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The economic potential of the Republic of Belarus after joining the SCO: Advantages and opportunities

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Abstract. In the era of globalization, integration groupings have become an important tool for the development of many countries in the world economy. They contribute to the formation of close economic ties and coordination of foreign trade between the participants, which in turn has a favorable effect on the development of the national economy of the country. Participation in integration associations is of great importance for the development of Belarus' economy and increasing its role in the international arena. Membership in the SCO opens up new prospects for the country and provides an opportunity to expand cooperation with other countries of the Asian region. Once Belarus becomes a full-fledged member of the association, the country will have new ways to develop its potential in various areas, including the economy, logistics, transport, security, culture, education, healthcare, tourism, industrial and agricultural sector, science, as well as experience in international multilateral cooperation. The article is devoted to the topic of assessing the potential of joining the Shanghai Cooperation Organization integration association of the Republic of Belarus. In order to assess the prospects of economic cooperation more accurately, the authors conducted an econometric analysis using a modified version of the traditional gravity model of Belarus' foreign trade with the member countries. As a result, the authors have identified the most significant factors influencing the volume of trade with the member countries. By analyzing the ratio of calculated indicators to the actual level of exports and imports, the authors made a conclusion about the level of realization of trade potential with the SCO countries. As a consequence, the authors proposed possible ways to implement trade by analyzing the commodity structure of foreign trade flows of the Republic of Belarus with the members of the integration association.

Keywords: export potential, foreign trade activity, gravity model, Shanghai Cooperation Organization, Republic of Belarus, gross domestic product, purchasing power parity

Экономический потенциал Республики Беларусь после присоединения к ШОС: преимущества и возможности

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Аннотация. В эпоху глобализации интеграционные группировки стали важным инструментом для развития множества стран в мировом хозяйстве. Они способствуют формированию тесных экономических связей и координации внешней торговли между участниками, что, в свою очередь, благоприятно сказывается на развитии национальной экономики страны. Участие в интеграционных объединениях имеет большое значение для развития экономики Беларуси и увеличения ее роли на международной арене. Вступление в ШОС открывает новые перспективы для страны и дает возможность расширять кооперацию с другими странами Азиатского региона. После становления Беларуси полноправным участником объединения перед страной откроются новые пути развития потенциала в различных сферах, включая экономику, логистику, транспорт, безопасность, культуру, образование, здравоохранение, туризм, промышленный и сельскохозяйственный сектор, науку, а также опыт международного многостороннего сотрудничества. Исследование посвящено оценке потенциала вступления Республики Беларусь в интеграционное объединение Шанхайской организации сотрудничества. Для более точной оценки перспектив экономического сотрудничества, авторами был проведен эконометрический анализ с использованием модифицированной версии традиционной гравитационной модели внешней торговли Беларуси со странами-участницами. В результате авторами были выявлены самые значимые факторы влияния на объем торговли со странами-участницами. В результате анализа отношения расчетных показателей к фактическому уровню экспорта и импорта авторы сделали вывод об уровне реализации торгового потенциала со странами ШОС, вследствие чего предложены возможные пути реализации торговли с помощью анализа товарной структуры потоков внешней торговли Республики Беларусь с участницами интеграционного объединения.

Ключевые слова: экспортный потенциал, внешнеторговая деятельность, гравитационная модель, Шанхайская организация сотрудничества, Республика Беларусь, валовой внутренний продукт, паритет покупательной способности

Introduction

In the modern world, international organizations play a key role in establishing and maintaining mutually beneficial cooperation between States, as well as in solving complex international problems. Joining such organizations is a strategic decision for States, opening up new prospects and challenges. One of the outstanding organizations is the Shanghai Cooperation Organization (SCO), founded in 2001 and uniting several countries in its ranks, including China, Russia, India, Kazakhstan and others. The SCO takes an active position in global politics and economics, aims to promote economic development, ensure security and cultural exchange between its members. In light of these circumstances, the Republic of Belarus, which has a strategic geopolitical position in Europe, has expressed a desire to join the Shanghai Cooperation Organization. This has aroused wide interest in scientific and political circles, since Belarus' accession to the SCO will provide it with new opportunities to strengthen economic cooperation and expand political influence in the region. The purpose of this study is a comprehensive analysis of the process of Belarus' accession to the Shanghai Cooperation Organization. To achieve this goal, we propose to consider the main reasons and motives that prompted Belarus to seek membership in the SCO, as well as to analyze the potential benefits and challenges that Belarus may face when joining this organization. In addition, we propose to consider the prospects and opportunities that may open up for Belarus as a result of joining the Shanghai Cooperation Organization. To achieve these goals, this study will use an analytical approach, including the analysis of academic articles, political documents and official statements related to the issue of Belarus' accession to the SCO. The results obtained will allow a deeper understanding of the reasons and consequences of this strategic step of Belarus, as well as to assess the potential contribution of the Republic of Belarus to the development of the Shanghai Cooperation Organization. The following sections of our study will provide a detailed description of the methodology and data sources used in this work, the results of the analysis of the study, as well as the main conclusions and recommendations.

Literature review

A number of scientific papers have been written on the topic of Belarus' entry into the Shanghai Cooperation Organization, which has been going on for more than 17 years, since the application for observer status in the SCO was submitted to Belarus in the summer of 2006, which touch on issues such as socio-economic aspects of Belarus' participation in the SCO. The opportunities that Belarus will receive after being granted the status observer, new ways of developing the potential of the Republic of Belarus in various spheres of life, including economy, logistics, transport, security, culture, education, healthcare, tourism, industrial and agricultural sector, science, as well as the experience of international multilateral cooperation.

In the light of the active discussion in the scientific community about the entry of Belarus into the SCO, the work of G.V. Ivanov (2020) is a valuable contribution to the

study of the socio-economic aspects of the participation of the Republic of Belarus in this organization. In it, he focuses on the program of multilateral trade and economic cooperation of the SCO member states until 2035, adopted in 2019, which is aimed at increasing the competitiveness and digital development of the economies of the participating countries, as well as stimulating innovative and "green" technologies. Belarus is interested in expanding and strengthening investment cooperation, developing high-tech industries and promoting its products to the markets of the SCO member states. Thus, participation in the SCO is a promising direction for Belarus and other participating countries, capable of achieving important goals of economic development and socio-economic stability in the region.

V.L. Senyuta (2016) discusses Belarus' cooperation with the Shanghai Cooperation Organization on six cooperation platforms, focusing on significant initiatives taken in this direction. The author emphasizes that these platforms are focused on strengthening security, creating new industries and jobs, expanding cooperation in various fields, developing a unified transportation network, financial cooperation, regional trade cooperation and strengthening the social sphere. Moreover, the author draws attention to the consistency of Belarus' interaction with the interests of the SCO member states and the strengthening of economic cooperation in the Eurasian region.

O.P. Rubo's (2023) work "Interests and prospects of the participation of the Republic of Belarus in the Shanghai Cooperation Organization as a full member" focuses on the priorities and interests of Belarus in the context of the SCO. The author notes the economic, transport and logistics, banking and financial directions, as well as the fight against terrorism and the drug threat as priorities for Belarus within the SCO. Belarus has long been a dialogue partner in the SCO, which allows it to participate in various events, meetings of ministers, heads and bodies responsible for the development of science, technology, culture, transport and other important areas. This paper considers the possibility of Belarus' membership as a country with a traditionally strong agricultural sector and large-scale industries, especially in high technology and agricultural engineering, which can be used to maintain and strengthen the food, nuclear and cybersecurity of the SCO member states. One of the prospects for Belarus' entry into the SCO is to strengthen the western Eurasian corridor as a bridge between the West and the East, as well as to build an equilibrium and balanced region thanks to the expansion of the European component in the SCO, which is now dominated by Asian countries. It is obvious that Belarus is able to make a significant contribution to the expansion of the SCO's activities in the Eurasian space and strengthen its partnership in this organization.

In the course of his work "The Republic of Belarus and the SCO in the Eurasian geopolitical space", V.G. Kogut (2017) highlights the principles and priorities of cooperation between Belarus and the SCO member states. He notes that cooperation in the field of security is fundamental and is based on mutual trust, mutual benefit, equality, respect for the diversity of cultures and the desire for joint development. Other principles and priorities include the equality of Member States, the prevention of activities contrary to the principles of respect for State

sovereignty and territorial integrity of each other, the resolution of differences by political and diplomatic means based on international law, respect for the right to choose the path of political, economic, social and cultural development, taking into account the historical experience and national characteristics of each State, and It is also unacceptable to use unilateral pressure measures without the approval of the UN Security Council. The author is also interested in promising cooperation between Belarus and the SCO in the light of changes in the global political and economic landscape. In this regard, the Republic of Belarus was granted observer status at the SCO, opening up new opportunities within the framework of increasing its geopolitical status in the Eurasian geopolitical space. The author points out several factors that can contribute to further cooperation, including the desire to move away from the unipolar world, support for the system of international law, a close position on regional conflicts, interest in reforming the international financial system, expansion of trade and economic partnership and the unacceptability of values that the West imposes on the whole world as "universal" and "universal." In general, the emphasis in the work of V.G. Kogut (2017). It is based on the principles and priorities of cooperation, speaking about the need to respect the interests of each state and the desire for joint development. He also emphasizes that for the Republic of Belarus, full-fledged membership in the SCO can significantly strengthen and strengthen this organization, as well as contribute to the expansion of economic and scientific partnership.

The studies of G.V. Ivanov (2020), V.L. Senyuta (2016), O.P. Rubo (2023) and V.G. Kogut (2017) emphasize the fundamental principles and priorities of cooperation within the SCO, as well as highlight significant areas of initiatives supported by Belarus in this organization. However, despite this, at the moment, there is no accurate assessment of the potential for the development of relations between Belarus and the SCO member states.

Research methods

Econometric gravity models of mutual trade were used in the article by E.G. Gospodarik, E.S. Marenova (2021) for the analysis of mutual trade of the EAEU countries. The choice of gravity models by the authors of the article is explained by the fact that these models are one of the most important means of empirical analysis of international trade flows. Two gravity models reflecting the foreign trade activities of the EAC member countries were constructed. Two different indicators were used in the models as a measure of economic size: GDP at current prices and the number of economically active population. Based on both models, it was confirmed that trade between the EAEU member states obeys the general laws of the gravitational model.

Gravity models can be used as a tool for assessing the potential of countries' foreign trade. Traditionally, gravitational models are presented in the following logarithmic form:

$$\ln(EXP_{ij}) = \beta + \alpha_1 \ln GDP_{\exp} + \alpha_2 \ln GDP_{\mathrm{imp}} + \ln DIST_{ij}, \tag{1}$$

where EXP_{ij} is the value volume of exports from country *I* to country *j*; $GDP_{\exp}$, is the *GDP* of the exporting country; GDP_{imp} is the *GDP* of the importing country; $DIST_{ij}$ is the distance between the capitals of trading partners:

$$\ln(IMP_{ij}) = \beta + \alpha_1 \ln GDP_{\exp} + \alpha_2 \ln GDP_{\mathrm{imp}} + \ln DIST_{ij}, \tag{2}$$

where IMP_{ij} is the value volume of imports of country *I* to country *j*; $GDP_{\exp}$, is the *GDP* of the exporting country; GDP_{imp} is the *GDP* of the importing country; $DIST_{ij}$ is the distance between the capitals of trading partners.

It should be noted that at this technological level of development of countries, the transport system is sufficiently developed so that the distance between countries does not play such a significant role in the external trade flows of the country. At the same time, the presence of common borders significantly increases the volume of trade between countries, therefore, instead of the factor of distance between the capitals of trading partners, this paper will consider the fact of the presence of common borders.

Belarus' trade with the SCO member states was considered for 2002–2021. The time series affects the COVID-19 pandemic, so the models also took into account its impact on external trade flows. Since the time period under consideration is limited to 2021, the consequences of the pandemic may not fully affect the estimates of the constructed models.

In 2011–2014, there was a noticeable increase in Belarus' exports to Russia and Kazakhstan compared to previous years. This may be explained by the creation of the customs union by the leaders of the countries to which Kyrgyzstan subsequently joined. In this regard, it was decided to add a fictitious variable of countries' participation in the customs union to the model.

Thus, the paper considered a modified version of the gravity model with the factor of countries having common borders, as well as a model with the addition of fictitious variables (the presence of common borders (variable D1), participation in the customs union (variable D2) and the COVID-19 pandemic (variable D3)).

In addition to the GDP presented in the traditional gravity model, GDP per capita, GDP by PPP and GDP per capita by PPP were also considered.

During the work, data were collected on GDP and GDP per capita in current US dollars, GDP by PPP and GDP per capita by PPP in current international dollars according to the World Bank, as well as export and import volumes in millions of US dollars according to Trade Map statistics for the period 2002–2021 (Table 1–4).

Russia and China are the largest trading partners of Belarus in the Shanghai Cooperation Organization, therefore, they largely determine the estimates of the model. Therefore, models were also evaluated in the course of the work, with the exception of data from two countries.

In addition to the gravity model for Belarus' exports to the SCO countries, the model for imports was also evaluated. It mirrors the exporting and importing countries while preserving all other factors.

Therefore, the logarithmic econometric models considered represent data panels for 2002–2021 and include 180 observations (160 observations for models excluding China and Russia).

Results and discussion

As a result of the analysis of the constructed export models, the best models (models with the lowest average approximation errors) were determined. They turned out to be GDP models (Table 1). At the same time, the best model is a model with dummy variables including all countries.

Table 1

Results of evaluation of export gravity models by GDP

Factors	Traditional model	Model with dummy variables	Model excluding China	Model excluding Russia
Exporter's GDP	0.86* (0.15)	0.84* (0.13)	0.99* (0.14)	0.91* (0.15)
Importer's GDP	0.31* (0.03)	0.42* (0.03)	0.36* (0.03)	0.42* (0.03)
Common borders	4.06* (0.23)	2.73* (0.23)	2.96* (0.25)	–
Participation in the Eurasian Customs Union	–	1.44* (0.15)	1.43* (0.15)	1.44* (0.16)
COVID–19 pandemic	–	−0.27 (0.21)	−0.32 (0.22)	−0.3 (0.23)
Coefficient of determination	0.78	0.86	0.87	0.68
Adjusted coefficient of determination	0.78	0.86	0.87	0.67
Number of reservations	180	180	180	180
MAPE	18.63 %	16.10 %	16.67 %	17.65 %

* — coefficients for factors are significant at 1 % level.

Source: compiled by the authors based on results of GDP (current US$) in World Bank. Retrieved May 20, 2023, from worldbank.org

The coefficients for fictitious variables responsible for the impact of the COVID-19 pandemic turned out to be insignificant, which suggests that these factors did not have any significant impact on the value of Belarus' exports from the SCO countries.

Positive coefficients for GDPexp and GDPimp mean that the larger the size of the economies of the countries, the more exports between trading partners. At the same time, a positive coefficient with factor D1 indicates that the fact that there are common borders between countries has a direct relationship with the amount of exports between them. The volume of exports from Belarus to Russia, the only SCO country

bordering it, exceeds the volume of trade with other countries by 273 %. By joining the customs Union of the countries, Belarus has also increased its export turnover with them by 144 %. In general, the significant factors of the equation explain 86 % of the variation in the value of Belarus' exports to the SCO countries. The best import models are the PPP GDP models (Table 2). The best model is the PPP model without China.

Table 2

Results of evaluation of imported gravity models of GDP **by PPP**

Factors	Traditional model	Model with dummy variables	Model excluding China	Model excluding Russia
Exporter's GDP	0.6* (0.04)	0.62* (0.04)	0.38* (0.04)	0.63* (0.05)
Importer's GDP	1.03* (0.28)	1.24* (0.35)	1.2* (0.3)	1.39* (0.38)
Common borders	33.03* (4.43)	36.57* (5.62)	32.1* (4.81)	—
Participation in the Eurasian Customs Union	—	0.7* (0.29)	0.87* (0.24)	1.00* (0.34)
COVID-19 pandemic	—	−0.1 (0.34)	−0.06 (0.29)	−0.06 (0.38)
Coefficient of determination	0.8	0.81	0.87	0.59
Adjusted coefficient of determination	0.79	0.8	0.86	0.58
Number of reservations	180	180	160	160
MAPE	15.06 %	13.07 %	12.22 %	15.46 %

* — coefficients for factors are significant at 1 % level.

Source: compiled by the authors based on results of GDP, PPP (current international $) in World Bank. Retrieved May 20, 2023, from worldbank.org (accessed: 10 December, 2022).

It should be noted that the pandemic did not have a significant impact on Belarus' imports from the SCO countries. According to the estimates, there is a direct relationship between the volume of imports and the size of the economies of trading partners. The same type of relationship exists between imports and a dummy variable corresponding to the presence of common borders between countries. Belarus' imports from Russia exceed imports from other countries by 3210 %. After joining the Customs Union, Belarus' imports to the SCO countries increased by 87 %. The variation in Belarus' imports is explained by 87 % of the significant factors included in the model 87 %.

With the help of the known values of exports and imports between Belarus and the SCO countries and the calculated values obtained from the constructed model, it is possible to assess the potential of trade between the countries. Since the models we evaluated gave different results, we built a consensus forecast. For this purpose, 5

of the most accurate models were selected and then linear econometric models were constructed, in which the actual value of exports or imports was used as an explanatory variable, and their calculated values from the selected models were used as explanatory variables. The coefficients obtained for each of them are the weights by which the potential values of exports and imports were subsequently multiplied to obtain a consensus forecast.

So, the degree of realized potential of foreign trade is the ratio of the actual value to the calculated value, reduced by one (Table 3). Consider this value for the period from 2015 to 2021.

Table 3

The level of realization of Belarus' export potential with SCO countries in 2015-2021, %

Year	India	Iran	Kazakhstan	China	Kyrgyzstan	Pakistan	Russia	Tajikistan	Uzbekistan
2015	14.16	−78.46	−27.34	5.43	−66.02	−60.23	−1.24	−51.67	−67.29
2016	52.27	−73.13	11.54	8.68	−52.81	−40.33	0.16	−41.40	−55.42
2017	−9.33	−73.89	9.23	−22.90	−12.51	−50.16	2.20	7.41	19.72
2018	2.66	−65.85	30.52	14.31	−24.16	−70.56	−3.91	−22.09	197.62
2019	21.50	−74.08	18.60	−3.44	−65.79	−68.44	2.62	−23.89	271.72
2020	28.91	−74.96	39.71	−0.78	−55.48	−67.86	0.52	60.10	401.08
2021	−93.23	−90.09	22.32	0.80	−53.88	−88.59	−0.40	−19.45	218.29

Source: compiled by the authors based on results of export in Atlas Harward. Retrieved May 20, 2023, from https://atlas.cid.harvard.edu/

We split the SCO countries into three groups: countries with fully realized export potential, countries with incompletely realized export potential, and countries with unrealized export potential. The first group of countries includes Uzbekistan. The second group includes India, Kazakhstan, China and Russia. The third group includes Tajikistan, Pakistan, Kyrgyzstan and Iran.

With Kazakhstan, there is an increase in the level of its realization, while with Iran and Pakistan, on the contrary, there is a decrease. With the other countries, it is not possible to identify a clear trend in the indicator.

Countries with fully realized import potential include Uzbekistan, countries with incompletely realized import potential include India, Kazakhstan, Russia, and countries with unrealized import potential include Iran, Kyrgyzstan, Pakistan, Tajikistan, and China (Table 4).

The level of realization of Belarus' import potential with SCO countries in 2015-2021, %

Year	India	Iran	Kazahstan	China	Kyrgyzstan	Pakistan	Russia	Tajikistan	Uzbekistan
2015	6.51	−62.93	−49.35	−8.46	−75.37	−67.21	−8.89	−33.32	103.55
2016	3.62	−82.39	−27.27	−5.94	−70.89	−64.82	−5.20	−52.17	93.71
2017	4.12	−77.81	11.95	7.98	−62.79	−74.14	5.41	−40.93	121.00
2018	5.07	−68.61	18.95	5.23	−45.50	−70.71	8.81	−35.19	154.53
2019	−0.37	−78.30	57.04	−1.57	−60.44	−68.81	−3.99	−53.11	180.86
2020	15.73	−46.79	49.36	5.26	−50.46	−59.60	17.21	7.53	549.35
2021	−0.12	70.89	70.87	−3.87	−46.26	−66.45	−13.19	80.52	756.03

Source: compiled by the authors based on results of import in Atlas Harward. Retrieved May 20, 2023, from https://atlas.cid.harvard.edu/

The low degree of realization of Belarus' trade potential with Iran can be explained by the large number of sanctions imposed on it, with Kyrgyzstan, Pakistan — by relative remoteness and not close relations between the countries.

An increase in the degree of realization of Belarus's import potential can be observed with Kazakhstan, Tajikistan and Uzbekistan.

With most of the countries in both export and import models there is an increase in the level of realization of foreign trade potential in 2020 and a decrease in 2021. This can be explained by the pandemic, whose effects started to show in the last year under consideration.

Neither so, with most countries, export nor import potential of Belarus has been realized. The accession of Belarus to the SCO would help to build closer economic relations and increase trade between partners. Ways to increase the indicator can be found by analyzing trade between the countries in selected commodity groups.

The authors conducted a study aimed at identifying the main commodity groups of exports and imports of the Republic of Belarus with the participating countries, through which Belarus can realize its trade potential.

It is important to note that as of May 2023, there are no data on groups of foreign trade goods for 2021 and 2022 with the SCO member countries, therefore, the analysis of commodity groups was considered in the time interval from 2015 to 2020. The classification of commodity groups of foreign trade in this study is considered within the framework of the Harvard University methodology, which divides the trade flows of countries into the following groups of goods: agriculture, chemicals, electronics, machinery, metals, minerals, stone, textiles, vehicles and other.

The Russian Federation has been the main importer of Belarusian goods throughout the entire period among the SCO member states. Absolutely the most stable and significant growth is observed in all commodity groups, when compared with other countries. Nevertheless, Russia's share in the world export of agriculture to Belarus has decreased by 12.5 % in five years and amounted to 63.3 %, while

the share of this group has grown in China (+4.5 %). Based on this, we can assume that Belarus is able to realize its potential with China in this direction and with Russia in such industries as chemicals and electronics, which have been increasing their share for five years, thereby compensating for the reduction in the agriculture group of goods.

If we rely on the volume of GDP and exports to Kazakhstan and India, then the export potential is not fully realized. We believe that the main way to implement it with Kazakhstan is the agriculture group of products. The share of this sector has been increasing for five years and in 2020 amounted to 40 % of exports to the country (+49.3 % in 5 years). During the period under review, the largest export item to India is the chemicals group of goods, which on average accounts for more than 83 % of exports to the country and in 2020 accounted for 3.6 % of world exports of this category of goods, which is the third largest partner in the SCO.

From the point of view of realizing the import potential, it is important to note that absolutely in all categories Belarus provides its consumption with goods from Russia and China, since the share of these countries in all groups for 5 years on average is more than 99 % of all SCO countries. That is why we have identified such a group of goods as agriculture as the main direction of realizing the import potential from Russia. Only this commodity group had a steady and significant increase in the share of the country's global imports, which in 2020 amounted to 41.6 % (+13.3 % of, 2020).

We believe that the expansion of trade relations with China in the field of motor vehicles and textiles can contribute to the fuller realization of the import potential of Belarus and the strengthening of economic ties between the two countries. The main reason for this is the increase in the share of these groups in imports from China, while these same groups are losing their share in imports from Russia, which just compensates for this reduction.

Conclusion

Therefore, consensus projections of the country's exports to SCO countries were constructed based on the top five gravity models of Belarus' exports to SCO countries. Similarly, consensus forecasts of the country's imports from SCO countries were constructed. Based on these data, the extent to which the country's export-import potential has been realized was assessed. The analysis showed that the export and import potential of Belarus is realized only with Uzbekistan. The trade potential of Belarus with other countries has not been fully realized or not at all.

For countries with which the potential of foreign trade can be improved, groups of goods were proposed whose trade volumes, in our opinion, should be increased. For China and Kazakhstan, Agriculture became such export groups, for India — Chemicals, and for Russia — Chemicals and Electronics. From the point of view of increasing the degree of realization of import potential, we can offer to increase

trade with China in the field of motor vehicles and textiles, and with Russia in the field of agriculture.

In our opinion, Belarus' full-fledged entry into the SCO and the development of trade with the organization's participants in the areas proposed above are beneficial for the country and correspond to its national interests.

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