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## Competitiveness of Uzbek agrarian foreign trade – different regional trade blocs and the most significant trade partners

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**Abstract.** Agriculture is one of the leading and largest economic sectors in the nation of Uzbekistan. The share of employees in the agricultural sector is 33% of the population. The annual growth rate of the agricultural sector is 1.7%, and it accounts for 18% of GDP. Agriculture provides jobs for approximately 15 million people, many of whom are part-time workers. During the years 2000 – 2018, the value of agrarian trade turnover increased from cc 520 million USD to 2.8 billion USD. This paper examines Uzbek foreign trade in agricultural products from the following perspectives: trade balance of Uzbekistan and international competitiveness. The intention of the paper is to determine changes in the character of agricultural trade. Changes in the product structure are identified, and individual changes are explained. The comparative advantages are analyzed according to different groups of countries (Asian countries without CIS countries, CIS without Asian countries, EU28 without other European countries, other European countries without EU and CIS countries, and developing countries). Agrarian trade competitiveness and territorial and commodity structure changes are analyzed for the last 19 years (2000–2018). The commodity structure of agricultural trade is analyzed on the basis of the standard Harmonized System. The source of information in the article is UN COMTRADE. The analysis is based on the following method and indexes: “product mapping approach” method, Herfindahl-Hirschman index,

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Lafay index, and the trade balance index. In addition, some other statistical characteristics are applied: geomean, chain index, basic index, import/export coverage ratio, etc. Uzbek agricultural exports are competitive with regard to Asian and CIS countries, and limited when compared with other territories.

**Keywords:** agrarian trade, agricultural products and foodstuffs, Uzbekistan, partners, competitiveness, changes, institutional comparative advantage, balance, products mapping.

**JEL Classification:** Q13, Q17

## 1. INTRODUCTION

In the second decade of the 21st century, the world economy is undergoing significant changes in its overall picture, which we were accustomed to seeing during the period of so-called hyper-globalization. It is the result of fundamental changes in the economic and geopolitical framework of global development and the transformation process that globalization processes have brought about as a result of profound structural changes.

The essential factors that have emerged in international relations include the slowing down of globalization processes, or even in certain areas, the opposite process of de-globalization, both at the global and regional level.

In this context, professional literature appeared the idea of the return of so-called geopolitics and geoeconomics to the practice of world economic, but also in wider sense political relations. It aims to use trade policy instruments to achieve the strategic geopolitical goals of individual powers and their geopolitical ambitions (Benešová, Novotná, Šánová, & Laputková, 2016a; Veebel & Markus, 2018).

Because of increasing power competition of “superpowers” small economies are under the permanent pressure. Very good example of such a situation is Uzbekistan - former post Soviet country. Its economy is heavily dependent on CIS (Commonwealth of Independent states) countries and especially Russian Federation. The trade between these countries is influenced by the basic relationship defined by Head, Mayer and Ries (2010) based on post-colonial ties and further extended to post-Soviet republics (Mazhikeyev & Edwards, 2013; Mazhikeyev, Edwards, & Rizov, 2015). At the same time, a typical center-periphery relationship could be applied to the Russia-other relationship (Furusawa & Konishi, 2007; Kowalczyk & Wonnacott, 1992; Puga, 2001). When comparing 2000 and 2015, there is a greater degree of interdependence between countries, especially those linked to Russia. This is pointed out by Myant and Drahokoupil (2008). At the same time, the structure of foreign trade of individual countries is gradually changing. There is a greater interconnection between individual geographical units. From the perspective of openness of the economy, it can also be said that Tajikistan, together with Uzbekistan, is among the countries that are closest to autarchy in 2015. Similar conclusions were reached by Bose (2005), Cameron et al. (2012) and Korosteleva (2016), who add that the export structure of these countries is also a problem. The possibility to diversify trade territorial structure concentration is rather limited because of negative influence of traditional trade partners (Benesova et al., 2016b; Remeikiene et al., 2018).

Uzbekistan is not member of the World Trade Organization. Uzbekistan's most important export partners include Switzerland, China, Russia, Turkey and Kyrgyzstan. In the case of imports, China, Russia, South Korea, Kazakhstan and Turkey are among the most important trading partners of Uzbekistan. China is an important trading partner for most Central Asian countries. One of the reasons is the large amount of mineral resources found in these countries (Bohr, 2004; Cobanli, 2014; Linn, 2012). Norling and Swanstrom (2007) point out that trade between these countries is becoming continental rather than

regional and favors broader ties. In the case of foreign trade between countries, there are also significant differences in the geographic structure of the market, where China and other Asian countries are an important trading partner for the Central Asian Republics (Chiaruttini, 2014; Linn, 2012; Spechler & Spechler, 2013; Yun & Park, 2012).

Uzbekistan has similar structural problems to Russia. These challenges include unfinished transformation, over-reliance on natural resources, lack of innovation and low productivity (Connolly, 2015; Hartwell, 2013).

Agrarian foreign trade has been chosen, to demonstrate the difficult situation of Uzbek foreign trade development and ambitions. The article is devoted to the position of Uzbek agricultural and foodstuff product exports in the international market (Csaki & Nash, 1999). Uzbekistan is one of the main producers of fruits and vegetables in the CIS member countries. After a protocol establishing a free trade zone was signed between the Republic of Uzbekistan and the CIS in 2013, the trade turnover of the agricultural products of Uzbekistan significantly increased. The main goal of the Protocol is the effort of Uzbekistan to unify trade regimes in relation to CIS, and to foster existing cooperation within the customs union of the former Soviet countries (Smutka et al., 2015a). The territorial structure of Uzbek agricultural and foodstuff exports in the period of 2000 to 2018 was heavily focused on Asian and CIS countries. Only in 2000, the share of CIS members in agricultural exports and imports reached 83.3% and 33.6%, respectively. In the same year - the share of other Asian countries in agri-food exports and imports reached cc 7.4% respectively 13%. Later on (in 2018), the share of CIS countries was reduced in favour of other Asian countries. While CIS countries share in exports and imports was reduced to 66% respectively 69%, the share of other Asian countries increased up to 32%, respectively 14%. The dominant positions are kept by Russia, Kazakhstan and Belarus. On the other hand, the share of exports to Russia is decreasing, and Kazakhstan has become an extremely important trade partner for Uzbek agrarian exports within the last few years. (Ilyina, D. FAO 2016). The Russian Federation share in Uzbek agricultural exports reached about 87.3% in 2000 and 25.4% in 2018. The share of Kazakhstan in Uzbek agricultural exports reached about 1.06% in 2000 and 55.8% in 2018. This article analyzes trends in the major changes in the territorial and commodity structure of the agricultural sector of Uzbekistan from 2000 to 2018. In the analyzed time period, the post-Soviet countries and the Republic of Uzbekistan significantly changed their trade strategies and policies. A negative feature of Uzbek agrarian trade is a much faster increase in the value of imports compared to the value of exports. As a result, the negative trade balance is constantly increasing.

## **2. METHODOLOGY**

The article analyzes the export potential of Uzbekistan in the international market of agricultural products for the last two decades (2000–2018). The article is focused on trade competitiveness in relation to individual groups of trade partners of Uzbekistan. Trade performance is analyzed in relation to the following groups: Asian countries (without the CIS), European countries (without CIS and EU28), CIS countries (without Asian countries), and other European countries (without EU28). The classification of agricultural products in the article uses the Harmonized System (according to UN Comtrade methodology), which divides agricultural trade into 24 aggregations (for details, see Table 1). The article calculates all values at current prices in USD.

Table 1

## The list of Harmonized commodity aggregations in the analysis (HS)

HS01	Live animals	HS13	Lac gums, resins and other vegetable saps and extracts
HS02	Meat and edible meat offal	HS14	Vegetable plaiting materials vegetable products not elsewhere specified or included
HS03	Fish and crustaceans, molluscs and other aquatic invertebrates	HS15	Animal or vegetable fats and oils and their cleavage products prepared edible fats animal or vegetable waxes
HS04	Dairy produce birds' eggs natural honey edible products of animal origin, not elsewhere specified or included	HS16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates
HS05	Products of animal origin, not elsewhere specified or included	HS17	Sugars and sugar confectionery
HS06	Live trees and other plants bulbs, roots and the like cut flowers and ornamental foliage	HS18	Cocoa and cocoa preparations
HS07	Edible vegetables and certain roots and tubers	HS19	Preparations of cereals, flour, starch or milk pastry cooks' products
HS08	Edible fruit and nuts peel of citrus fruit or melons	HS20	Preparations of vegetables, fruit, nuts or other parts of plants
HS09	Coffee, tea, mate and spices	HS21	Miscellaneous edible preparations
HS10	Cereals	HS22	Beverages, spirits and vinegar
HS11	Products of the milling industry malt starches inulin wheat gluten	HS23	Residues and waste from the food industries prepared animal fodder
HS12	Oil seeds and oleaginous fruits miscellaneous grains, seeds and fruit industrial or medicinal plants and fodder	HS24	Tobacco and manufactured tobacco substitutes

Source: COMTRADE database, 2019

The article analyzes the allocation of comparative advantages in relation to the Asian market, as well as to the rest of the world (CIS members, other European countries (without EU28), the European Union (EU28) and developing countries). The following methods are used to achieve the above-mentioned results: Herfindahl-Hirschman index, Lafay index, trade balance index and product mapping. The Herfindahl-Hirschman index uses a common measure for market concentration and the determination of market competitiveness. The LFI and TBI indices only provide limited knowledge of trade competitiveness development. The “product mapping method” defines the whole process of profiling the commodity structure of the agrarian foreign trade of Uzbekistan. This approach is based on a combination of both above-mentioned indicators (a similar approach has already been tested by Maitah et al., 2016; Bielik et al., 2013; Rezbova et al., 2014; Svatos et al., 2010; Borak et al., 2018; Braha et al., 2019; Ferto 2017, 2018; Jambor et al., 2017; Wajda-Lichy & Kawa, 2018; Bilan et al., 2018; Kozlovskiy et al., 2018). The Lafay index (Lafay, 1992) analysis is used to help provide information on bilateral trade relations between countries and regions. The use of the Herfindahl-Hirschman index is a common indicator of market concentration and is used to determine market competitiveness. HHI is calculated by squaring the market share of each country competing in the market and then summing the results. It can range from zero to 10,000. A market with an HHI of less than 1,500 is considered a competitive market, an HHI of 1,500 to 2,500 is a moderately concentrated marketplace, and an HHI of 2,500 or more is a highly concentrated marketplace. Using the LFI index, we may observe the difference between the general normalized trade balance and each item’s normalized trade balance. The LFI index, by taking imports into account, allows controlling for intra-industry trade and re-export streams. Defined in this way, it is superior to the traditional Revealed Comparative Advantages index (Balassa, 1965). Thus, the LFI index is used to eliminate the influence of cyclical factors that may affect the amount of trade streams in the short term, and to focus on bilateral trade relations between regions and countries.

Contrarily, negative values indicate de-specialization (Zaghini, 2003; Smutka et al., 2015b). While the LFI index is focused on the analysis of the development of competitiveness, the TBI index analyzes the development of the trade balance. A country is defined as a “net importer” in a specific product group if the TBI value is negative, and a “net exporter” if the TBI value is positive. (Widodo, 2009; Ischukova, Smutka, 2013 and 2014).

Figure 1 represents the matrix for the allocation of the whole set of exported commodities into 4 groups in accordance with two selected indicators (LFI and TBI). The data sources for individual analysis are the State Committee of the Republic of Uzbekistan on Statistics and UN COMTRADE.

The Herfindahl-Hirschman index is calculated by squaring the market share of each country competing in the market and then summing up the results. The Herfindahl-Hirschman index is formulated as follow:

$$HHI = S_1^2 + S_2^2 + S_3^2 + \dots S_n^2 \quad (1)$$

Where:  $S_n$  is the market share percentage of country n expressed as a whole number, not a decimal.

The next method used in this paper is the product mapping method. This method determines the whole process of profiling the commodity structure of the agrarian foreign trade of Uzbekistan:

Table 1

Modified product mapping scheme

Lafay index	Group B: Comparative Advantage Net- importer (LFI > 0 and TBI < 0)	Group A: Comparative Advantage Net- exporter (LFI > 0 and TBI > 0)
	Group D: Comparative disadvantage Net- importer (LFI < 0 and TBI < 0)	Group C: Comparative disadvantage Net- exporter (LFI < 0 and TBI > 0)
Uzbek Agrarian Foreign Trade Commodity Structure	Trade Balance Index	

Source: own modification and processing (2019)

The trade balance index (TBI) by Lafay (1992) is an indicator of export-import activities.

The TBI is mainly used to analyze whether a country specializes in imports (as a net importer) or exports (as a net exporter) for a specific group of products, and is simply formulated as follows:

$$TBI_{ij} = (x_{ij}-m_{ij})/(x_{ij}+m_{ij}) \quad (2)$$

where  $TBI_{ij}$  denotes the trade balance index of country i for product j;  $x_{ij}$  and  $m_{ij}$  represent exports and imports of group of products j by country i, respectively. (Lafay, 1992). Values of the index range from -1 to +1. At the extremes, the TBI equals -1 if a country only imports; in contrast, the TBI equals +1 if a country only exports. Indeed, the index is not defined when a country neither exports nor imports. A country is termed a “net exporter” if the TBI reaches positive values and “net importer” in a specific product if the TBI values are negative (Widodo, 2009; Zaghini, 2003).

By considering imports, the Lafay index (LFI) allows controlling for intra-industry trade and re-export flows (Lafay, 1992). In this sense, it surpasses the traditional index of Revealed Comparative Advantages (Balassa, 1965).

Since comparative advantages are structural, by definition it is extremely important to exclude the influence of cyclical factors that may affect the amount of trade flows in the short term.

The Lafay index takes these effects into account, given the difference between the normalized trade balance of each position and the overall normalized trade balance. Finally, the Lafay index weighs the contribution of each product according to its importance in trading.

For a given country,  $i$ , and for any given product  $j$ , the Lafay index is defined as:

$$LFI_j^i = 100 \left( \frac{x_j^i - m_j^i}{x_j^i + m_j^i} - \frac{\sum_{j=1}^N (x_j^i - m_j^i)}{\sum_{j=1}^N (x_j^i + m_j^i)} \right) \frac{x_j^i + m_j^i}{\sum_{l=1}^N (x_l^i + m_l^i)} \quad (3)$$

where  $x_{ij}$  and  $m_{ij}$  are exports and imports of product  $j$  of country  $i$ , towards and from the rest of the world, respectively, and  $N$  is the number of items.

Positive values of the Lafay index indicate the existence of comparative advantages in a given item; the larger the value, the higher the degree of specialization. (Zaghini, 2003).

The RSCA index is a common decreasing commons transformation of the Balassa index (Balassa, 1991) or revealed comparative advantage (RCA). In practice, the Balassa index is a generally accepted method for analyzing the transaction data (Bielik, Smutka and Svatos, 2013; Dalum, Laursen and Villumsen, 1998; Maitah, Rezbova and Smutka, 2016; Rezbova, Smutka and Purkrabek, 2014; Cieslik et al., 2018). RCA is based on export performance and observed trade patterns. This index was used to determine the most important areas and product groups for the region's export trade. It is used in the international economy to calculate the relative advantage or disadvantage of a particular country in a particular class of goods or services. RCA measures a country's exports of a commodity (or industry) relative to its total exports and to the corresponding exports of a set of countries.

$$RCA = (X_{ij}/X_{it})/(X_{nj}/X_{nt}) = (X_{ij}/X_{ni})/(X_{it}/X_{nt}) \quad (4)$$

where  $X$  represents exports,  $i$  is a country,  $j$  is a commodity (or industry),  $t$  is a set of commodities (or industries) and  $n$  is a set of countries. The RSCA index is characterized as follows:

$$RSCA = (RCA_{it-1})/(RCA_{ij+1}) \quad (5)$$

The values of the  $RSCA_{ij}$  index range from minus one to one.  $RSCA_{ij}$  greater than zero implies that country  $i$  has a comparative advantage in a group of products  $j$ . In contrast,  $RSCA_{ij}$  less than zero implies that country  $i$  has a comparative disadvantage in a group of products  $j$  (Svatos and Smutka, 2012).

This article presents an extended version of an article presented at the Agrarian Perspectives conference under the title Comparative advantage: Products mapping of Uzbekistan's agricultural exports (Ortikov and Vacek, 2018).

### 3. EMPIRICAL RESULTS AND DISCUSSION

The agrarian trade of Uzbekistan is concentrated on CIS members, Central Asian and European countries (Table 2). The most dominant role is played by CIS members, Asian countries and EU members. But during the analyzed time period the role of individual partners changed. The total value of agricultural trade performance recorded significant growth. The nominal value of exports increased from about 250 mil. USD up to about 1.1 bil. USD. The value of imports recorded growth from 271 mil. USD up to 1.7 bil. USD. The total value of the negative agri-food trade balance increased from 18.6 mil. USD up to about 583 mil. USD. The problem of Uzbek agrarian trade value development is connected to much lower inter-annual growth rate of export value in comparison to inter-annual growth of import value. Because of much higher imports' dynamics in comparison to exports, Uzbekistan recorded the significant reduction of export/import coverage ratio.

Table 2

Uzbek agrarian exports' concentration - by regional groups (HHI index)

Groups	2000		2018	
	Market share	HHI index	Market share	HHI index
Asia (without CIS countries)	7.4%	54.76	31.7%	1004.9
Africa	0.0%	0	0.0%	
EU 28	7.0%	49	1.8%	3.2
Other European countries (without EU and CIS)	1.2%	1.44	0.0%	
CIS (without Asian countries)	83.5%	6972.25	66.2%	4382.4
North America	0.9%	0.81	0.3%	0.1
Latin America	0.0%	0	0.0%	
Australia and Oceania	0.0%	0	0.0%	
World	100.0%	7078.26	100.0%	5390.7

Source: own processing, 2019

During the analyzed time period export/import coverage ratio significantly decreased from 93% to 65%.

In 2000, the Asian share in Uzbek agricultural exports and imports reached about 7.4% and 31.7%, respectively. In the same year - the share of EU28 in agricultural exports and imports reached about 7% and 1.8%, respectively and the share of CIS members in agricultural exports and imports reached 83.5% and 66.2%, respectively. The most dominant role was played by the Russian Federation, Belarus and Tajikistan (Table 3). In 2000, Russian Federation's share in Uzbek agricultural exports and imports reached about 87.3% and 25.43%, respectively. The share of Belarus in agricultural exports and imports reached about 3.4% and 1.24%, respectively and the share of Tajikistan in agricultural exports and imports reached 2.4% and 1.4%, respectively.

Table 3

Uzbek agrarian exports' concentration - by CIS countries (HHI index)

Groups	2000		2018	
	Market share	HHI index	Market share	HHI index
Azerbaijan	0.04%	0.00	0.75%	0.5625
Belarus	3.37%	11.36	1.24%	1.5376
Moldova	0.01%	0.00	0.06%	0.0036
Armenia	0.11%	0.01	0.08%	0.0064
Georgia	1.47%	2.16		
Kazakhstan	1.06%	1.12	55.86%	3120.3396
Kyrgyzstan	1.91%	3.65	12.31%	151.5361
Russian Federation	87.32%	7 624.78	25.43%	646.6849
Tajikistan	2.34%	5.48	1.42%	2.0164
Turkmenistan	1.51%	2.28	1.45%	2.1025
Ukraine	0.86%	0.74	1.40%	1.96
Total	100.00%	7 651.58	100.00%	3926.7496

Source: own processing, 2019

The share of Kazakhstan in agricultural exports and imports reached 1% and 59%, respectively.

Table 4

## Uzbek agrarian foreign trade value development between 2000 and 2018 in USD

2000	Africa	Asia (without GIS countries)	Australia and Oceania	CIS	EU 28	Latin America	North America	Other European countries (without EU and CIS)	World total
Export		18 677 323		210 867 285	17 749 020	95	2 181 042	3 092 804	252 567 569
Import		35 743 330		91 372 459	141 937 313	57 994	1 793 607	336 619	271 241 322
Balance		-17 066 007		119 494 826	-124 188 293	-57 899	387 435	2 756 185	-18 673 753
Balance/Export	0.00%	-91.37%	0.00%	56.67%	-699.69%	-60946.32%	17.76%	89.12%	-7.39%
2018	Africa	Asia (without CIS countries)	Australia and Oceania	CIS	EU 28	Latin America	North America	Other European countries (without EU and CIS)	World total
Export	356 832	350 697 619		731 889 267	19 612 179	35 221	2 821 751	281 193	1 105 694 062
Import	5 131 002	237 673 958	1 180 138	1 174 946 324	190 393 528	66 130 720	5 291 454	7 901 691	1 688 648 815
Balance	-4 774 170	113 023 661	-1 180 138	-443 057 057	-170 781 349	-66 095 499	-2 469 703	-7 620 498	-582 954 753
Balance/Export	-1337.93%	32.23%	-3350.67%	-60.54%	-870.79%	-187659.35%	-87.52%	-2710.06%	-52.72%
Export Basic index 2018/2000	0.02	18.78	-	3.61	1.10	370.75	1.29	0.09	4.52
Import Basic index 2018/2000	0.14	6.65	20.35	12.90	1.34	1 140.3	2.95	23.47	6.23

Source: COMTRADE database, 2019 and own calculations.

Table 5

## Uzbek agrarian foreign trade value development by CIS countries between 2000 and 2018 in USD

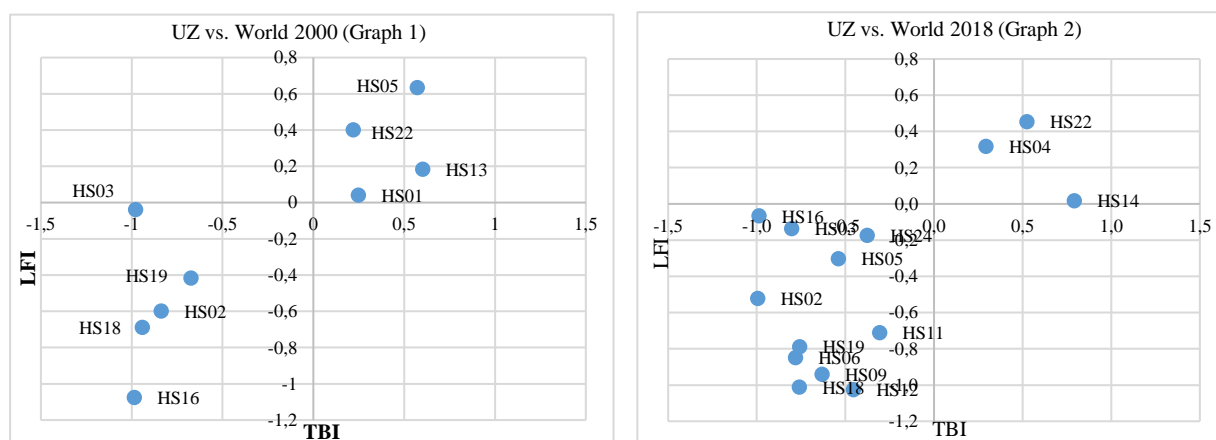
2000	Balance	Export	Import	Balance/Export	2018	Balance	Export	Import	Balance/Export	Export Basic index 2015/2000	Import Basic index 2015/2000
Azerbaijan	65 553	93 673	28 120	70%	Azerbaijan	5 528 197	2 701 010	2 827 187	51%	59	96
Belarus	6 922 800	7 103 200	180 400	97%	Belarus	9 147 774	21 686 357	-12 538 583	-137%	1	120
Moldova	-1 045 314	30 437	1 075 751	-3434%	Moldova	414 787	316 070	98 717	24%	14	0
Armenia	237 680	237 680		100%	Armenia	608 295	40 320	567 975	93%	3	
Georgia	2 784 457	3 092 442	307 985	90%							
Kazakhstan	-71 249 100	2 232 000	73 481 100	-3192%	Kazakhstan	411 787 557	612 408 366	-200 620 809	-49%	184	8
Kyrgyzstan	2 648 145	4 031 855	1 383 710	66%	Kyrgyzstan	90 772 582	1 999 282	88 773 300	98%	23	1
Russian Federation	173 034 616	184 119 106	11 084 490	94%	Russian Federation	187 484 593	400 116 086	-212 631 493	-113%	1	36
Tajikistan	4 850 000	4 931 000	81 000	98%	Tajikistan	10 483 127	371 576	10 111 551	96%	2	5
Turkmenistan	3 010 600	3 190 410	179 810	94%	Turkmenistan	10 679 195	2 531 545	8 147 650	76%	3	14
Ukraine	-1 764 611	1 805 482	3 570 093	-98%	Ukraine	10 299 639	132 775 712	-122 476 073	-1189%	6	37
Total	119 494 826	210 867 285	91 372 459	57%	Total	737 205 746	1 174 946 324	-437 740 578	-59%	3	13

Source: COMTRADE database, 2019 and own calculations.

As can be seen in tables 4 and 5, the current agricultural trade performance of Uzbekistan is heavily focused on CIS and Asian countries. Those partners represent nearly 98% of export value and 84% of import value in 2018. The key aspect of Uzbek agrarian trade is its competitiveness (especially low-price competitiveness). Based on volume (tons) and value (total value and unit value) analysis, bulk commodities (e.g. vegetables, fruits) could be considered the main driver of agricultural export growth. Another very specific feature of Uzbek agri-food trade is its concentration on post-Soviet countries. The markets of those countries represent the key territory for export-oriented activities. And mutual trade

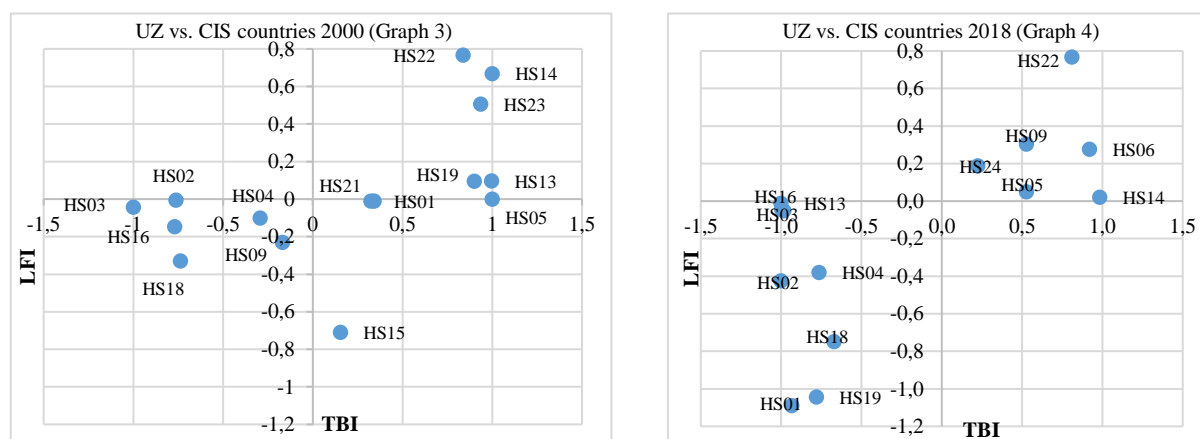


agreements (preferential trade agreements and free-trade zones) could be considered the key element supporting national export ambitions.



**Graphs 1 – 2. Uzbek agrarian exports' comparative advantages distribution – traditional and modified "Product mapping approach"**

*Source: own processing, 2019*



**Graphs 3 – 4. Uzbek agrarian exports' comparative advantages distribution – traditional and modified "Product mapping approach"**

*Source: own processing, 2019*

The existence of comparative advantages is proved through the application of LFI and TBI indices, taking into consideration only agricultural trade performance. The above-mentioned graphs provide an overview related to the global competitiveness of individual Uzbek agrarian trade items (graphs 1 and 2) and CIS members (graphs 3 and 4). The graphs provide a different overview of the modified product mapping approach. The results provided by the modified approach deliver a more accurate overview of the distribution of the comparative advantages of Uzbek agrarian exports. The number of items located in groups B and C is significantly reduced, and the whole commodity structure is divided into two groups, A (with comparative advantages) and D (without comparative advantages). The modified approach is able to specify in more detail the current level of Uzbek agrarian trade competitiveness and competitiveness development. Using this applied approach, it is evident that the structure of Uzbek agrarian commodity

trading has been significantly changing its character. The commodity structure is still looking for its optimal state (for details see tables 6 and 8 (global) and also tables 7 and 9 (for CIS countries)).

Table 6

Uzbek agrarian trade commodity structure in 2000 (traditional product mapping) in USD

					All trade transactions worldwide 2000				
B-2000	Import	Share in import	Export	Share in export	A-2000	Import	Share in import	Export	Share in export
					HS01	285 088	0.11%	473 396	0.19%
					HS05	1 148 989	0.42%	4 227 646	1.69%
					HS06	153 620	0.06%	5 850 545	2.35%
					HS07	6 534 242	2.41%	32 139 297	12.88%
					HS08	1 053 268	0.39%	85 853 445	34.41%
					HS12	2 739 601	1.01%	14 509 999	5.82%
					HS13	296 551	0.11%	1 193 263	0.48%
					HS14	160 607	0.06%	16 741 308	6.71%
					HS20	1 173 581	0.43%	27 575 339	11.05%
					HS22	3 113 466	1.15%	4 876 474	1.95%
					HS23	609 150	0.22%	13 047 628	5.23%
					HS24	9 079 735	3.35%	29 672 985	11.89%
					Total	26 347 898	9.72%	236 161 325	94.66%
D-2000	Import	Share in import	Export	Share in export	C-2000	Import	Share in import	Export	Share in export
HS02	3 589 988	1.33%	318 945	0.13%					
HS03	211 647	0.08%	2 247	0.00%					
HS04	16 914 352	6.24%	217 660	0.09%					
HS09	14 385 851	5.31%	763 809	0.31%					
HS10	64 044 224	23.64%	2 446 313	0.98%					
HS11	16 295 797	6.01%	305 017	0.12%					
HS15	16 986 672	6.27%	5 214 505	2.09%					
HS16	5 877 851	2.17%	45 180	0.02%					
HS17	91 835 500	33.90%	2 819 949	1.13%					
HS18	3 858 285	1.42%	115 100	0.05%					
HS19	2 868 718	1.06%	561 099	0.22%					
HS21	7 716 554	2.85%	503 978	0.20%					
Total	244 585 439	90.28%	13 313 802	5.34%					

Source: own processing, 2019

Table 7

Uzbek agrarian trade commodity structure by CIS countries in 2000 (traditional product mapping approach) in USD

Trade transactions by CIS countries 2000									
B-2000	Import	Share in import	Export	Share in export	A-2000	Import	Share in import	Export	Share in export
					HS05			710	0.00%
					HS06	7 751	0.01%	5 618 346	2.66%
					HS07	187 543	0.21%	31 618 947	14.99%
					HS08	55 679	0.06%	83 986 594	39.83%
					HS12	1 415 650	1.55%	10 389 548	4.93%
					HS13	969	0.00%	483 874	0.23%
					HS14		0.00%	3 341 257	1.58%
					HS19	28 796	0.03%	544 212	0.26%
					HS20	74 269	0.08%	26 718 344	12.67%
					HS22	427 779	0.47%	4 821 699	2.29%
					HS23	90 600	0.10%	2 738 382	1.30%
					HS24	1 126 880	1.23%	29 289 288	13.89%
					Total	3 415 916	3.74%	199 551 201	94.63%
D-2000	Import	Share in import	Export	Share in export	C-2000	Import	Share in import	Export	Share in export
HS02	12 561	0.01%	1 700	0.00%	HS01	156 907	0.17%	307 596	0.15%
HS03	91 077	0.10%		0.00%	HS15	3 755 936	4.11%	5 123 879	2.43%
HS04	286 333	0.31%	156 595	0.07%	HS21	196 665	0.22%	401 748	0.19%
HS09	721 258	0.79%	513 028	0.24%					

HS10	60 859 807	66.61%	1 536 569	0.73%					
HS11	14 774 369	16.17%	305 000	0.14%					
HS16	337 807	0.37%	43 869	0.02%					
HS17	6 000 432	6.57%	2 811 000	1.33%					
HS18	763 391	0.84%	115 100	0.05%					
Total	83 847 035	91.76%	5 482 861	2.60%	Total	4 109 508	4.50%	5 833 223	2.77%

Source: own processing, 2019.

Table 8

Uzbek agrarian trade commodity structure in 2018 (traditional product mapping approach) in USD

All trade transactions worldwide 2018									
B-2018	Import	Share in import	Export	Share in export	A-2018	Import	Share in import	Export	Share in export
					HS04	6 306 013	0.37%	11 519 642	1.04%
					HS07	46 876 707	2.76%	307 714 084	27.69%
					HS08	25 303 500	1.49%	543 935 423	48.95%
					HS13	2 297 119	0.14%	23 681 603	2.13%
					HS14	50 530	0.00%	432 113	0.04%
					HS20	14 786 471	0.87%	30 727 553	2.77%
					HS22	4 135 961	0.24%	13 253 219	1.19%
					Total	99 756 301	5.87%	931 263 637	83.80%
D-2018	Import	Share in import	Export	Share in export	C-2018	Import	Share in import	Export	Share in export
HS01	75 001 264	4.41%	2 603 732	0.23%					
HS02	18 641 325	1.10%	40 035	0.00%					
HS03	5 850 531	0.34%	638 303	0.06%					
HS05	19 823 595	1.17%	5 921 220	0.53%					
HS06	37 106 855	2.18%	4 520 133	0.41%					
HS09	51 046 497	3.00%	11 483 346	1.03%					
HS10	305 594 848	17.98%	20 569 994	1.85%					
HS11	132 548 155	7.80%	70 111 379	6.31%					
HS12	85 136 376	5.01%	31 814 015	2.86%					
HS15	238 216 058	14.01%	1 918 960	0.17%					
HS16	2 376 474	0.14%	13 480	0.00%					
HS17	347 426 508	20.44%	4 794 369	0.43%					
HS18	45 450 239	2.67%	6 182 092	0.56%					
HS19	35 507 175	2.09%	4 877 633	0.44%					
HS21	48 021 765	2.82%	764 354	0.07%					
HS23	132 538 363	7.80%	4 705 420	0.42%					
HS24	20 008 873	1.18%	9 047 084	0.81%					
Total	1 600 294 901	94.13%	180 005 549	16.20%					

Source: own processing, 2019.

Table 9

Uzbek agrarian trade commodity structure by CIS countries in 2018  
(traditional product mapping approach) in USD

Trade transactions by CIS countries 2018									
B-2018	Import	Share in import	Export	Share in export	A-2018	Import	Share in import	Export	Share in export
					HS05	298 730	0.03%	967 509	0.13%
					HS06	181 054	0.02%	4 399 916	0.60%
					HS07	25 368 716	2.16%	159 678 854	21.82%
					HS08	1 054 224	0.09%	487 262 332	66.58%
					HS09	1 805 370	0.15%	5 837 989	0.80%
					HS14	2 529	0.00%	313 027	0.04%
					HS20	10 499 936	0.89%	20 893 587	2.85%
					HS22	1 336 916	0.11%	12 722 868	1.74%
					HS24	3 051 523	0.26%	4 815 777	0.66%
					Total	43 598 998	3.71%	696 891 859	95.22%
D-2018	Import	Share in import	Export	Share in export	C-2018	Import	Share in import	Export	Share in export
HS01	28 643 144	0.14%	995 059	0.14%					
HS02	10 559 437	0.00%		0.00%					
HS03	1 065 803	0.00%	1 820	0.00%					

HS04	12 027 581	0.22%	1 610 161	0.22%					
HS10	301 620 277	0.06%	420 697	0.06%					
HS11	128 502 892	0.01%	67 855	0.01%					
HS12	64 648 547	1.91%	13 967 112	1.91%					
HS13	301 657	0.00%		0.00%					
HS15	192 952 729	0.26%	1 910 610	0.26%					
HS16	1 262 824	0.00%	10 556	0.00%					
HS17	248 918 994	0.57%	4 196 115	0.57%					
HS18	27 232 210	0.74%	5 391 381	0.74%					
HS19	32 368 597	0.55%	4 011 230	0.55%					
HS21	33 261 013	0.08%	561 902	0.08%					
HS23	47 981 621	0.25%	1 852 910	0.25%					
Total	1 131 347 326	4.78%	34 997 408	4.78%					

*Source:* own processing, 2019.

Agricultural trade as well as the entire agricultural sector went through a significant restructuring process. The production and trade structures recorded important changes. But the transformation of the Uzbek agrarian sector has not yet finished the restructuring process, and its commodity profile is constantly changing. Low added-value products (very low unit value) still represent a significant share of total exports. The value of Uzbek agrarian trade is typical primarily because of its specific character in relation to individual partners/partner territories. As already mentioned, Uzbek agrarian trade is focused on the CIS, Asia and Europe. In the analyzed time period (2000 - 2018), a significant increase in the value of exports and imports can be observed in relation to all the main territories representing the main Uzbek trading partners in the agricultural sector (Asian countries – export value growth of more than 1700%, CIS countries – export value growth of 250%). As noted above, a negative feature of Uzbek agrarian trade is a much higher relative increase in the value of imports compared to the value of exports. This tendency was seen in several key areas under the analysis (CIS, EU28, Latin America, North America, Other European countries). The only region – Asian countries (without CIS) recorded the growth of positive export/import coverage ratio.

Uzbekistan's problem is the rather limited heterogeneity of export competitiveness (aggregations HS07 and HS08 represent the key pillar of agri-food export activities). An analysis of comparative advantages based on the LFI index confirmed the existence of comparative advantages at the bilateral level, especially in relation to post-Soviet countries (the most important partners are the Russian Federation, Kazakhstan and the CIS countries), only in the case of a limited number of trade items. The results presented by the product mapping approach provide a more accurate overview of the distribution of the comparative advantages of Uzbekistan's agrarian exports. Most of the items representing the agrarian trade commodity structure are distributed between two groups, A (with comparative advantages: HS05, HS07, HS08, HS13, HS14, HS20) and D (without comparative advantages: HS01, HS02, HS03, HS04, HS06, HS09, HS10, HS11, HS15, HS16, HS17, HS18, HS19, HS21, HS23). The problem of Uzbek agrarian trade is its extreme commodity concentration. Just aggregations included into quadrant A represent nearly 94% of total export value. Uzbekistan has been suffering because of constantly decreasing competitiveness of individual trade items and the number of competitive aggregations is constantly decreasing as it could be demonstrated through the last two decades development (for details see Tables 6 – 9). Those changes can be considered as an evidence of an ongoing restructuring process. The commodity structure is still looking for the optimal state. The Republic of Uzbekistan is not competitive at the general level, but rather it has only bilateral comparative advantages, as previously mentioned. Comparative advantages exist, especially with regard to trading partners who apply restrictive trade policies in relation to the world market. Mutual trade is the result not of real price competitiveness, but of political deals.

### Distribution of comparative advantages in relation to different groups of countries

The Republic of Uzbekistan, as a member of the CIS, carries out its agrarian and trade activities in various regimes and different conditions with respect to certain groups of countries. As a CIS member, Uzbekistan can operate within the CIS market without any restrictions; on the other hand, with respect to some territories, such as other European countries and the EU, the agrarian trade of Uzbekistan is influenced by multilateral agreements signed under the WTO rules, as well as signed at the bilateral level between individual members of the CIS and the EU. If we want to understand the real distribution of comparative advantages, we need to analyze them for each individual group of countries – Asia (without CIS countries), other European countries (without members of the EU28 and CIS), EU28 and CIS countries, North American countries, and the whole world. The analysis provides for a comparison not only of different commodity structures and the competitiveness of individual items for individual groups of countries, but also of the state of the product structure at the beginning and end of the analyzed period. The results obtained from individual analyses provide a very interesting overview of the current and historical situation. Significant dynamics of commodity structure development can be seen in relation to both the LFI and TBI indices. The structure of agrarian trade has not yet been stabilized, and agricultural trade is still looking for the ideal state. Significant changes in the competitiveness of Uzbek agrarian trade in the period from 2000 to 2018 can be observed, especially in relation to the Asian countries, other European countries, CIS countries, African countries and EU28 countries.

According to the product mapping matrix, the share of Group A products in the total volume of agricultural exports increased significantly between 2000 and 2018 (for details, see tables 11 and 13). On the other hand, the proportion of items located in group D was significantly reduced. Developing countries have not changed their role in Uzbek agrarian trade activities, in the case of both exports and imports. The TBI and LFI indices did not show any important changes.

The Republic of Uzbekistan is largely focused on trade activities carried out in relation to developed and, especially, Asian countries and the CIS (for details, see tables 11 and 13).

Table 10

Uzbek agrarian trade value commodity structure - modified product mapping approach (2000)

Value 2000 (in USD)	A		B		C		D		Total	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Asia	17.145.252	1.680.468	921.768	1.116.925			610.303	32.945.937	18.677.323	35.743.330
Africa										
EU 28	10.634.005	1.887.068	6.955.544	4.908.159			159.471	135.142.086	17.749.020	141.937.313
Other European countries	3.092.328						476	336.619	3.092.804	336.619
CIS	199 551 201	3 415 916			5 833 223	4 109 508	5 482 861	83 847 035	210 867 285	91 372 459
North America	2.181.042	15.374						1.778.233	2.181.042	1.793.607
Latin America										
Australia and Oceania										
World	232 603 828	6 998 826	7 877 312	6 025 084	5 833 223	4 109 508	6 253 111	254 049 910	252 567 474	271 183 328

Source: own processing, 2019.

Table 11

Uzbek agrarian trade value commodity structure - modified product mapping approach  
by CIS countries (2000)

Value 2000 (in USD)	A		B		C		D		Total	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Azerbaijan										
Armenia										
Belarus	7 102 000	73 800	1 200	44 600				62 000	7 103 200	180 400
Moldova										
Georgia	3 091 560		417				465	307 985	3 092 442	307 985
Kazakhstan	2 177 200	75 500	42 100	228 100			12 700	73 177 500	2 232 000	73 481 100
Kyrgyzstan	2 471 923	401 325	1 559 932	968 800				13 585	4 031 855	1 383 710
Russian Federation	183 447 298	8 153 671	473 530	1 270 185	198 185	969	93	1 659 665	184 119 106	11 084 490
Tajikistan										
Turkmenistan										
Ukraine	1 544 793	149 849	260 689	3 420 244					1 805 482	3 570 093
CIS	199 834 774	8 854 145	2 337 868	5 931 929	198 185	969	13 258	75 220 735	202 384 085	90 007 778

Source: own processing, 2019.

Table 12

Uzbek agrarian trade value commodity structure - modified product mapping approach (2018)

Value 2018 (in USD)	A		B		C		D		Total	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Asia	336 798 683	34 994 570			2 812 815	2 315 965	11 086 121	200 363 423	350 697 619	237 673 958
Africa	229 802		89 163	122 136			37 867	5 007 847	356 832	5 129 983
EU 28	13 558 000	2 820 796			5 413 156	20 442 610	641 023	167 130 122	19 612 179	190 393 528
Other European countries	281 193			5 854		7 895 837			281 193	7 901 691
CIS	696 891 859	43 598 998					34 997 408	1 131 347 326	731 889 267	1 174 946 324
North America	2 641 564	262 718	179 209	326 247			978	4 702 489	2 821 751	5 291 454
Latin America			35 221	1 621 011				64 509 709	35 221	66 130 720
Australia and Oceania										
World	1 050 401 101	81 677 082	303 593	2 075 248	8 225 971	30 654 412	46 763 397	1 573 060 916	1 105 694 062	1 687 467 658

Source: own processing, 2019.

Table 13

Uzbek agrarian trade value commodity structure - modified product mapping approach  
by CIS countries (2018)

Value 2018 (in USD)	A		B		C		D		Total	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Azerbaijan	75 984	2 194 403	5 012 648	291 834	418 807	199 411	20 758	15 362	5 528 197	2 701 010
Armenia										
Belarus	9 089 262	311 957	20 625	21 156			37 887	21 353 244	9 147 774	21 686 357
Moldova										
Kazakhstan	400 854 383	22 887 580					10 933 174	589 520 786	411 787 557	612 408 366
Kyrgyzstan		13 500			90 729 059	1 365 300	43 523	620 482	90 772 582	1 999 282
Russian Federation	184 162 820	19 965 788		2 529			3 321 773	380 147 769	187 484 593	400 116 086
Tajikistan	7 038 650	25 422			3 444 477	346 154			10 483 127	371 576
Turkmenistan	8 923 819	138 903					1 755 376	2 392 642	10 679 195	2 531 545
Ukraine	10 260 111	272 439		31 959			39 528	132 471 314	10 299 639	132 775 712
Total	620 405 029	45 809 992	5 033 273	347 478	94 592 343	1 910 865	16 152 019	1 126 521 599	747 115 838	1 764 110 720

Source: own processing, 2019

During the analyzed period, the agrarian trade of Uzbekistan changed its structure. The share of agrarian exports realized under group A increased by 3 percentage points (92% to 95%). The share of the A group in total imports changed from 2.6% to 4.8%. Group B decreased its share in total agrarian exports and imports from 3.12% to 0.03% and from 2.22% to 0.12%, respectively. The share of exports and imports realized under group C export decreased from 2.3% to less than 1% and import increased from 1.5% to 1.8%, respectively. Exports and imports realized under group D recorded the following changes: The share of exports in total agrarian exports increased from 2.5% to 4.2% and the share of realized imports almost did not change (the shift from 93.7% to 93.2%). The conducted analysis also proved the dominant role of CIS and Asian countries as the main trade partners of the Republic of Uzbekistan. Their cumulative share in agrarian exports and imports is a dominant 98% respectively 84%. In 2000, their cumulative share in total exports and imports reached only 90%, respectively 46%.

As already mentioned above, the agrarian trade of Uzbekistan is concentrated especially on CIS member countries (however, their share in exports is decreasing). Their share in total Uzbek agrarian exports realized under group A decreased from 85.8% to 66.3%. On the other hand CIS's share in total Uzbek agrarian exports and imports realized under group D decreased from 87.7% to 74.8%, respectively decreased from 33% to 71.9%. The role of CIS member countries in B and C group is marginal.

#### **4. CONCLUSION**

Analysis of the last nineteen years provides the following results. The agrarian trade of Uzbekistan is continually increasing its value, and the character of both its commodity and territorial structure is changing. The relative value of exports increased three times faster when compared to the value of imports. Unfortunately, the trade balance is still in negative numbers. The problem is primarily the very low added value of Uzbek exports, while the added value of imports is much higher. Another negative feature is the constantly decreasing food self-sufficiency. The agrarian trade territorial structure is becoming more and more concentrated. It makes Uzbek agricultural trade extremely vulnerable and dependent on a limited number of partners (especially the CIS). The commodity structure development is the opposite (a diversification trend was proved). The structure of commodity exports is based mainly on the variety of low added-value items having comparative advantages – notably at the bilateral level. While Uzbek agrarian trade is fairly competitive, notably with respect to Asia and CIS countries, competitiveness towards other territories (European countries, especially developing countries, Latin and North America) is limited. In connection with current and especially future Uzbek agricultural trade, it is necessary to increase the volume of production. The combination of the TBI, LFI and product mapping approach analyses proved the comparative advantage of the following set of aggregates/trade items: fish, plants, meat products, cereals, live animals, vegetable oils, vegetable juices, dairy products, sugar, juices, weaving materials, product shredding, drinks and alcohol.

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