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COMPLEMENTARITY OF AGRI-FOOD TRADE OF REGIONAL INTEGRATION GROUPINGS

KOMPLEMENTARNOŚĆ WYMIANY ROLNO-ŻYWNOŚCIOWEJ REGIONALNYCH UGRUPOWAŃ INTEGRACYJNYCH

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Streszczenie. Od połowy lat 90. XX wieku obserwuje się systematyczny wzrost zainteresowania liberalizacją regionalną, która może być traktowana jako pierwszy etap międzynarodowej integracji gospodarczej. Jej powodzenie uwarunkowane jest wieloma czynnikami, w tym komplementarnością struktur handlowych. Głównym celem badań była ocena wewnętrznej i zewnętrznej komplementarności handlu rolno-żywnościowego pięciu ugrupowań: AFTA, MERCOSUR, NAFTA, SADC oraz UE w latach 2000–2014. Przeprowadzona analiza pozwala, z jednej strony, wyjaśnić obserwowany różny poziom integracji badanych ugrupowań, z drugiej strony, pozwala wskazać perspektywy wymiany pomiędzy analizowanymi podmiotami.

Key words: trade complementarity, agri-food trade, regional integration groupings.

Słowa kluczowe: komplementarność handlu, handel rolno-żywnościowy, regionalne ugrupowania integracyjne.

INTRODUCTION

Integration processes in the global economy take place with varying intensity, and at a varying pace, scope and depth of integration. The expression of that process are the preferential (regional) trade agreements that allow the introduction of discriminatory trade liberalization towards third countries. Since the mid-90s of the twentieth century a steady growth of interest in regional liberalization has been observed, also considered to be an alternative to protracted negotiations of the Doha Round. During the term of the GATT in the years 1958–1994, fifty regional trade agreements (concerning the trade of goods and services, and accession) entered into force. Within the framework of the WTO – in the period from 1995 to 2013 – 319 such agreements came into effect. In other words, until mid-90s more than one (1.4) agreement entered into force on average per year, and in the next period, that is from 1995 to 2013, the annual average was almost seventeen (16.8). Due to the fact that regional trade agreements bring liberalization of trade in goods between selected countries, they can be perceived as the first stage of international economic integration within the groups.

The success of international economic integration is determined by a number of factors. These include, *inter alia*, geographical location of countries, the state of economic infrastructure, the economic policy pursued by integrating countries and the presence of complementary economic structures. An important factor contributing to the intensification of international trade is geographical proximity, since it allows countries to shorten the time and cost of the transfer of goods, services and factors of production. It should be noted, however, that in the light of

the growing number of preferential trade agreements concluded between countries from various geographical regions (so-called interregional agreements), geographical proximity is steadily losing its importance (Śledziwska 2012). Effective economic integration is served by the existing economic infrastructure that determines international flows of goods and services, and promotes real and/or potential complementarity. The nature of economic policies of countries concluding given agreement is also an important factor in the process of economic integration. The question is whether this policy is conducive to international exchange, whether it promotes unification of the partners' economic conditions, or discrimination against countries from outside the bloc.

The development of economic integration is also determined by the presence of complementary economic structures. Before embarking on the integration process, these structures should be already complementary (real complementarity). Optionally, economic partners should have conditions allowing mutual adaptation through development of appropriate forms of institutional, instrumental and property linkages (potential complementarity). Complementary structures can have both the nature of inter- or intra-industry. The former one stems from differences in production factor resources (some countries specialize in the production of raw materials and food, and others in processed goods). While inter-industry complementarity is not a prerequisite for integration, intra-industry complementarity, based on differences in factor productivity, definitely is (Zielińska-Głębocka 1997; Bożyk et al. 1998; Misala 2001). The dominance of complementarity structures on their competitiveness foster strengthening integration processes (Nasrudin et al. 2014). In the light of existing regional trade agreements and intra- or extra-regional agri-food trade, it is interesting to examine whether and how the agri-food trade complementarity among the member countries, as well as between selected groupings, change. Hence, the purpose of the study is to assess internal (among countries within groupings) and external (between two groupings) complementarity of agri-food trade of selected regional integration groupings.

MATERIAL AND METHODS

Statistical data retrieved from the World Bank's World Integrated Trade Solution (WITS) were used in the research. The study embraces foreign trade of agri-food products recognized as section 0 + 1 + 2 – 27 – 28 + 4 according to the SITC (Standard International Trade Classification) at three digit level. The value, structure and dynamics of agri-food trade of five regional integration groupings, such as AFTA¹, MERCOSUR², NAFTA³, SADC⁴ and the EU⁵, were assessed. In view of availability and completeness of statistical data, the study period covers the years 2000–2014.

¹ AFTA means Free Trade Area of the ASEAN (Association of Southeast Asian Nations and East) and includes countries such as Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic of Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. In Due to unavailability of statistical data, Laos and Myanmar were excluded from the study.

² Argentina, Brazil, Paraguay and Uruguay are the member countries of MERCOSUR (Southern Common Market).

³ NAFTA (North American Free Trade Agreement) encompass Canada, Mexico and the United States.

⁴ SADC (Southern African Development Community) are Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Due to unavailability of statistical data, Angola, the Democratic Republic of Congo, Lesotho and Swaziland were excluded from the study.

⁵ The EU member states consist of: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. The study did not include Croatia, which is a member of the EU from 2013.

To evaluate the agri-food trade complementarity, the trade complementarity index was used. This index shows the percentage of matching exports of one country to imports of the other country (Mikic and Gilbert 2009). Its mathematical formula has the form (Cheong 2010):

$$CI = [1 - \{\sum_g \text{abs} ([m_{rig} / M_{rit}] - [x_{kg} / X_{kt}])\} / 2] \cdot 100\%$$

where:

- CI – trade complementarity index,
- m_{rig} – imports of product group g by country i,
- M_{rit} – total imports of country i,
- x_{kg} – exports of product group g from country k,
- X_{kt} – total exports of country k.

The index ranges from zero to 100%. If the complementarity index reaches zero, it indicates lack of trade complementarity between the analyzed entities. If the index equals to 100% it means perfect complementarity of exports of one country with imports of the other country. High level of complementarity, which is an important indicator of the potential development of intra-regional trade (Khandelwal 2005; Makochekanwa 2012), also increases the chance of success of the integration process⁶. In the presented research, the values of the agri-food trade complementarity between the selected member country and the rest of the integrated grouping (so-called internal complementarity), and between selected groupings (so-called external complementarity) were estimated.

INTERNAL COMPLEMENTARITY AGAINST THE AGRI-FOOD INTEGRATION GROUPS

The EU agri-food industry in showed the highest turnover in 2014 (over 600 billion US dollars for exports and imports, Table 1). Respectively, NAFTA made less than half of the above value in exports and had nearly three times smaller imports. In that same year, the exports of MERCOSUR reached 140 billion US dollars, twofold less than that of NAFTA and 4.5 times less than the EU. The value of imports of MERCOSUR remained at relatively low levels and was higher only than the one listed for SADC. In 2014 the lowest value of agri-food exports and imports was observed in the group of Asian countries associated in AFTA and the African countries which are members of SADC (Table 1).

Table 1. Agri-food trade of regional groupings in 2000 and 2014 [billion USD]

Groupings	AFTA		MERCOSUR		NAFTA		SADC		EU	
	2000	2014	2000	2014	2000	2014	2000	2014	2000	2014
Agri-food trade										
Export	37.7	88.4	29.3	138.9	114.6	276.5	6.9	15.1	215.8	631.0
Import	24.3	60.1	7.3	18.1	95.2	225.0	3.6	11.9	239.1	624.8
Balance	13.4	28.3	22.0	120.7	19.4	51.5	3.4	3.3	-23.3	6.2
Intra-regional agri-food trade										
Export	6.3	19.0	4.1	6.8	48.6	107.3	1.3	5.3	160.2	455.9
Import	5.2	17.7	4.0	7.2	47.3	105.8	1.2	3.6	155.8	427.7
Balance	1.1	1.3	0.1	-0.4	1.3	1.4	0.1	1.7	4.4	28.2
Extra-regional agri-food trade										
Export	31.4	69.4	25.2	132.1	66.0	169.2	5.7	9.8	55.6	175.1
Import	19.1	42.4	3.3	11.0	47.9	119.2	2.4	8.2	83.3	197.1
Balance	12.3	27.0	21.9	121.1	18.1	50.1	3.3	1.6	-27.7	-21.9

Source: own calculations based on data from the World Integrated Trade Solutions.

⁶ High rates of complementarity for all member states represent positive conditions for mutual cooperation leading to trade specialization within the integration process. When one country has high rates of complementarity, at low values of the indicators for the other member countries, it points to potential dominance of the country in the regional grouping (Nasrudin et al. 2014).

In the 2000–2014 the highest increase (4.7-fold) of agri-food exports was observed in the MERCOSUR. With lower import growth (250%) it resulted in a nearly 5.5-fold increase in the positive balance of agri-food trade, which in 2014 reached more than 120 billion USD and was the highest among analyzed groups (Table 1). It should be emphasized that in the analyzed fifteen year period, a positive balance of agri-food trade was recorded also in the AFTA, NAFTA and SADC. Only the European Union (years 2000–2012) showed a negative balance of agri-food trade. In 2014, it was already positive and reached more than 6 billion USD, almost twenty times less than the balance of MERCOSUR and eight times less than NAFTA respectively.

The size and changes of agricultural production depend on the natural environmental conditions and access to resources. That determines different significance of agri-food trade for different integration groupings (Pawlak 2013). Considering the importance of agri-food trade in total turnover, it is worth noting that in the 2000–2014 this share increased for most groups of countries (Table 2). The largest increase in exports, more than 10 p.p., was recorded for MERCOSUR. Correspondingly smaller increases were observed in AFTA, NAFTA and the EU. In the case of SADC member countries, a five-point drop in the share of agri-food exports in total exports took place. To a somewhat lesser extent, the significance of imports decreased too. The downward trend in relation to imports also appeared in MERCOSUR, which may be indicative of increased food self-sufficiency. In other groupings the share of agri-food imports in total imports increased⁷ (Table 2).

Table 2. Selected trade relations of regional groupings in 2000 i 2014 [%]

Groupings	AFTA		MERCOSUR		NAFTA		SADC		EU	
	2000	2014	2000	2014	2000	2014	2000	2014	2000	2014
Share of agri-food trade (intra and extra) in total trade (intra and extra)										
Export	9.0	9.4	34.9	45.2	9.4	11.3	18.3	13.4	9.0	10.9
Import	6.7	7.0	8.4	5.7	5.7	6.9	9.2	8.6	9.7	11.0
Share of intra-regional total trade										
Export	22.5	26.7	21.1	14.0	55.8	50.7	13.9	23.8	65.5	61.9
Import	22.2	21.2	20.5	13.0	39.5	34.7	16.1	15.2	60.2	58.6
Share of extra-regional agri-food trade in extra-regional total trade										
Export	9.6	10.1	38.0	50.0	12.3	14.0	17.3	11.4	6.7	7.9
Import	6.8	6.2	4.8	4.0	4.7	5.6	7.2	7.0	8.5	8.4
Share of intra-regional agri-food trade in agri-food trade (intra and extra)										
Export	16.7	21.5	13.9	4.9	42.4	38.8	18.3	35.2	74.2	72.2
Import	21.3	29.5	54.6	39.4	49.7	47.0	33.7	30.7	65.2	68.5

Source: own calculations based on data from the World Integrated Trade Solutions.

In the context of ongoing economic integration, which can be assessed based on the share of intra-regional trade in total trade, it is evident that the strongest links exist between the EU member states. Although this share decreased over the 2000–2014 period (Table 2), the average share stood at almost 65% for exports and 60% for imports, and was the highest among analyzed regional groupings. In the case of NAFTA, on average, more than half of exports and about 35% of imports took place between members of this group and the

⁷ In the EU and NAFTA the share of agri-food exports in total exports was similar, with a relatively lower importance of the agri-food imports in the NAFTA. This represents increased food self-sufficiency in NAFTA and lower rates of imports penetration in the region (Pawlak 2013).

importance of this indicator decreased (by almost 5 p.p.). A larger decrease in the share of intra-regional trade was recorded in the MERCOSUR (about 7 p.p.). In the case of Asian countries (AFTA) and African countries (SADC), intra-regional cooperation increased in relation to exports, with a relatively small decrease of the importance of intra-regional imports.⁸

The largest share of intraregional agri-food trade in the total agri-food turnover of groups was noted for the European Union and NAFTA (Table 2). For example, in the last study year, these values for the EU stood at over 72% for exports and 68.5% for imports, and the NAFTA amounted to nearly 39% and 47% respectively⁹. Strengthening integration through the development of agri-food trade was visible also in SADC, in which more than 35% of exports was directed to the members of the African group (increase of more than 16 p.p. since 2000) and over 30% of agri-food imports came from member countries (a decrease of 3 p.p. from 2000). In the 2000–2014 period the agri-food trade within the AFTA countries had also intensified. Over time they have become increasingly self-reliant as suppliers and consumers of agri-food products (growth rates for exports and imports). The largest decrease in the importance of intra-regional agri-food trade took place in the MERCOSUR group. The share index decreased from nearly 14% to 5% for exports and from over 54% to 39% for imports. MERCOSUR is also the only group that reached a negative balance of intra-regional agri-food trade in the last study year (Table 1), even though in 2000–2007 it was positive. The opposite trend can be observed in case of SADC. In other groupings such as AFTA, NAFTA and the EU, the balance of intra-regional agri-food trade was positive and growing throughout the period analyzed.

In their relations with third countries, AFTA, MERCOSUR and NAFTA reached a positive and growing balance of agri-food trade. Positive, but declining result of trade was characteristic of SADC. In contrast, the European Union was the only grouping that showed a negative balance of agri-food trade with third countries in the 2000–2014 (Table 1). In 2014, within extra-regional trade, the agri-food trade was responsible for only about 8% (Table 2). For the sake of comparison, it was about 14% (an increase compared to 2000), nearly 11.5% (down) and about 10% (growth) in exports of NAFTA, SADC and AFTA respectively. However, in the case of MERCOSUR, half of the extra-regional trade accounted for agri-food products (increase by 12 p.p. since 2000). The share of agri-food imports in extra-regional trade of groups ranged from 4% (MERCOSUR) to 8.5% (EU) and was significantly lower (except EU) in comparison to the importance of exports (Table 2).

The above changes in the nature of trade flows of individual groups show that the most advanced processes of trade integration (but showing downward trends) with regard to agri-food products took place in the EU and NAFTA. The average annual rates of internal complementarity of agri-food trade for those groups of countries were respectively at levels of 66% and 56% (Fig. 1), and in the EU the degree of matching grew steadily, whereas in NAFTA it declined. The structure of agri-food trade of MERCOSUR member countries was

⁸ It is also worth noting that in the years 2000–2014 the trade balance was positive and growing for AFTA, NAFTA and the EU, and in the MERCOSUR group exports and imports were close to balance. However, in the case of SADC, a higher growth in exports in comparison to imports made it possible to achieve a positive trade balance in 2010 and then in 2012–2014 (based on data from WITS).

⁹ The EU countries are both suppliers and consumers of agri-food products, while the NAFTA countries are more suppliers than consumers of agri-food products.

complementary in the range of 40–50% in the conditions of a distinct decline in the importance of intra-regional agri-food trade. However, it was different in the case of AFTA and SADC, where the role of intra-regional agri-food trade steadily increased, although at generally low values of trade. In these groupings, the lowest values of internal complementarity noted 35–40% and 23–27% respectively.¹⁰

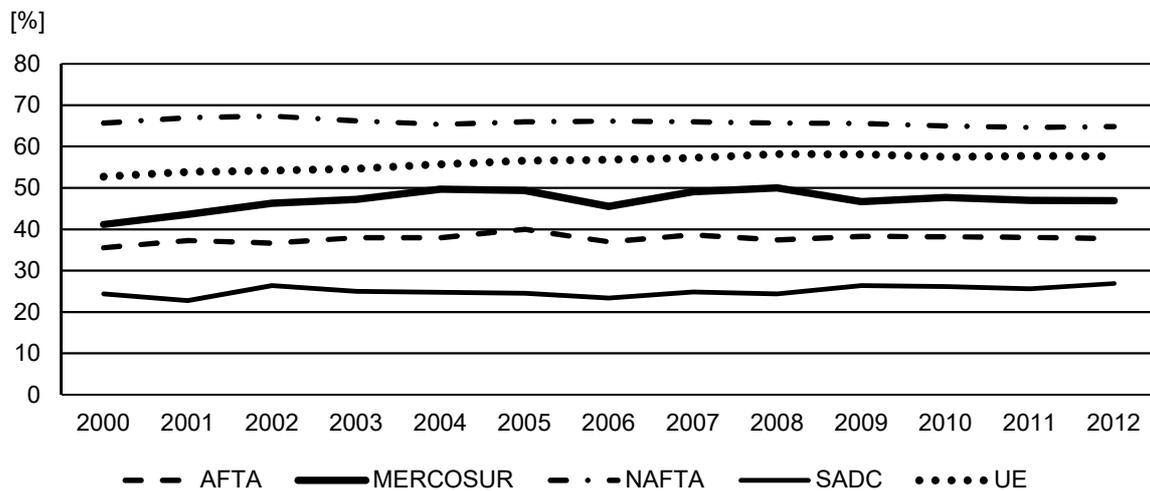


Fig. 1. Internal agri-food trade complementarity of selected regional groupings in 2000–2012
Source: own calculations based on data from the World Integrated Trade Solutions.

Differences in the level of complementarity between the groups are determined by, *inter alia*, quantitative and qualitative resources of production factors, the likelihood of financial support for agriculture and adopted institutional arrangements in terms of agricultural policy. In most of the regional groups, the integration process was also accompanied by a systematic increase of agri-food complementarity (with the exception of NAFTA). Membership in the regional integration grouping and the introduction of a preferential trade liberalization is associated with changes in the product structure of exports in relation to imports of the rest of the group¹¹. The increase in exports matching level of one country to imports of other member countries can be considered as a sign of specialization in intra-regional trade relations. At the same time, the trade complementarity is conditioned by the level of economic development of countries and the size of economies. More developed countries (NAFTA, EU) were characterized by a higher degree of matching of agri-food trade, which is an expression of higher integration between member countries. In the groupings involving the poorest and the

¹⁰ One should remember that the average value and changes of agri-food trade complementarity at the level of groups did not reflect the evolution of the compatibility of exports of individual member countries with imports of other member countries. At the level of individual countries, these values are in fact different, but their detailed analysis is beyond the scope of this paper.

¹¹ For example, in the EU countries the changes in the exports of the new member states foster the increase of average complementarity. The MERCOSUR member countries acted as relatively stable markets and suppliers to one another, and the competition between them was run on third markets. That was revealed by a decrease in the share of intra-regional agri-food trade. The low level of internal complementarity within SADC and AFTA is partly due to the relatively underdeveloped agricultural sector and limited opportunities to create competitive exports (Sapa 2014).

developing countries (SADC), the lowest average complementarity levels within the group were observed. These countries have in fact similar and poorly diversified offer of agri-food products that restricts and hinders their ability to develop intra-regional trade (Keane et al 2010).

CHANGES OF EXTERNAL COMPLEMENTARITY OF THE AGRI-FOOD TRADE

Taking into account the trade relations between the analyzed five groups, it is worth noting that throughout the considered period only MERCOSUR reached a steadily growing positive balance of agri-food trade with the other four groups of countries (Table 3). At the same time MERCOSUR recorded the largest trade surplus with the developed countries of the EU (more than USD 25 billion in 2014), and the smallest one with African countries integrated in SADC (over 770 million USD in 2014). The highest growth in exports (more than 1310% in 2000–2014) and imports (relatively over 630%) was observed in the dealings of MERCOSUR with AFTA. The value of agri-food trade between MERCOSUR and SADC and the EU (imports) increased almost three times and by approximately 170% with NAFTA. The main partners in agri-food trade of MERCOSUR were the EU countries (although the share of this group of countries as recipients halved from more than 43% in 2000 to nearly 22% in 2014). Important suppliers (but of decreasing magnitude) of MERCOSUR was also NAFTA, for which the average share in the external agri-food trade of MERCOSUR stood at over 21% (Table 4). Given the agri-food trade relations between MERCOSUR and the analyzed groups, only the share of AFTA increased. At the same time, in conditions of relatively high value, complementarity indicators for the MERCOSUR trade with AFTA decreased by nearly 7 p.p. (Table 5). The comparatively high complementarity of agri-food trade was observed also in the relations with the EU, lower rates were recorded respectively in trade with SADC and NAFTA.

Table 3. Agri-food trade of selected regional groupings in 2000–2014 [million USD]

Groupings		AFTA		MERCOSUR		NAFTA		SADC		EU	
		2000	2014	2000	2014	2000	2014	2000	2014	2000	2014
AFTA	export			200.4	530.6	5688.5	8268.2	414.9	1354.5	5481.0	8835.4
	import			954.2	6101.7	4556.9	7183.5	449.9	508.5	2846.3	7270.4
	balance			-753.8	-5571.1	1131.7	1084.7	-35.0	846.0	2634.7	1565.0
MERCOSUR	export	837.0	10 972.9			3225.3	8707.9	273.5	836.9	10 965.6	28 478.2
	import	230.6	1458.9			880.5	2401.2	21.1	62.7	956.5	2837.4
	balance	606.4	9514.0			2344.8	6306.7	252.5	774.1	10 009.1	25 640.8
NAFTA	export	3968.7	15 141.2	864.4	2383.0			312.3	630.4	14 171.3	22 897.4
	import	6951.6	18 565.5	3970.7	9955.6			565.6	908.4	13 935.2	29 913.1
	balance	-2982.9	-3424.4	-3106.3	-7572.6			-253.4	-278.0	236.1	-7015.7
SADC	export	326.8	717.8	16.9	47.2	373.5	476.6			2898.0	3809.1
	import	391.2	1570.5	268.5	884.5	343.2	461.8			643.9	2644.6
	balance	-64.4	-852.6	-251.6	-837.4	30.3	14.9			2254.1	1164.5
EU	export	2337.2	9167.1	936.4	2866.0	12 044.1	27 286.7	612.5	2982.0		
	import	6912.4	21 940.2	12871.7	32 149.2	16 629.3	25 872.1	4215.0	7829.8		
	balance	-4575.2	-12 773.0	-11 935.3	-29 283.1	-4585.3	1414.6	-3602.5	-4847.8		

Source: own calculations based on data from the World Integrated Trade Solutions.

Table 4. The share of agri-food products in the external trade of regional groupings in 2004 and 2014 [%]

Groupings		AFTA		MERCOSUR		NAFTA		SADC		EU	
		2000	2014	2000	2014	2000	2014	2000	2014	2000	2014
AFTA	export			0.6	0.8	18.1	11.9	1.3	2.0	17.5	12.7
	import			5.0	14.4	23.9	16.9	2.4	1.2	14.9	17.1
MERCOSUR	export	3.3	8.3			12.8	6.6	1.1	0.6	43.4	21.6
	import	7.0	13.3			26.7	21.9	0.6	0.6	29.0	25.8
NAFTA	export	6.0	8.9	1.3	1.4			0.5	0.4	21.5	13.5
	import	14.5	15.6	8.3	8.4			1.2	0.8	29.1	25.1
SADC	export	5.8	7.3	0.3	0.5	6.6	4.9			51.3	38.8
	import	16.6	19.1	11.4	10.7	14.5	5.6			27.3	32.1
EE	export	4.2	5.2	1.7	1.6	21.7	15.6	1.1	1.7		
	import	8.3	11.1	15.4	16.3	20.0	13.1	5.1	4.0		

Source: own calculations based on data from the World Integrated Trade Solutions.

Table 5. External agri-food trade complementarity of selected regional groupings in 2000 and 2014 [%]

Export \ Import	AFTA		MERCOSUR		NAFTA		SADC		UE	
	2000	2014	2000	2014	2000	2014	2000	2014	2000	2014
AFTA			48.2	62.0	57.8	55.9	47.3	58.8	55.5	53.3
MERCOSUR	50.1	43.4			39.6	31.0	41.4	39.5	55.6	44.5
NAFTA	70.5	61.3	45.9	48.6			53.3	55.3	60.1	55.5
SADC	46.1	47.0	49.0	42.6	55.6	52.6			63.6	54.5
EU25	54.5	65.9	53.4	55.5	61.9	60.1	59.8	62.0		

Source: own calculations based on data from the World Integrated Trade Solutions.

In the external agri-food trade of NAFTA it is the EU countries that have the biggest, though declining importance (Table 4). It is worth noting that in the analyzed period, from a net exporter in relations with the EU (positive balance of trade in 2000) NAFTA turned into a net importer (negative balance of trade in 2014, Table 3). As it comes to trade relations with other groups, NAFTA showed a negative growing balance of agri-food trade. The highest dynamics of the agri-food trade was observed in the trade of NAFTA with AFTA (over 380% for exports and about 270% for imports). This was accompanied by an increase (nearly 3 p.p.) of importance of AFTA in the agri-food trade between NAFTA and the third countries. The share of MERCOSUR and SADC was relatively stable, but the importance of the EU clearly decreased. As for the complementarity indicators of agri-food trade, it must be said that the agri-food exports of NAFTA was maximally complementary (and decreasing at the same time) to the corresponding imports of AFTA and the EU (Table 5). Lower though increasing degree of adjustment of agri-food exports of NAFTA was observed for imports of SADC and MERCOSUR.

The importance of the latter group was particularly evident in the external agri-food imports of AFTA. This share rose from 5% to nearly 14.5% in 2000–2014 (Table 4). At the same time less than one percent of agri-food exports from AFTA was directed to the markets of MERCOSUR countries (Table 5). In result, in the study period, AFTA recorded negative, steadily growing balance in agri-food trade with MERCOSUR, and the imports growth was nearly 2.5 times higher than that of exports. Only in the case of bilateral trade of AFTA with SADC, the growth of exports exceeded the growth of imports, which allowed to change the

negative agri-food trade balance into a positive one (albeit by relatively low value of trade). In the external trade of AFTA, the most important were groups of developed countries such as NAFTA and the EU, even though their share was steadily declining. The faster growth of imports compared to exports resulted in a drop in positive balance. Therefore, the EU countries and NAFTA became more of suppliers of AFTA than consumers of agri-food products. Complementarity indicators for these two groups (AFTA–NAFTA, AFTA–the EU) deteriorated and at the end of the analyzed period were at their lowest (Table 5). Apparent increase in complementarity took place in agri-food trade relations with MERCOSUR and SADC.

In the years 2000–2014 SADC showed a positive balance of agri-food trade with the EU and NAFTA. However, the higher growth rate of imports over exports resulted in the fact that the trade balance obtained was almost twofold lower in 2014 compared to 2000. At the same time, the negative balance with AFTA grew by thirteen times and by three times with MERCOSUR (Table 3). In the trade relations of SADC with other groups, the importance of AFTA countries (in terms of exports and imports) and the EU (imports) increased maximally (Table 4). The share of NAFTA as a supplier of agri-food products, and the EU as a recipient decreased clearly. The degree of matching agri-food trade of SADC with the EU and NAFTA was the highest, though decreasing at the same time (Table 5). The increase in the degree of complementarity was observed in relations with AFTA. The lowest level of adjustment occurred in the trade with MERCOSUR.

NAFTA played the biggest role, though steadily declining, in external trade relations of the EU played NAFTA, recording a positive balance of agri-food trade in 2014 (Table 3 and 4). For other groups the higher export growth compared to imports was responsible for increasing negative trade balance. In case of the EU trade with MERCOSUR, which is primarily a supplier of agri-food products, the agri-food trade deficit increased 2.5 times in the analyzed period and reached 29 billion USD in 2014 (Table 3). In the same year the negative balance of trade with AFTA was more than two times, and with SADC six times smaller. The degree of complementarity between agri-food exports of the EU and agri-food imports of other groupings was relatively high (Table 5). It decreased only in the case of trade with NAFTA. The biggest positive change in the level of agri-food trade complementarity index related to the EU's trade with AFTA, which was also associated with the highest dynamics of trade between these groups.

CONCLUSIONS

1. Integration processes taking place in the global economy are progressing with varying intensity. This is manifested, among others, by a varying degree of sectoral trade cooperation between the countries within groupings that can be assessed using a measure of the share of intraregional trade in total trade. The largest share of intra-regional agri-food trade took place in the EU and NAFTA – that is groupings of developed countries. In the groupings of developing countries (SADC AFTA), this share was significantly smaller although definitely on the rise. It may indicate the growing role of regional integration in the process of economic development of these countries. In the case of MERCOSUR, relatively weak integration in terms of intra-regional trade was accompanied by a high dynamics of trade with the third countries.

2. The study allows to conclude that in groupings showing the highest share of intra-regional agri-food trade and including the most developed countries (NAFTA and the EU), the degree of complementarity was the highest. In turn, the lowest levels of internal complementarity were observed in the regional groupings of developing and the poorest countries (SADC AFTA). At the same time, intra-regional cooperation systematically strengthened (for AFTA in relation to exports and imports, for SADC in relation to exports) in these groupings, which creates the potential for further development of trade relations. The average trade complementarity index of MERCOSUR in comparison to others groupings was accompanied by low and relatively stable level of intra-regional cooperation. Trade cooperation developed mainly through trade with the third countries.
3. Considering the relations between the analyzed groups, it can be stated that the groupings of the most developed countries (EU, NAFTA) recorded negative agri-food trade balance. MERCOSUR was the only grouping that throughout the considered period achieved positive and growing balance of agri-food trade throughout the study period, although the complementarity index systematically decreased. SADC, with a low complementarity index, was a net importer of agri-food products from AFTA and MERCOSUR. African countries recorded higher trade complementarity in their trade with the EU and Nafta. As it comes to AFTA, it assigned primary, though decreasing, importance to NAFTA and the EU, although the trade complementarity showed a decline. The increase of complementarity occurred in trade with other developing countries grouped in MERCOSUR and SADC. Based on the highest average values of complementarity observed in the agri-food trade between the analyzed groups in 2014, it can be concluded that the following configuration of groupings have the highest chance of expanding the agri-food trade: AFTA with MERCOSUR, MERCOSUR with AFTA and the EU, NAFTA with AFTA, SADC with the EU, and the EU with AFTA and SADC.

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Summary. Since the mid-90s of the twentieth century a steady increase in regional liberalization has been observed, which can be considered as the first stage of international economic integration. Its success is conditioned by many factors, including the complementarity of commercial structures. The main objective of the study was, therefore, to assess the level of internal and external trade complementarity index of agri-food trade of five regional integration groupings: AFTA, MERCOSUR, NAFTA, SADC and the EU over the 2000–2014 period. The analysis allows, on the one hand, to explain the perceived level of integration of selected groupings, and on the other hand, indicate the prospects of agri-food trade relations between the analyzed entities.

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