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## COMPREHENSIVE ANALYSIS OF BRICS COUNTRIES AGRICULTURAL COMMODITY TRADING

*KOMPLEKSOWA ANALIZA HANDLU TOWARAMI ROLNYMI KRAJÓW BRICS*

*Key words: trade, commodity, agriculture, BRICS*

**Słowa kluczowe: handel, towar, rolnictwo, BRICS**

*JEL codes: F13, F14, F15*

**Abstract.** Agricultural commodity trading plays an important role in the global trade. The main reason of this article is to present changes in agricultural commodity trading that had appeared between 2004-2014 for BRICS countries. Furthermore, it examines how would the agricultural commodity trading would look if we would treat BRICS countries as one economic block. Descriptive statistics had been used by presenting an aggregated agricultural commodity trading data to elaborate this research problem.

### Introduction

Changing the balance of power in the global economy, which has continued from the beginning of the twenty-first century, derives its source primarily in the political changes that took place at the end of the last century. Their mark on this issue reflects primarily the collapse of the Soviet Union, the start of the reform of the Chinese Communist empire, and finally a departure from India's socialist system. In the same period, previous world power – which dominates the economies of the rest of the world the United States – wanting at all costs to maintain its position, engage in another costly armed conflict, resulting in the indebtedness of the state budget. Necessary, therefore, it has become a leading long-term policy of very low interest rates and prevailing inflation, which was possible, among others, thanks to the import of cheap products from China. All of these processes and transformations have led to entering to the global market of countries that have so far not participated in it, and even considered by many to be the “third world countries”.

BRICS refers to a new cooperation mechanism established by Brazil, Russia, India, China and South Africa, the five emerging economies, to strengthen cooperation and enhance their international influence and voice in the new situation. As the world's important bases of agricultural production, BRICS countries own 1/3 of the world's farmland. With large-scale agricultural production, the five countries are critical to guaranteeing world food security. Agriculture is top on the agenda of respective governments [BRICS 2017]. Trade in agriculture sector has been gaining attention in the recent years [Sharma 2012].

BRICS for many years was regarded mainly as a geopolitical term, defining the group of countries with rapidly growing economy, large population resources, as well as with significant growth potential for twenty-first century. The very concept of BRICS was born in 2001. However, it should be noted, that the concept and the principle futurological vision of O'Neill, as to the functioning of the BRICS group did not immediately become a reality. Compared to O'Neill's focus on the BRICS' share in the world economy as a whole, their weight in world agriculture is even larger. In 2010, over 40% of agricultural value added (in current US\$) was generated in BRICS countries. At a national level, agriculture is still a major economic sector in India and China, supplying huge populations and amounting to 18% and 10%, respectively,

of national GDP. For Russia and Brazil the share of agriculture in GDP is substantially lower, at 4% and 5%, respectively. However, in Brazil, agriculture has particular importance due to its contribution to the balance of payments. Meat (mainly poultry and beef), sugar, soybeans and other agricultural produce represent over a third of Brazil's merchandise exports. Russia has become a major exporter in the markets for grains, particularly for wheat, and is expected to further expand in this regard (see Pall et al. in this feature). A quarter of the world's agricultural land area is situated in BRICS countries. The area per inhabitant is small in India and China. China, presently highly dependent on agricultural imports, particularly of protein feeds, has started to invest in agricultural enterprises abroad aiming to secure control over food supplies needed for its population [Brosig et al. 2013]. BRICS has a significant role in the global trade flows. Its contribution to the global trade turnover has approximately tripled over the last two decades which proves the increased magnitude of BRICS in the global trade flows [Rasoulinezhad, Jabalameli 2018].

The accelerated economic globalization and integration has promoted the development of world agricultural trade; BRICS countries are increasingly important in international agricultural trade and have shaped trade structures with salient features [BRICS 2017].

### Material and methods research

The main objective of the study is to evaluate of changes the BRICS trade in agricultural products. Time frame of research has been selected for a period from 2004 till 2014, because in 2004 BRICS as an economic alliance of Brazil, Russia, India and China has been created, the Republic of South Africa had joined in 2011, and therefore, the economic alliance has been renamed to BRICS. Statistical data would be selected from the Database Statistical WTO. In case of agricultural trade, we are taking in consideration the products according to the WTO standards. The scope of the research would be observation of changes that had occurred in agricultural commodity trading for BRICS countries as well as evaluation of significance of the received results.

### Research results

By analyzing the available WTO date we might see how agricultural commodity trade had been shaped in time about how agriculture commodity trade had shaped in the time. The importance of incising role of export trade in agricultural products may observe in table below (tab. 1) and graphical representation (fig. 1).

As we can notice from data given above in the BRICS countries had occurred constant rise in trade of agricultural products from 2004 until 2014. As we may observe from the WTO data

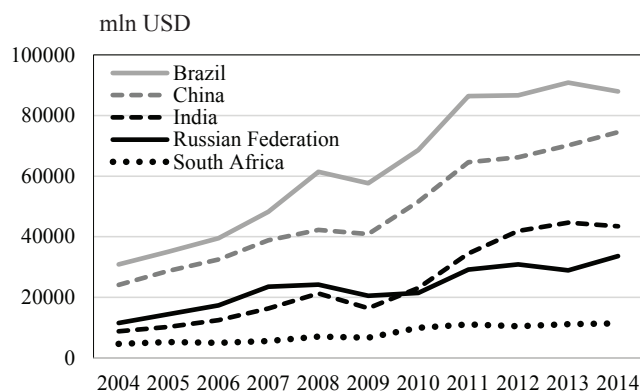


Figure 1. Export of agricultural products from BRICS (at current prices)  
Source: own study based on WTO data

Table 1. Export of agricultural products from BRICS member states (at current prices)

| State  | Export [mln USD] |        |         |         |         |         |         |         |         |         |         |
|--------|------------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|        | 2004             | 2005   | 2006    | 2007    | 2008    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    |
| Brazil | 30,867           | 35,048 | 39,527  | 48,287  | 61,398  | 57,659  | 68,587  | 86,443  | 86,656  | 90,842  | 87,925  |
| China  | 24,121           | 28,711 | 32,542  | 38,862  | 42,258  | 40,883  | 51,607  | 64,613  | 66,204  | 70,188  | 74,497  |
| India  | 8,799            | 10,274 | 12,452  | 16,301  | 21,251  | 16,384  | 23,106  | 34,491  | 41,890  | 44,685  | 43,467  |
| Russia | 11,542           | 14,481 | 17,336  | 23,508  | 24,204  | 20,538  | 21,437  | 29,202  | 30,892  | 28,877  | 33,599  |
| RSA    | 4,661            | 5,246  | 4,955   | 5,574   | 7,037   | 6,679   | 9,932   | 11,102  | 10,499  | 11,137  | 11,374  |
| Total  | 79,990           | 93,760 | 106,812 | 132,532 | 158,156 | 142,143 | 174,669 | 225,851 | 236,141 | 245,729 | 250,862 |

Source: own study based on WTO data



Figure 2. Aggregated export agricultural products for BRICS (at current prices)

Source: own study based on WTO data

all BRICS countries. For Brazil and China export hand been increasing dynamically and for India till 2014 too. From the data we know that export of agricultural goods for Republic of South Africa (RSA) had minimal importance. Situation of Russia shows that in 2013 after international sanctions agro-export had suffered but we may assume that after finding new trading partners is went back on upward part. Thus, if we would treat all countries BRICS states, that is – Brazil, the Russian Federation, India, People's the Republic of China and the Republic of South Africa (RSA), we would observe that the line of trend is going dynamically and constantly upward. Representation of the results we see below (fig. 2).

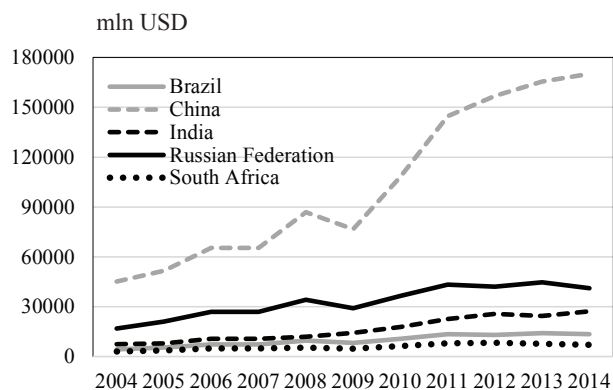


Figure 3. Import of agricultural products for BRICS member states (at current prices)

Source: own study based on WTO data

Table 2. Import of agricultural products for BRICS member states (at current prices)

| State  | Import [mln USD] |        |         |         |         |         |         |         |         |         |         |
|--------|------------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|        | 2004             | 2005   | 2006    | 2007    | 2008    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    |
| Brazil | 4,341            | 5,487  | 7,266   | 7,266   | 9,690   | 8,208   | 10,759  | 13,582  | 13,109  | 14,174  | 13,528  |
| China  | 45,189           | 51,653 | 65,369  | 65,369  | 86,807  | 76,617  | 108,260 | 144,724 | 156,835 | 165,476 | 170,107 |
| India  | 7,520            | 7,976  | 10,659  | 10,659  | 12,005  | 14,224  | 17,864  | 22,551  | 25,668  | 24,418  | 27,316  |
| Russia | 16,868           | 21,036 | 26,897  | 26,897  | 34,284  | 29,079  | 36,473  | 43,256  | 42,037  | 44,726  | 41,216  |
| RSA    | 3,048            | 3,649  | 4,888   | 4,888   | 5,364   | 4,730   | 6,296   | 8,066   | 8,399   | 7,677   | 7,148   |
| Total  | 76,966           | 89,801 | 115,079 | 148,150 | 123,858 | 132,858 | 179,652 | 232,179 | 246,048 | 256,471 | 179,652 |

Source: own study based on WTO data

We should not forget about import and its importance for national economy in trade balance. The data below representing the researched timeframe (tab. 2) and its graphical illustration (fig. 3) for each country and for BRICS treated as unity (fig. 4). As we can observe there are tremendous differences between BRICS countries. Contrary to export data China since 2009 had rapidly increased import of agricultural products which is in fact several times more higher then from other states. Brazil and India had slightly increased import and Russia Federation with Republic of South Africa had decreased their import. However, BRICS import as economic block/partnership shows upward tendency.

When we would take under the scoop relation between agricultural products export and import from BRICS countries we can observe very interesting dependence. The export and import of this commodity group is almost simultaneously increasing for BRICS states from 2004 until 2014. Graphical representation of this dependence is given below (fig. 5).

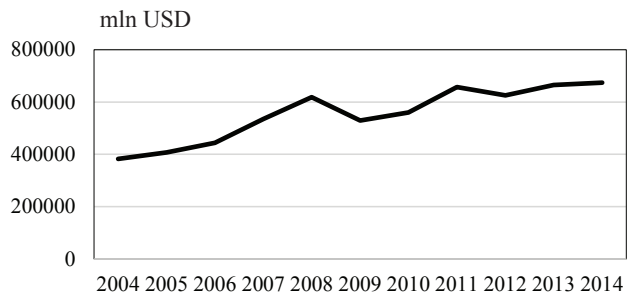


Figure 4. Aggregated import agricultural products for BRICS (at current prices)

Source: own study based on WTO data

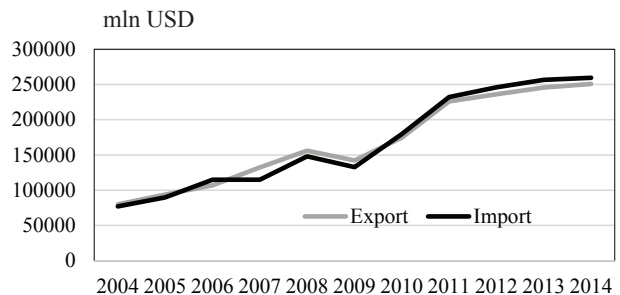


Figure 5. Aggregated export and import agricultural products for BRICS (at current prices)

Source: own study based on WTO data

## Summary

This article elaborates aggregated agricultural commodity trading from BRICS countries. As we can observe that despite many predictions about downward in importance of the global trade and declining share of agriculture in total value of trade is actually rising for the BRICS countries. That ensure us that agriculture is important sector of economy of that countries as well the agricultural commodity trade is developing for that group of countries.

The empirical study shows the parallel correlation in aggregated export and import for BRICS countries. The deviations between them are sporadic and the level that can be observed is not high. That inform confirm the statement about increasing value of trade in agricultural goods.

From other approach if we would exanimate each BRICS country separate the findings might be also interesting. Brazil would be the most exporting country in terms of agricultural goods, but import does not play important role, so we can say is export orientated country. Contrary, the People's Republic of China is the leader in import of that products but on the other hand they are the sound biggest exporter among BRICS. Further, India is slowly increasing their agro-food export, but import is sable, however on the low level. The Russian Federation slowly increasing their export, but import had not increased during the examination period. The last, Republic of South Africa presented the worst results, therefore, we may conclude that for them agricultural commodity trading is not significant. Thus, it is important to underline three facts from the analyzed WTO data. First is that economic crisis from 2008 had been visible in agricultural commodity data for all BRICS countries, either for export and import. Second, the international sections against Russia economy had resulted only for short time – year 2013 and this country had continued increasing part. Last findings, inform us that Republic of South Africa had the worst results in agro-trade. Deeper study would be needed to answer if the problem is structure of agricultural production or undeveloped primary sector which need modernization and investment.

This leads us to the conclusion that agricultural commodity trading is dynamic process. Additionally, agricultural production is important for some BRICS countries and it will be affecting on their total trade. Finally, we can observe that each country agro-export is visible connected and reflect that interdependence on the export slope.

This research in the article is also giving interesting starting point in further research, which would try to explain what factors are shaping both export and import and would discuss what agro-products are crucial for their trade and if BRICS countries in aim to increase theirs agricultural commodity trading should more focus on specialization in production of particular agricultural products.

## Bibliography

- BRICS. 2017. *BRICS Agricultural Development Report*. Ministry of Agriculture, Livestock, and Supply of the Federative Republic of Brazil, Ministry of Agriculture of the Russian Federation, Ministry of Agriculture and Farmers Welfare of the Republic of India, Ministry of Agriculture of the People's Republic of China, Department of Agriculture, Forestry and Fisheries of the Republic of South Africa.
- Brosig Stephan, Ramona Teuber, Inna Levkovych, Rainer Thiele, Thomas Glauben. 2013. Introduction to the special feature: Will the BRIC decade continue? The Role of Rural Areas and Agriculture. *Journal of Agricultural Economics* 64 (1): 145-150.
- Rasoulnezhad Ehsan, Farkhondeh Jabalameli. 2018. Do BRICS countries have similar trade integration patterns? *Journal of Economic Integration* 33 (1): 1011-1045.
- Sharma L. Sashiukumar. 2012. Economic effects on food and agriculture sector of BRICS+2: A CGE Model Simulation Analysis. *Management Convergence* 3 (2): 1-8.
- WTO Data Base: <http://stat.wto.org/Home/WSDBHome.aspx>.

### **Streszczenie**

*Handel towarami rolnymi odgrywa ważną rolę w globalnym handlu. Celem artykułu jest ocena zmian, które nastąpiły w handlu oraz w eksporcie i imporcie produktów rolnych dla krajów BRICS. Zbadano także związek pomiędzy państwami członkowskimi BRICS i ich wpływem na rolnictwo tych 5 krajów, czyli Brazylii, Rosji, Indii, Chin, Południowej Afryki. Stwierdzono, że handel towarami rolnymi jest dynamicznym procesem, a produkcja rolna jest ważna dla niektórych krajów BRICS, np. dla Brazylii, która miała największy eksport pod względem towarów rolnych. Natomiast Indie powoli zwiększały swój eksport rolno-spożywczy, w przeciwieństwie do Chińskiej Republiki Ludowej, która była liderem w imporcie tych produktów.*

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