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Analysis of the foreign trade dynamics in the BRICS countries

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Abstract. The relevance of studying the trends in the development of foreign trade operations of the BRICS countries is due to the ever-increasing role of the union in the global economy. The study presents the results of the analysis of the dynamics and structure of foreign trade operations of export and import of the BRICS countries for the period 2000–2022. In the entire volume of world trade of the BRICS countries, the most significant items of cross-border exchange of goods were identified in order to study the trend of the dynamics of the BRICS countries in international trade. The indicators of export and import of the most important food and raw materials, energy resources, which make up about 40 % of the total turnover, were studied. The outpacing growth of exports compared to imports indicates a relatively better supply of raw materials, as well as a higher level of competitiveness of the BRICS countries compared to other economic unions and other states. The analysis of the growth structure of the volumes of foreign trade operations of the BRICS member countries showed the prevalence of high-tech goods with high added value in exports and a high raw material component of the BRICS imports. The results demonstrate trends in significant growth in the volumes of foreign trade operations and the overall positive dynamics of the growth of the BRICS share in world trade for a 20-year period, which indicates an increase in the political and economic power of the union countries. The findings allow us to predict the growth of the economic potential of the union, further increase in trade flows and an increase in the share in world trade, which will strengthen both political positions in the world and will contribute to the deepening of cooperation and macroeconomic coordination of the BRICS countries.

Keywords: BRICS, export, import, high-tech goods, raw material, development prospects

Authors' contribution. Vavilina A.V. — research concept and design, data analysis; Komarova T.V. — data collection, data analysis; Firsova A.A. — data collection, data analysis.

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Анализ динамики внешнеторговых операций в странах БРИКС

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Аннотация. Актуальность изучения тенденций развития внешнеторговых операций стран БРИКС обусловлена постоянно возрастающей ролью союза в мировой экономике. Представлены результаты анализа динамики и структуры внешнеторговых операций экспорта и импорта стран БРИКС за период 2000–2022 гг. Во всем объеме мировой торговли этих стран выделены наиболее значимые статьи трансграничного обмена товарами с целью изучения тенденции динамики стран БРИКС в международной торговле. Исследованы показатели экспорта и импорта важнейших продовольственных и сырьевых товаров и энергоресурсов, составляющих около 40 % от общего товарооборота. Опережающий рост экспорта по сравнению с импортом свидетельствует о сравнительно лучшей обеспеченности сырьем, а также о более высоком уровне конкурентоспособности стран БРИКС по сравнению с другими экономическими союзами и государствами. Анализ структуры внешнеторговых операций стран-участниц БРИКС показал преобладание высокотехнологичных товаров с высокой добавленной стоимостью в экспорте и высокую сырьевую составляющую импорта. Результаты исследования демонстрируют тенденции значительного роста объемов внешнеторговых операций и общую положительную динамику роста удельного веса БРИКС в мировом товарообороте за 20-летний период, что свидетельствует об увеличении политико-экономической мощи стран. Полученные выводы позволяют прогнозировать рост экономического потенциала объединения, дальнейшее увеличение товаропотоков и прирост доли в мировой торговле, что усилит политические позиции БРИКС в мире и будет способствовать углублению сотрудничества и макроэкономической координации стран — участниц и партнеров.

Ключевые слова: БРИКС, экспорт, импорт, высокотехнологичные товары, сырье, перспективы развития

Вклад авторов. Вавилина А.В. — концепция и дизайн исследования, анализ данных; Комарова Т.В. — сбор данных, анализ данных; Фирсова А.А. — сбор данных, анализ данных.

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Introduction

The BRICS group of countries, which was established in 2006 as an informal inter-state association, by 2024 has transformed into a political and economic union and strategic partnership of major emerging states (Sekongo, Antonov, Titus, 2017; Radulescu, Panait, Voica, 2014). The initial discussions of researchers about the prospects for institutionalization and viability of BRICS (Andronova, 2013; Davtyan, 2013; Davydov, 2014; Kheyfets, 2015) have today been replaced by a discussion of the multiplier effects in the development of the association and the effectiveness of new financial institutions and cross-border settlement and depository infrastructure. (Degtereva, Moseikin, Chernova, 2016; Gusakov et al., 2019). Objectively, the BRICS development vector can be explained by the trajectory of fast-growing countries wielding high regional economic influence and strength that they are gradually transforming into the political one. The great political strength of the BRICS union is determined by the facts that (1) two BRICS countries (Russia and China) are permanent members of the U.N. Security Council; (2) Russia, China and India are nuclear powers; as well as that (3) the organization tend to grow through incorporating major regional economies.

According to estimates of the volume of export-import activities of the BRICS countries, today the BRICS countries account for one third of global exports of goods and services, more than half of capital and consumer goods exports of emerging countries, as well as imports of commodities, natural resources (Kovaleva, Rastopchina, Bozhkov, 2003). More than 40% of the world's population is represented by these countries, and their economies generate more than 30% of global GDP (Andronova, 2013). By 2030, the BRICS countries are projected to provide more than 50% of global GDP (Kovaleva, Rastopchina, Bozhkov, 2023; Vavilina, Komarova, 2023).

While analyzing the BRICS as a phenomenon of the new global economy, some researchers note that the member countries have united not in a traditional union on the basis of their geographical features, but on the attractive for them idea of sovereign economic policy and the creation of a polycentric world (Khmeleva, Guseva, 2024; Davydov, 2017). The independent position of the BRICS and the desire of the member countries to create a multipolar world contribute to the Union attractiveness for prospective members.

The expansion of BRICS through incorporating major players in the global market allows increasing the influence of individual member states, developing mutual settlements based on national currencies, expanding reciprocal openness of markets, transport and logistics infrastructure (Khmelevskaya, 2015). In the course of the latest expansion of the alliance, the BRICS' indicators on energy supply and trade, which play a key role in modern economies, has been particularly improved (Ugrin, Sasina, Gololobova, 2019; Zhou, 2020).

By 2024 about 30 developing countries had already shown interest in integrating into this community. Notable among them are Algeria, Turkey, Bangladesh, Vietnam, Indonesia, Kazakhstan, Nigeria, Thailand and Pakistan — these are major regional powers with significant human and natural resources

(Dergachev, 2021), agricultural potential (Tsypin, Ovsyannikov, 2017; Shelamova, 2023) and transport and logistics system. The expansion of the BRICS at the expense of the mentioned countries will radically change the political map of the world, creating a unified association of the so-called "Global South", which will serve as a counterweight to the declining political and economic influence of the countries of the "Collective West" (Silakova, 2023).

The landmark shift for the BRICS from a state of stability to an expansion strategy was the increase in sanctions risks for developing states (Akaev, Musiyeva, 2023; Medushevsky, Penzin, 2023). This is an incentive both for individual countries to increase the level of their own independence, and for the organization itself to enhance its influence and opportunities for mutual settlements among nations through extensive (growth in the number of members) and intensive (entry of the most powerful countries in terms of world trade) progress (Raghutla, Chittedi, 2020; Siswana, Phiri, 2021; Rani, Kumar, 2018).

BRICS includes not only large, but also rapidly developing nations that play an increasing valuable role in the global economy and, what is more important, in global trade (Balykhin, 2020; Potatuev, 2022; Shapiro, Karaeva, 2023). The growth of the share of mutual exchange of goods indicates an increase in the competitiveness of each state individually, a reduction in the dependence on goods from developed states and a strengthening of its own financial and economic position in the world arena (Druzin, Barsegyan, 2019; Djabrailova, 2022).

At all BRICS summits, the theme of strategic economic cooperation and trade partnership, mutual trade and investment has been and remains a priority (Kovaleva, Rostopchina, Bozhkov, 2003). Therefore, our work is devoted to a retrospective analysis of the world trade dynamics and the role of BRICS countries in it in the context of assessing the dynamics and trends in the development of foreign trade transactions of export and import of the BRICS countries for the period 2000–2022.

Materials and methods

In this study, we consider the BRICS countries in the updated format (from January 1, 2024) consisting of ten states as objects of study: Brazil, Russia, India, China, South Africa, Iran, Saudi Arabia, Egypt, Ethiopia and the UAE in the "partner state" category. Argentina declined the invitation to join the organization, so we excluded it from consideration. According to various reports, Saudi Arabia has not yet completed all the procedures for joining BRICS, however, according to official statements, it has already done so.

In the entire volume of world trade over the 20-year period, we have identified the largest items of cross-border exchange of goods in order to reflect the dynamics of the BRICS countries' progress in international trade: these are essential food and raw materials, energy resources, gold, medicines, fertilizers, paper and cardboard, steel and aluminum, metal cutting machines, electronics, cars and aircraft equipment. Overall, the coverage of the product groups selected for analysis is about 40% of total turnover (both exports and imports).

The main body of data is combined in two tables (exports and imports), reflecting the volume of trade of selected goods, as well as the share of BRICS countries for this product code for the period 2000–2021. However, in our opinion, the most important commodity positions are presented in detail in the context of all ten countries of the association. The tabular and graphical methods were used to process the body of statistical data; and the methods of general scientific knowledge were applied to interpret the results obtained.

The materials of the study include works of Russian and foreign authors, and the data from official websites of organizations. The key source of information of the study is the International Trade Statistics Yearbook of the UN Statistical Division[1]. Food trade is reported by FAOSTAT (Corporate Database for Substantive Statistical Data)[2]. Statistics on international trade in steel were obtained in the Steel Statistical Yearbook (World Steel Association)[3]. Here we used natural values in tons. Data for all other products are given in US dollars. Some data missing in the International Trade Statistics Yearbook for Russia were taken or updated on FCS (Federal Customs Service) information, for other countries — on the basis of the data of the international statistical aggregator Trademap[4].

At the time of this study, export and import data were available for the period from 2000 to 2022; while for trade in certain goods — only to 2021.

Results and discussion

Analysis of the foreign trade balance of the BRICS countries

As we have already noted in the introduction, one of the development trends of the BRICS member countries is the constant increase in foreign trade turnover both in absolute and relative terms compared to other countries. Moreover, as our analysis presented in Figures 1 and 2 below will show, total exports of the BRICS countries are growing faster than imports.

The economic shocks of 2020–2021 resulted from coronavirus pandemic have slightly slowed down the overall export growth of the BRICS countries. In absolute terms, the increase in the volume of goods exported continued, although the relative share of the group's countries decreased slightly in 2021–2022 compared to the 2020 figure.

Overall, for the period 2000–2022 the share of the BRICS' countries in global exports has doubled. In absolute terms, the export of goods increased 8 times. This includes 10 times in India and Egypt, 9 times in China and the UAE, and 6 times in Brazil, Russia and Ethiopia. Iran, Saudi Arabia and South Africa have increased

[1] Trade by Product. (2017). International trade statistics yearbook.

[2] Food and agriculture organization of the United Nations. FAOSTAT. Retrieved March 11, 2024 from https://www.un-ilibrary.org/content/series/24121355

[3] World steel Association: Steel statistical yearbook. Retrieved April 11, 2024 from https://worldsteel.org/steel-by-topic/statistics/steel-statistical-yearbook/

[4] ITC: Trademap. Trade statistics for international business development. Retrieved April 11, 2024 from https://www.trademap.org/Index.aspx

sales of their goods by 3–4 times over 20 years, which corresponds to the world average growth (3.9). Thus, only three BRICS countries are close to the world average in terms of export growth, while the remaining seven countries show better dynamics.

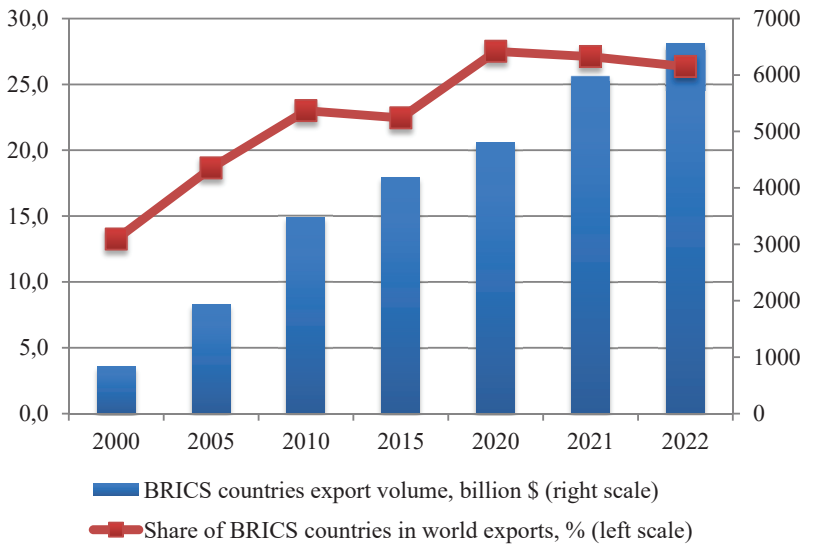

Figure 1. Total exports of the BRICS countries, 2000–2022 in billion USD

Source: compiled by A.V. Vavilina, T.V. Komarova, A.A. Firsova according to International Trade Statistics Yearbook, Trademap.

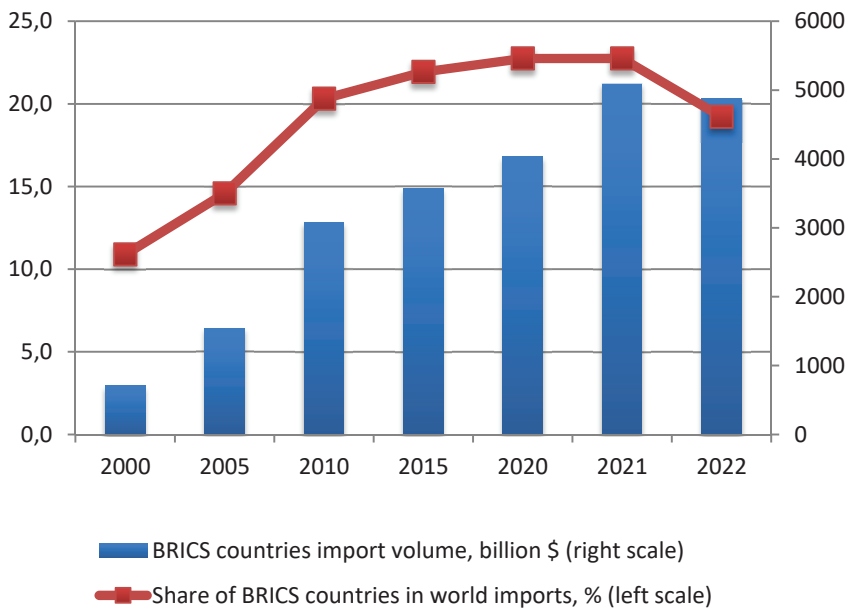

Figure 2. BRICS countries total imports in 2000–2022

Source: compiled by A.V. Vavilina, T.V. Komarova, A.A. Firsova according to International Trade Statistics Yearbook, Trademap.

It is also worth noting that China and Russia are the largest exporters of the BRICS group (64 and 9% respectively).

BRICS imports in 2022 declined in relative terms even more markedly than exports (from 22.7 to 19.2%, while exports fell from 27.1 to 26.7% of the world total). Also in 2022, a decrease in imports in absolute terms was recorded (see Figure 2); this was due to a reduction in imports of foreign goods to Russia, China and Iran. In general, over 20 years from 2000 to 2022, total BRICS imports increased 7-fold against a global average of 3.9-fold (1.8-fold in relative terms).

The largest import growth in individual countries for 2000–2022 was recorded in India and Ethiopia (14 and 12 times respectively), with imports into the UAE increasing tenfold, Russia and China sevenfold, Brazil and Saudi Arabia fivefold, and Egypt and South Africa — fourfold. Imports to Iran have tripled over the past 20 years.

China and India account for 58 and 15% of BRICS imports, respectively. Russia accounts for only 5.3% (5th place in the organization).

Thus, the overall analysis of the BRICS' foreign trade indicators showed that total exports of the countries are growing faster than imports, which certainly has an impact on the balance of their trade, as it is shown in Table 1.

Table 1

BRICS countries total exports in 2000–2022

Trade balance, total, billion $	2000	2005	2010	2015	2020	2021	2022	2022 compared to 2000, %
Brazil	–4	41	10	12	43	45	42	1192
Russia	69	142	168	161	105	199	332	480
India	–9	–43	–124	–126	–93	–175	–280	3049
China (with Hong Kong)	13	92	139	547	498	636	1360	10462
Republic of South Africa	3	–3	2	–4	16	28	10	305
Iran	14	16	36	21	40	54	55	396
Saudi Arabia	47	122	144	29	108	55	133	281
Egypt	–15	–9	–26	–46	–33	–33	–32	206
Ethiopia	–1	–3	–6	–15	–13	–12	–12	1570
UAE	15	32	55	35	101	88	78	524
Total BRICS	133	386	397	613	772	886	1686	1271

Source: compiled by A.V. Vavilina, T.V. Komarova, A.A. Firsova according to International Trade Statistics Yearbook, Trademap.

Table 1 shows that the 20-year trade surplus or deficit of BRICS countries has remained stable for all countries except Brazil. I.e. the countries with consistent foreign trade surplus have significantly increased their trade balance between 2000 and 2022.

China is notable in this respect, where the balance has grown by more than 100 times. For Russia, the trade surplus has increased 5 times over the past 20 years. South Africa, Iran, Saudi Arabia and the United Arab Emirates also significantly increased the positive balance between the export and import of goods.

India, Egypt and Ethiopia have negative trade balances. Moreover, in India it increased 30 times between 2000 and 2022, in Ethiopia — 16 times, and in Egypt the foreign trade deficit doubled.

Analysis of the BRICS export dynamics

It is relevant to present the dynamics of individual goods export by the BRICS countries on a global scale in the form of a separate table (Table 2). We note the dynamics of trade in key goods, indicating as a dynamic in absolute values (In billion $) and the share of BRICS countries in global exports of this product.

Table 2 shows that foreign trade represents about 40% of total exports of BRICS countries, and this share is stable throughout the observation period from 2000 to 2021.

The BRICS countries have noticeably increased their share in global food exports: 2.3 times the share in sales of meat, 1.4 times — fish, fruit and nuts, 2.8 times — sugar.

As it is shown in Table 2, the group's largest export growth is in wheat sales — in absolute terms, the increase in sales for 21 years amounted to 62 times, in relative terms — 16 times. The entire increase is due to Russia, which has increased wheat sales from virtually zero in 2000 to $7.3 billion in 2021. India's wheat exports have also grown significantly, from 92 million $ in 2000 to $1.72 billion in 2021. It is noteworthy that India, as a country with a rather low level of personal consumption, is a significant exporter of food. The share of other BRICS countries in wheat exports is insignificant.

BRICS' share in global iron ore and coal exports has declined — due to the sharp increase in Australian exports, which is a key global supplier. It is remarkable that exports from Russia have increased almost 15 times.

Over the past 20 years, the countries of the group have built up their sales of petroleum products almost 14 times (the growth of their share was 2.5 times).

Table 3 shows that the key global suppliers that have increased their sales by a factor of 5 or more are UAE, India, Saudi Arabia and Russia. It is worth noting that India and the UAE exported virtually no petroleum products in 2000, but by 2021 had taken global market shares of 6.7 and 11% respectively. Russia has increased its exports of petroleum products by 8 times in 20 years and holds a share of 8.6%. Overall, the BRICS countries account for about 40% of global oil product exports and almost 45% of oil exports, making the BRICS the most important player in the energy market, which is well positioned to influence global prices and regulate global oil production.

Table 2

Dynamics of some goods export by BRICS countries a nd their share in global exports 2000–2021

Name	Unit of measure	2000	2005	2010	2015	2020	2021	2021 compared to 2000, times
Meat	Billion $	2.9	9.5	15.4	21.4	22.7	26.3	8.9
	%	6.3	12.9	14.0	16.5	14.6	14.8	2.3
Fish	Billion $	10.7	12.3	28.7	29.6	30.2	35.4	3.3
	%	14.0	16.7	20.2	22.2	20.0	20.1	1.4
Wheat	Billion $	0.2	1.3	2.6	4.6	8.3	9.4	61.7
	%	1.0	7.2	8.0	11.8	18.6	16.9	16.2
Fruit and nuts	Billion $	3.2	6.2	12.1	16.4	20.8	22.3	7.0
	%	11.4	13.2	16.6	16.5	16.7	16.1	1.4
Sugar	Billion $	1.8	4.7	15.1	9.8	14.1	15.9	8.7
	%	15.2	27.2	41.6	31.4	42.6	42.3	2.8
Iron ore	Billion $	3.9	13.4	43.5	20.1	39.5	66.7	17.0
	%	43.1	47.7	41.4	29.4	27.7	30.7	0.7
Coal	Billion $	5.7	11.4	17.1	14.2	16.8	24.1	4.2
	%	27.4	24.6	16.4	19.2	21.0	19.2	0.7
Oil	Billion $	96.6	313.0	457.5	300.6	347.2	447.2	4.6
	%	29.6	42.8	40.5	40.4	58.2	44.5	1.5
Petroleum products	Billion $	23.4	85.6	179.6	179.6	207.4	321.8	13.8
	%	15.8	22.6	26.3	29.3	44.3	39.7	2.5
Gas	Billion $	20.5	40.7	73.5	26.2	29.6	51.5	2.5
	%	22.8	22.4	25.1	10.3	13.4	12.7	0.6
Pharmaceutical products	Billion $	2.8	4.8	13.1	23.0	36.4	65.6	23.5
	%	2.4	1.9	3.0	4.7	5.4	7.9	3.3
Fertilizers	Billion $	2.7	5.9	16.3	22.8	17.2	29.4	11.0
	%	17.6	21.0	29.7	36.6	31.1	34.9	2.0
Paper and cardboard	Billion $	4.1	8.6	13.9	19.4	19.9	23.1	5.6
	%	5.8	8.9	12.5	19.0	19.5	18.9	3.2
Steel	Million tons	56.1	82.9	88.2	169.2	116.9	137.3	2.4
	%	18.3	22.3	22.5	36.2	28.8	29.9	1.6
Gold	Billion $	1.1	3.1	13.4	65.8	120.5	99.6	87.7
	%	5.0	8.0	8.5	20.3	28.9	23.6	4.7
Aluminum	Billion $	8.5	18.1	30.2	44.8	45.6	68.8	8.1
	%	13.3	23.8	30.6	41.0	42.4	41.9	3.1
Computers	Billion $	13.5	86.2	152.8	157.9	200.7	251.6	18.6
	%	7.4	32.0	50.8	50.9	52.5	56.4	7.7
Microcircuits and their elements	Billion $	14.0	40.8	84.9	156.2	271.8	370.0	26.4
	%	7.3	16.1	21.2	30.9	34.7	36.7	5.0
Ground vehicles	Billion $	14.1	43.3	73.5	110.2	119.3	177.4	12.5
	%	2.5	4.7	6.8	8.3	9.3	11.7	4.6
Aircraft	Billion $	4.9	6.3	8.0	15.3	9.6	10.9	2.2
	%	4.2	4.9	5.8	7.2	6.7	7.6	1.8

Source: compiled by A.V. Vavilina, T.V. Komarova, A.A. Firsova according to International Trade Statistics Yearbook, Trademap.

Table 3

International exports of petroleum products by BRICS' countries and their share in global exports 2000–2001, billion $

Country	2000	2005	2010	2015	2020	2021
Brazil	1.3	2.8	3.1	1.7	5.1	7.3
Russia	9.2	33.8	69.3	67.4	45.4	70.0
India	2.1	10.0	36.6	30.0	26.2	54.0
China (with Hong Kong)	2.1	6.4	17.0	19.1	25.5	32.5
Republic of South Africa	1.1	1.4	2.4	2.8	1.8	2.0
Iran	0.0	0.3	10.4	9.9	20.0	9.0
Saudi Arabia	6.4	18.3	18.0	24.1	33.0	52.3
Egypt	1.2	3.2	3.0	1.5	2.9	6.0
Ethiopia	…	…	…	…	…	…
UAE	0.0	9.4	20.0	23.2	47.5	88.8
Total BRICS	23.4	85.6	179.6	179.6	207.4	321.8
Share in global exports, %	15.8	22.6	26.3	29.3	44.3	39.7
World-wide exports	148	379	684	614	468	810

Source: compiled by A.V. Vavilina, T.V. Komarova, A.A. Firsova according to International Trade Statistics Yearbook, Trademap.

The group's share of gas exports has been almost halved. However, here we can see a statistical inaccuracy, because for Russia for unknown reasons from 2010 to 2015 gas exports decreased 10 times — from $52.3 to $5.6 billion, which was due to the lack of data on the value of exports to a number of European countries (this can be seen in more detail by looking at export statistics according to the FCS). And international statistical aggregators only repeat the incomplete estimate of the FCS (Federal Customs Service). We also note the lack of data on gas exports by Saudi Arabia for 2020 and 2021. Taken together, these two observations are very significant and the real share of BRICS in global gas exports is likely to remain at 25% by 2021 — as in 2010.

Exports of pharmaceutical products increased 23.5 times from 2000 to 2021 (3.3 times in relative terms). Exports of pharmaceutical products increased 23.5 times from 2000 to 2021 (3.3 times in relative terms). China is the major supplier of pharmaceuticals, while India is the major supplier of ready-to-use drugs.

Exports of fertilizers by the BRICS countries increased 11-fold. Almost the entire export volume of the association is formed by Russia and China. If Belarus joins BRICS in 2024, the group's share in fertilizer supplies to the global market may reach 40%, which is very significant for global agriculture (annual supplies from Belarus account for about 3% of global ones).

Exports of paper and cardboard increased 6 times in absolute and 3 times in relative terms. China accounts for about half of it, with the remaining exports mainly to India, Brazil and Russia.

Steel exports from the BRICS countries have grown 2.4 times in absolute terms over 20 years, and their share has increased 1.6 times globally. China remains in the lead; the next three countries (Russia, India and Brazil) export a combined total of about the same amount of steel as China did in 2021. The other countries in the group do not play a significant role in global trade in steel and steel products.

Gold exports from the BRICS have grown almost 88 times. However, due to the global trend towards the growth of the gold market in relative terms, the share of the group's countries increased "only" 5 times. Hong Kong and the UAE are key exporters. Russia also plays a significant role, which in 2000 did not supply gold to foreign markets at all, but in 2021 it took a share of 4.1% ($17.4 billion). In general, the export of BRICS gold is composed of its sales on the world market by China, the UAE and Russia (Table 4).

Table 4

International exports of gold by BRICS' countries and their share in global exports 2000–2001, billion $

Country	2000	2005	2010	2015	2020	2021
Brazil	0.3	0.5	1.8	2.3	4.9	5.3
Russia	0.0	0.0	0.0	1.5	18.5	17.4
India	0.0	0.0	0.1	5.3	0.3	0.0
China (with Hong Kong)	0.8	2.2	10.1	45.0	45.2	32.8
Republic of South Africa	0.0	0.2	0.0	2.0	17.4	7.3
Iran	0.0	0.0	0.0	0.0	0.0	0.0
Saudi Arabia	0.0	0.2	0.2	0.3	2.0	2.0
Egypt	0.0	0.0	1.0	0.6	2.9	1.1
Ethiopia	0.0	0.0	0.2	0.2	0.0	0.0
UAE	0.0	0.0	…	8.6	29.3	33.8
Total BRICS	1.1	3.1	13.4	65.8	120.5	99.6
Share in global exports, %	5.0	8.0	8.5	20.3	28.9	23.6
World-wide exports	22.7	39.0	157.1	323.9	417.4	422.6

Source: compiled by A.V. Vavilina, T.V. Komarova, A.A. Firsova according to International Trade Statistics Yearbook, Trademap.

Exports of aluminum have increased by 8 times (share tripled). The main growth was driven by China, which smelts more than half of the world's primary aluminum. India (which did not export metal in 2000) and Russia are also significant suppliers.

It is worth noting the significant growth of computer exports by BRICS countries: over 20 years, it has grown almost 19 times (growth in relative terms almost 8 times). Almost all exports of electronic computing equipment are generated at the expense of China. The contribution of the remaining countries is insignificant.

The BRICS countries' sales of microchips increased 26 times. Here again, more than a third of the world market is being formed by China; which, by the way, is an even larger importer (almost half of world imports as we show in Table 5 below).

It is also worth noting the dynamics of vehicle exports, which in the BRICS countries amounted to 12.5 times (4.6 times growth in relative terms). 2/3 of the group's exports for 2021 are generated by China. The share of India, UAE, South Africa and Brazil is also notable.

The export of aviation and space equipment grew 2.2 times over 20 years, and in relative terms is 1.8 times. This is the most "conservative" sector of world trade, where the market grows very slowly, as we can see from the proximity of absolute and relative figures of the growth of BRICS exports.

Let us note that since 2010 export and import of aircraft Russian FCS under code 88 is not published.

The dynamics of BRICS exports by main commodity items for 2001–2022, in descending order, is presented in Fig. 3.

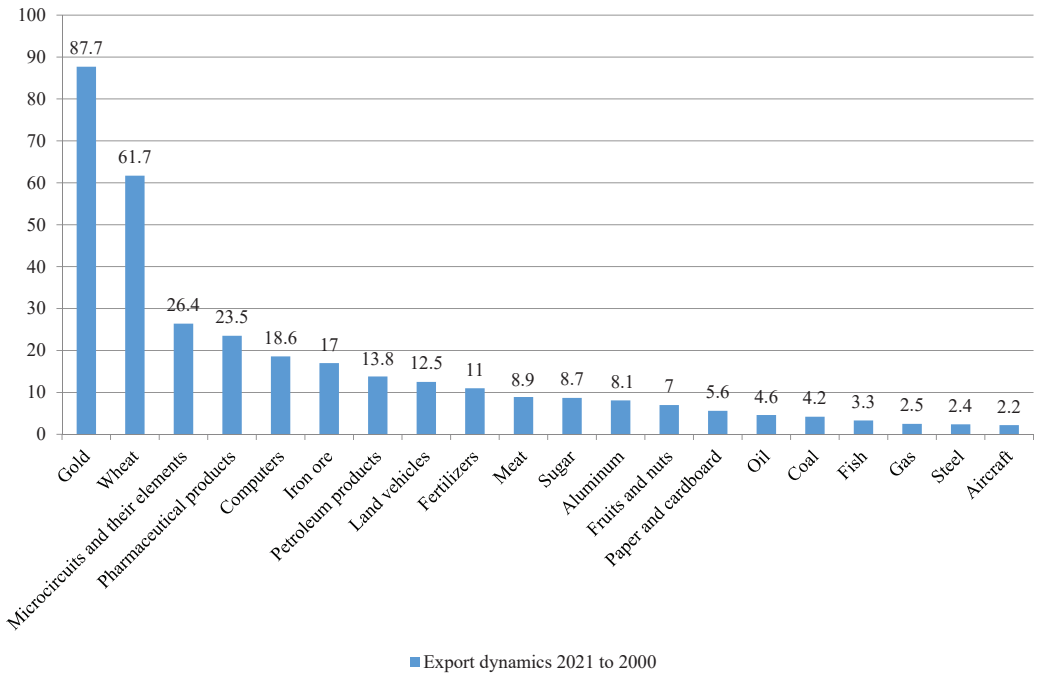

Figure 3. Export dynamics of the main BRICS exports in 2000–2022, times
Source: compiled by A.V. Vavilina, T.V. Komarova, A.A. Firsova.

Analysis of the BRICS import dynamics

After analyzing the BRICS export dynamics, we go to the import analysis (Table 5).

From 2000 to 2021, the BRICS countries increased their imports of meat 7 times, fish and wheat 3 times, fruits and nuts 11 times, and sugar 4 times. If we compare these data with exports, we can note that for fish and sugar, the BRICS group as a whole has a positive trade balance with the rest of the world, while for other goods there is a persistent trade deficit.

Table 5

Import dynamics of some goods export by BRICS countries and their share in global exports 2000–2021

Name	Unit of measure	2000	2005	2010	2015	2020	2021	2021 compared to 2000, times
Imports, total	Billion $	709.6	1542	3080	3575	4029	5106	7.2
	%	10.9	14.6	20.3	21.9	22.7	22.7	2.1
Meat	Billion $	2.9	5.2	12.0	16.1	35.0	36.6	12.6
	%	6.2	7.2	11.1	12.6	22.5	21.0	3.4
Fish	Billion $	9.6	7.9	18.5	17.2	23.1	27.0	2.8
	%	12.0	10.1	13.5	13.5	15.5	15.7	1.3
Wheat	Billion $	3.5	3.0	6.4	7.2	8.3	10.3	3.0
	%	22.0	15.1	18.0	16.8	16.9	17.2	0.8
Fruit and nuts	Billion $	3.0	5.5	13.7	21.0	28.5	34.1	11.4
	%	9.3	10.4	17.3	19.5	21.5	23.0	2.5
Sugar	Billion $	1.5	2.6	5.9	4.5	5.2	5.8	3.9
	%	10.6	13.0	15.8	13.2	14.4	13.9	1.3
Iron ore	Billion $	3.3	23.8	87.8	60.2	124.9	190.6	57.1
	%	26.1	58.5	66.5	66.9	75.9	73.8	2.8
Coal	Billion $	2.5	7.3	29.9	27.3	35.0	57.6	23.4
	%	9.8	12.6	26.5	30.3	36.5	37.2	3.8
Oil	Billion $	31.5	98.1	246.7	296.2	273.9	379.8	12.1
	%	9.2	12.3	20.3	36.6	38.5	35.5	3.9
Petroleum products	Billion $	9.6	25.4	56.2	43.6	53.5	95.3	9.9
	%	6.7	7.0	9.1	7.8	12.1	13.2	2.0
Gas	Billion $	2.8	7.1	18.2	45.6	55.5	93.9	33.9
	%	3.0	3.8	5.9	15.3	22.7	20.1	6.6
Pharmaceutical products	Billion $	7.6	14.2	37.5	52.7	75.0	96.1	12.7
	%	6.5	5.5	8.3	10.3	10.5	11.2	1.7
Fertilizers	Billion $	3.7	8.3	15.5	19.5	20.4	30.8	8.4
	%	21.1	24.5	26.2	27.5	31.4	31.3	1.5
Paper and cardboard	Billion $	10.9	14.7	21.2	20.0	21.2	24.7	2.3
	%	15.2	14.7	18.7	19.1	20.3	20.0	1.3
Steel	Billion $	34.5	53.2	53.2	46.2	57.6	48.0	1.4
	%	11.6	14.6	13.8	10.2	14.2	10.4	0.9
Gold	Billion $	6.5	18.6	46.6	100.1	95.0	186.7	28.7
	%	24.3	37.7	32.6	28.8	22.8	41.2	1.7
Aluminum	Billion $	3.9	8.8	17.3	18.4	18.7	27.1	7.0
	%	6.1	8.4	12.0	11.5	11.5	11.6	1.9
Computers	Billion $	14.6	33.9	55.2	66.2	83.4	105.9	7.2
	%	7.3	11.8	17.2	19.6	19.2	20.8	2.9
Microcircuits and their elements	Billion $	33.1	121.3	232.7	336.2	537.2	664.9	20.1
	%	15.4	28.2	36.6	45.4	48.1	46.9	3.0
Ground vehicles	Billion $	21.7	56.0	142.6	169.2	149.4	185.6	8.6
	%	3.9	6.2	13.2	12.8	11.6	12.2	3.2
Aircraft	Billion $	10.7	15.1	22.0	51.2	20.4	25.5	2.4
	%	10.6	13.7	13.5	20.7	12.9	15.9	1.5

Source: Compiled by A.V. Vavilina, T.V. Komarova, A.A. Firsova according to the International Trade Statistics Yearbook, Trademap, FAOSTAT, Steel Statistical Yearbook.

Imports of iron ore increased 57 times, coal — 23 times. Almost the entire volume is purchased by China, whose deposits are gradually being depleted, and the huge volume of consumption in the economy requires increased imports of raw materials. We also note the increase in India's coal imports by almost 25 times over 20 years.

Imports of oil by BRICS countries increased 12 times and imports of oil products 10 times. Although at the expense of Russia and Middle Eastern countries, the group as a whole has a significant trade surplus.

The volume of gas imports increased 34 times (6.6 times growth in relative terms). All of the growth is driven by increased consumption in China and India.

Imports of pharmaceutical products increased 12.7 times, imports of fertilizers grew 8 times. It should be noted that the key consumers of fertilizers in the global market are Brazil and India, which do not have their own developed raw material base and chemical industry.

The growth in imports of paper and cardboard amounted to 2.3 times. It is noteworthy that the imports and exports of paper and cardboard for Russia and India are roughly the same.

BRICS' share in world steel imports has declined by 10 — due to a decrease in imports from Iran and Egypt, as well as a small increase compared to the world average import growth rate in the rest of the group.

Gold imports have increased 29-fold. However, the relative increase was only 1.7 times. Gold is imported primarily from China (with Hong Kong — 17% of world imports), India (12% of world purchases) and the UAE (10.6% of imports). India has traditionally been among the world's largest gold consumers, thanks to its highly developed jewelry industry. While gold is hardly exported from the country. Generally speaking these three countries are the main source of all gold imported by BRICS.

The aluminum and computers import into BRICS countries have grown 7 times. China is the key consumer. Imports of chips have grown 20 times — almost all of them are bought by China. Imports of vehicles have increased 8.6 times in absolute terms and 3.2 times in relative terms. The main consumers in the world market are China and Russia.

The growth of imports of aviation and space equipment amounted to 2.4 times (In percentage terms — one and a half times). Moreover, almost the entire volume of imports is sent to China. Recall that statistics on aircraft imports to Russia have not been published since 2015. However, in 2015 it amounted to only $3.2 billion (less than 1% of the world — at the level of India, 10 times less than Chinese imports).

The dynamics of BRICS imports by main commodity items for 2001–2022, in descending order, is presented in Fig. 4.

Thus, in this paper we have conducted a retrospective analysis of foreign trade transactions by BRICS countries based on time series of trade of 20 key goods, which form about 40% of the foreign trade turnover of BRICS countries. The positive dynamics of the gradual increase in the share of BRICS in world trade has been clearly demonstrated, which indicates an increase in the aggregate political and economic power of the union countries.

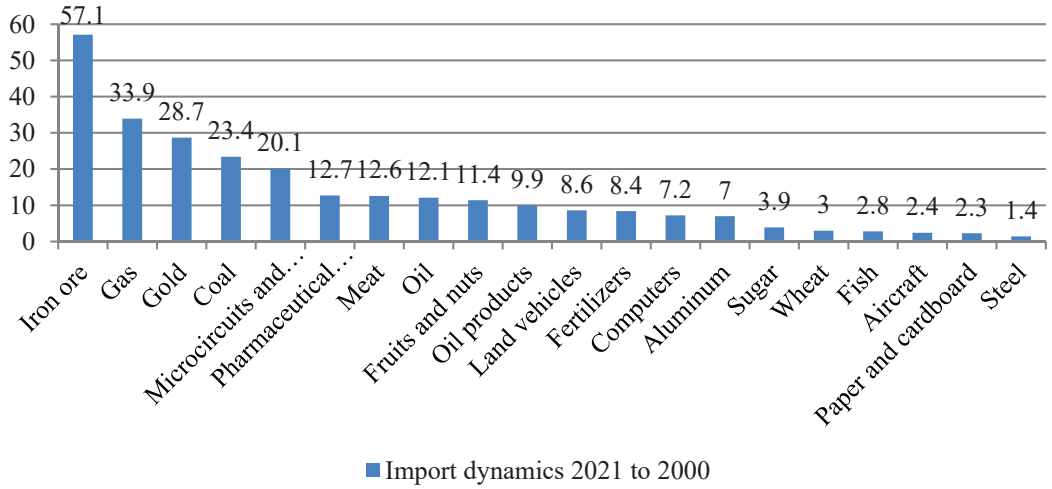

Figure 4. Dynamics of imports of main goods of the BRICS countries in 2000–2022
Source: Compiled by A.V. Vavilina, T.V. Komarova, A.A. Firsova.

Conclusion

The obtained results conceptually correspond to the results of leading studies on similar topics in the world. The researchers substantiated positive trends in the development of BRICS: the growth of the share of raw materials and semi-finished products produced in BRICS in imports contributes to the unification of manufacturers in value chains, and the increase in the technological component of products from China, Russia and Brazil allows for the substitution of imports with goods from BRICS countries. The higher-than-anticipated growth of exports compared to imports is a reflection of the relatively better commodity supply and competitiveness of BRICS countries as contrasted with other economic unions and countries.

Analysis of food exports of the group countries shows a decrease in the level of their own food supply due to the rapid growth of imports. This is clearly driven by the rising consumption standards of developing countries and the fact that their own agriculture and food industry are lagging behind the needs of the population.

The consumption of raw materials is increasing; however, a sufficiently high availability of minerals (primarily oil) in the countries of the group allows them to reasonably pursue an independent economic policy, both from other countries and from world prices for raw materials.

The positive dynamics can be seen in the growth of exports and the decline of imports for various industrial goods; first of all, of course, here the key role belongs to China as a leading world industrial center.

The analysis of discussions on the subject of foreign trade transactions of the BRICS countries has shown that contemporary researchers note a relatively low share of imports of consumer goods (less than 10% of the global volume in 2021), while the countries export a relatively large share of them (about 25%). For commodities, the

situation is the opposite — the share of natural resources in imports is 31%, which is about twice their respective share in exports.

The findings we have received are consistent with these statements. Graphs 3–4 show the dynamics of exports and imports, from which it can be concluded that the predominance of high-tech goods with high added value in exports and the high raw material component of imports of the BRICS countries indicates a considerable potential for the development of the technological structure of export and import growth.

Thus, based on the analysis of foreign trade transactions of exports and imports by the BRICS countries over the past 22 years in the history of development of foreign trade operations of the BRICS countries, we can draw conclusions about the trends of significant growth in the volume of these operations and predict the growth of the economic potential of the union, further increase in commodity flows and growth of the share in global trade, which will strengthen both political position in the world and will contribute to the deepening of cooperation and macroeconomic coordination of the BRICS countries.

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