5 – food and agricultural raw products (2.4%), 6 – chemical products and fertilizers (2.4%), 7 – other products (7.1%).

China exports to Russia a wider range of goods. The basic imported items by Russia from China is 1 – machines, equipment and hardware (50.1%), 2 – metal and derivatives (7.8%), 3 – textile and shoes (7.4%), 4 - chemicals (5.7%), 5 – various industrial products (5.3%), 6 – plastics, rubber and rubber (4.6%), 7 – transport (4.4%), 8 – shoes, hats, umbrellas, etc. (4%), 9 – food and agricultural raw products (2.2%), 10 – tools and devices, watches (2.2%), 11 – other (6.3%).

The analysis shows, that the import to Russia from China is more high-tech, i.e. high-tech machines and equipment are imported. The share of chemical industry products, food and agricultural materials as well as metal and metal products, textile and shoes is also very large within the structure of Russian import (China Internet information center 2017).

To evaluate the modern prospects of the trade between the countries, the authors have conducted a statistical analysis of the input data for the period of 2010-2018 and produced a forecast of the goods turnover trend for 2019-2020 (see Figure 2). The forecast was issued via the software tool Statgraphics Centurion 18.

![Figure 2](image_url) The graph of smoothed values of initial time series and the forecast of goods turnover in the trade between Russia and China for 2019-2020.
The sources of information for building the forecast model were Ru-Stat (2019) data, data from the Foreign Economic Information Portal (2019) section of a government Internet resource, and data from the Foreign Trade of Russia (2019) section.

The forecast is based on the statistics model Random walk with drift = 5.9625, which is highly accurate and adequate. To verify the statistical adequacy of the model in Statgraphics the relevant tests were done to determine the compliance of the model with the informational criteria ME (Mean Error), MSE (Mean Squared Error), MAE (Mean Absolute Error), MAPE (Mean Absolute Percentage Error), MPE (Mean Percentage Error). However, it should be noted that the forecast was issued in accordance with the trends which had been identified in the preceding periods.

As the Figure 2 shows, the trend of the trade between the countries is accelerating. The volumes of mutual trade will grow up to $114.2 bln in 2019 and up to $120.3 bln in 2020. Due to the lack of official information on the volumes of mutual trade between the countries at the time of writing this article in 2019, it is not possible to compare the forecast values of 2019 with the actual values for this period or part of it (quarter, six months).

4. DISCUSSION / ANALYSIS

The main reason of the imbalance is low dynamics of the economic growth in Russia and its weakened processing industry while the fuel and energy sector is gaining grounds. On the one hand, this distribution of exporter and buyer roles between the countries inevitably puts Russia and China on the opposite sides of a negotiation table, which hardly lets them reach a compromise on the creation of new and science driven industries in Russia. On the other hand, trading advantages of both countries contribute to a greater complementarity, both countries may maintain competitive production based on a firm trading structure, encourage free trade. The main agenda of the Celestial Empire today is to reduce the cost of goods shipped from China to other countries. To solve that problem, China has suggested the concept of “the Silk Road Economic Belt”. Investments in the infrastructure of partner countries (Russia, Kazakhstan, Tadzhikistan, etc.) are one of the components of the concept. According to the researchers of the National Research University Higher School of Economics (Higher School of Economics Information portal 2015), China is ready to invest $40 bln in the construction of railways, storage and other facilities on the territories of partner countries in order to use and control that infrastructure in the future (30). Tipping the scales of bilateral trade in favour of Russia requires a lot of effort. It will take as much as a slow and gradual reindustrialization of Russia and a build-up of an investment and innovation model of mutual trade. The model considers the use of competitive advantages of our country in traditional sectors (energy, transport, agriculture) and new high-tech sectors, as well as the economy of knowledge to turn innovative factors into the main source of economic growth. To do that, one needs to turn to long-term projects of cooperation, which do not generate returns right away, instead of the short-term ones. It should be borne in mind that such projects in the form of non-resource-based contracts with China are being implemented already. For instance, in 2014 the countries signed 40 agreements, the most significant of which include collaborative design and production of wide body civil aircrafts, cooperative development of satellite navigation systems, cooperation in agriculture, space exploration, education and health care. The most efficient agreements seem to be the ones signed during the visit of Xi Jinping to Moscow in May 2015 when agreements were signed to cooperate in the spheres of finances, research and development, transport and infrastructure development, mass media and informational safety, as stated by SKOLKOVO Moscow school of management (2015), IEMS Monitoring and other Russian sources. As arbitrary as the generalizations may be, there are obvious attempts to go beyond the trade of raw materials.

Moreover, China shows a positive dynamics of population - 0.5% per annum, and consequently the exhaustible traditional resources lead to a higher demand for food. In 2016 China started gradually lifting the limitations of importing meat and meat products from Russia and increased the volume of imported Russian chocolate and confectionary, thus becoming the largest importer of that kind of products (Andreeva and Gililov 2017). Russian exporters of grain, corn, rice, soybeans and rape successfully passed the trials of accessing the Chinese market and now the export of the range of products is increasing. It is clear that China is simplifying the trading regulations with Russia.

5. CONCLUSION

The conclusions based on the study of the matters of developing trade relations between the Russian
Federation and the People's Republic of China, are as follows: Trade between China and Russia has a lot of advantages: it is complementary, but at the same time the countries are not competitors, they have ties and contacts in BRICS. The parties need to extend their cooperation in the intra-industry trade. Russia and China need to develop a new so-called “investment and innovation” model of mutual trade. Russia may use Chinese investments, technologies and advantages of manpower in order to develop its prioritized industry sectors.

Over the past few decades, China has demonstrated outstanding results of trade development with Russia. One of the key success factors was the targeted state policy aimed at supporting Chinese companies that have gained solid ground on the Russian market in innovative industry sectors where the efficiency of production processes is crucial. Nevertheless, the old model of economic development embodied in the “Made in China” brand can no longer maintain sustainable growth rates, because the competitive advantages of low-paid labour and high return on capital are gradually disappearing. The future of the Chinese economy is in the development of its scientific and technological potential and the innovation system whose core will be formed by innovative entrepreneurs and high-tech small and medium-sized businesses.

6. LIMITATION AND STUDY FORWARD

The new model of Russia's economic development is also associated with innovation and the development of high-tech industries. The economy model based on the export of natural resources triggered a quick qualitative breakthrough and reduced the economic lag, but it did not create leadership positions in the new emerging high-tech trade format. The future of Russia is seen as a new economic model based on high-tech manufacture; the export of technologies rather than raw materials; the creation of new markets and technological trends while ensuring leadership on them. The international cooperation of Russia and China in the innovation sphere will help them combine their efforts and achieve significant synergy.

Russia's interest in reinforcing the factors of BRICS bonding, overcoming differences in foreign policy priorities, deepening the potential of economic collaboration is obvious. The bond will multiply foreign policy potentials of each BRICS country; make their voices heard more clearly in global affairs. The significant aspect in this respect is making the interaction more profound and developing BRICS as a new model of global relations.

Russia and China have built a multi-tier system of advising to work on new common projects and develop bilateral trade. The model is implemented by means of regular summits at the top level, at the level of government and ministry meetings; the New Development Bank (NDB) and a number of special intergovernmental branch committees have been created, which focus on practical proposals within agendas of meetings of state representatives at the bilateral level. It is safe to say that the level of technological development of BRICS countries will help Russia and China start building up their cooperation in many spheres at an absolutely new level, taking into account their common experience of overcoming global crises and western sanctions. The coordination of the countries in this issue will contribute to reducing production costs, Russian companies will have the opportunity to share and gain technologies and licenses to develop the domestic industry. The cooperative production, research and development, joint enterprises will create an efficient system of work in this area, which will also increase the bilateral sales turnover.

REFERENCES
