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ASSESSING THE POTENTIAL OF MOLDOVA'S AGRI-FOOD PRODUCTS IN THE CONTEXT OF EU NEIGHBOURHOOD

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Abstract. Due to the Deep and Comprehensive Free Trade Agreement signed recently between Moldova and European Union, it is of vital importance for local agri-food products to be competitive on the EU market in order to benefit from the potential gains of the increased demand. The aim of this research is to analyze the changes in the trade flows and to evaluate the consequences and potential benefits of DCFTA from the agri-food exports of Moldova. The authors used in the given research data from the National Bureau of Statistics for the period 2001-2012. The analysis of competitiveness will be carried out based on the intra and inter industrial trade indices (RTA, GL). The obtained results highlighted the advantages of some agri-food products, while the high values of GL index indicated an increase of imports for many agri-food products.

Key words: Agri-food products; Competitiveness; Trade flows; GL; RTA

Rezumat. În contextul recentei semnări a Acordului de Liber Schimb Aprofundat și Cuprinzător între Republica Moldova și Uniunea Europeană, de o importanță deosebită este faptul că produsele agro-alimentare locale să fie competitive pe piețele Uniunii Europene pentru a beneficia de potențiale câștiguri, rezultate din cererea majorată. Scopul acestei cercetări este analiza modificărilor în fluxurile comerciale și evaluarea consecințelor și potențialelor beneficii ale Acordului de Liber Schimb asupra exporturilor de produse agro-alimentare ale Republicii Moldova. În acest sens au fost utilizate informațiile statistice ale Biroului Național de Statistică pentru perioada 2001-2012. Analiza competitivității este bazată pe evaluarea indicilor comerțului inter și intra industrial (RTA, GL). Rezultatele obținute indică asupra avantajelor unor produse agro-alimentare, pe când valorile înalte ale comerțului intra-industrial indică asupra majorării importurilor a mai multor produse agro-alimentare.

Cuvinte cheie: Produse agro-alimentare; Competitivitate; Fluxuri comerciale; GL; RTA

INTRODUCTION

In the Republic of Moldova, as in other Central and Eastern European countries, many changes had occurred during the transition process towards a market economy in the agricultural and food trade environment. Trade liberalization is an important part of this transformation process.

In this paper we focus on the agri-food sector of Moldova. The core objective of this investigation is to assess the competitiveness of the local agri-food products on the EU markets and to examine the effects of trade liberalization on trade flows of Moldova in the context of the Deep and Comprehensive Free Trade Agreement with EU.

MATERIAL AND METHODS

This research analyzes some indicators of inter and intra industry trade. In order to analyze the agri-food trade indicators there were used data from the National Bureau of Statistics during the period 2001-2012. The data set includes 24 commodity groups, divided in agricultural products (01-15) and foodstuffs (16-24).

We also analyzed Moldova's foreign trade activity using indices that measure the level of inter-industry trade - Revealed Trade Advantages index (RTA), and the intra-industry trade level - Grubel-Lloyd index (GL).

RESULTS AND DISCUSSIONS

Agriculture and food industry play a key role in the national economy. This sector represents an important share in the GDP (about 10% in 2012), and together with food industry about 30% in 2012. According to statistics, about 40% of the labor force is also employed in the agricultural sector.

The agri-food products have a large share in country's trade activity. During 2001-2012 the share of agri-food products in the total trade was about 40%. During the same period, the share of agri-food imports was about 12%. The agri-food trade balance of Moldova is so far positive, 135541,4 mln US dollars in 2012.

The agri-food trade flows had increased during the analyzed period. Thus, the agri-food exports increased about 3 times from USD 356857.1 thousands in 2001 to USD 878881,1 thousands in 2012. The agri-food imports increased as well: from USD 143298.1 thousands in 2001 to USD 743339.7

Table 1. Evolution of Moldova's agri-food trade flows, 2001-2012

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Agri-food exports, mln US dollars	35687.1	405533.3	463076.7	527184.7	582715.2	463292.8	506210.7	594996	604745.7	732211	917103.1	878881.1
Agri-food imports, mln US dollars	143298.1	147024.9	204589.5	224995.8	279575	315611.9	465914.3	631390.5	513583	591522.2	687784.6	743339.7
Agri-food trade balance, mln US dollars	213559	258508.4	258487.2	302188.9	303140.2	147680.9	40296.4	-36394.5	91162.7	140688.8	229318.5	135541.4
Share of agri-food exports in the total amount of exports, %	63.1	62.9	58.6	53.5	53.4	44.1	37.7	37.3	47.1	47.5	41.3	40.6
Share of agri-food imports in the total amount of imports, %	16	14.1	14.5	12.7	12.1	11.7	12.6	12.8	15.6	15.3	13.2	14.2

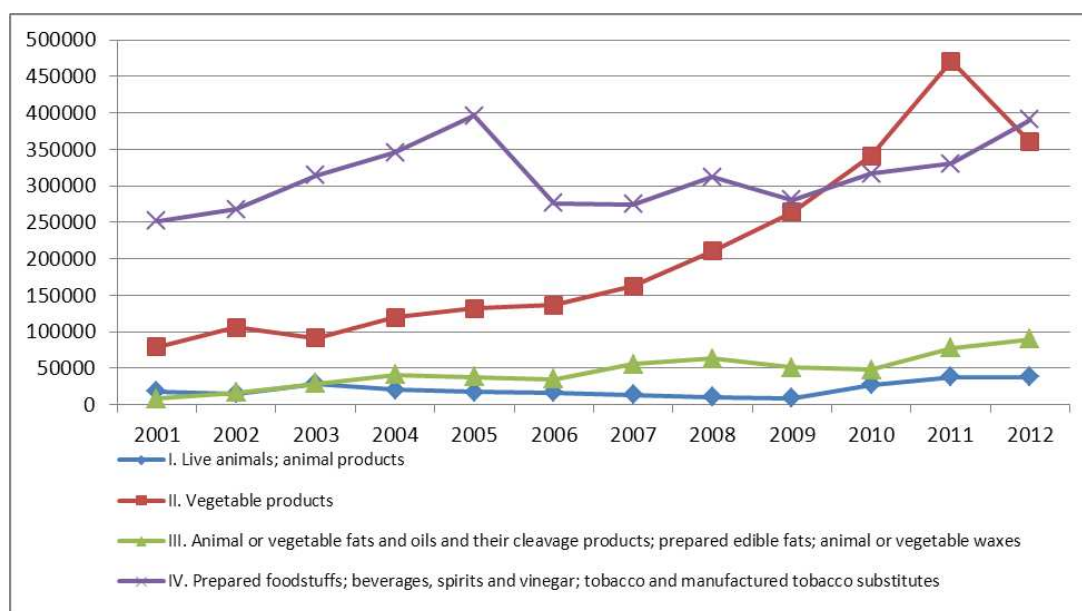
Source: based on data from the National Bureau of Statistics

thousands in 2012. As for the imports structure, the largest share belongs to foodstuffs, alcoholic drinks and vegetable products.

In the Republic of Moldova, out of the total agri-food exports, about 80% belongs to agricultural products (commodity group 01-15) and only 20% to food processing industry products.

The main exported products are vegetal products, vegetables, animal fats and oils, and foodstuffs. The exports of vegetable products mostly increased in the analyzed period, except from the sharp decrease in 2012 caused by the severe drought that affected the production and as a result the exports. Out of this group of products, a higher share belongs to edible fruits and oil seeds, the export of both being in a steady increase in the last years.

As for the agri-food export by groups of products to the EU market, the largest share belongs as well to vegetable products (USD 141079 thousands in 2012) and to processed foodstuffs; beverages, spirits and vinegar; tobacco and manufactured tobacco substitutes (USD 110423 thousands in 2012). Generally, all agri-food exports to EU countries recorded an increase in this period, except the group of vegetable products which registered a slight decrease in 2012, about 40%.

**Figure 2.** Agri-food exports of Moldova, by commodity groups, thousands USD

In the analyzed period, together with exports, the agri-food imports increased as well. In the structure of agri-food imports a large share belongs as well to processed foodstuffs, beverages and tobacco (about 50%), vegetable products, live animals and animal products. The agri-food imports from EU countries increased as well and the largest share belongs to processed foodstuffs, beverages and tobacco.

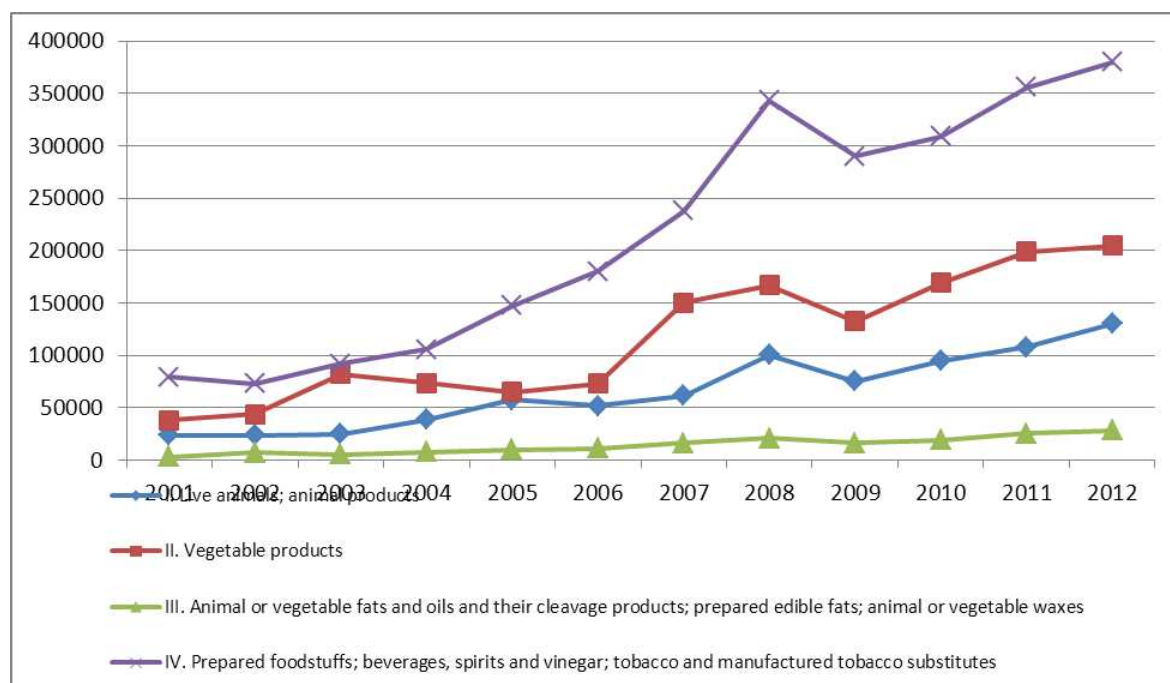


Figure 2. Agri-food imports of Moldova, by commodity groups, thousands USD

The largest export markets for Moldova's agri-food products are still the CIS countries, accounting 46% of total country exports and 46% of agri-food exports in 2012. Russian Federation is the main trading partner of Moldova with an export share of 30% and 15% for imports. The agri-food exports to Russia amounted to USD 235034 thousands in 2012, with 13% more than its level in 2001. Out of this, the largest share in 2012 belonged to vegetable products (46%) and processed foodstuffs, beverages and tobacco (41%).

The agri-food exports to CIS countries registered a sharp decrease in 2006 because of the interdiction imposed by the Russian Federation on Moldovan wines. As a result, the exports to CIS countries was about 50% lower in 2006-2007.

Another main trading partner of the Republic of Moldova is the EU countries market, which is the second largest market (38%) for agri-food products. In 2012, the largest share in Moldova's agri-food exports to the EU countries was recorded by Romania (USD 79364 thousands), Italy (USD 57187 thousands), Poland (USD 35396 thousands) followed by France and United Kingdom.

The exports to EU countries increased mostly after 2005 and basically doubled. An important factor of the increased share of Moldova's trade on the EU markets was the accession of Romania and Bulgaria to EU family. Nevertheless, EU countries have a lower share, particularly for some specific agri-food exports as mostly for food, live animals, beverages and tobacco. Particularly, it is generated because of Moldova's capacity to adapt to the demanding standards imposed by the EU market. Before joining the EU family, Romania was one of the main trading partners for Moldova's meat exports. As for other products, such as wine and alcoholic beverages, the EU markets are highly competitive which imposes difficulties in terms of price and quality for entering this market.

The agri-food imports also had increased and amounted to USD 743339 thousands in 2012. CIS countries have the largest share in Moldova's agri-food imports (42%) followed by the EU countries (34%). In 2012, among the CIS countries, the largest trading partner in agri-food imports was Ukraine (USD 216295 thousands), followed by Russia (USD 70805 thousands) and Belarus (USD 25285 thousands).

In 2012, among the EU countries, in terms of Moldova's agri-food imports, the largest share had Germany (USD 40002 thousands), Romania (USD 26797 thousands), Poland (USD 23890 thousands) followed by Italy, Bulgaria and France.

For the Republic of Moldova, according to NEI index, some commodities register higher imports (with values between -1 and zero) while others register higher exports. The exports prevail for the following commodities: "Edible fruits and walnuts; peel of citrus fruits or melons"; "Cereals"; "Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruits; industrial or medicinal plants; straw and fodder"; "Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes"; "Sugars and sugar confectionery"; "Preparations of vegetables, fruits, walnuts or other parts of plants"; "Beverages, spirits and vinegar".

In order to appreciate country's comparative advantage (or the one of a particular sector) Bela Balassa (Balassa, 1965) elaborated the method that reveals the "Revealed Comparative Advantages" (RCA). This method is based on the assumption that the implicit comparative advantages find their reflection directly in the trade flows. According to Balassa, comparative advantages are manifested in relatively high shares of a particular product/sector in the structure of exports. At the same time the relative limitations are reflected through low shares of a product/sector.

The RCA index or Balassa index is an indicator that characterizes the ratio of a commodity i in the total amount of country's exports and the share of this commodity in the total amount of world's exports. This index is based on observed trade patterns. This index is defined as:

$$B = (X_{ij}/X_{it}) / (X_{nj}/X_{nt}) \quad (1)$$

where:

X – export; i – a country; j – a commodity; t – a set of commodities; n – a set of countries.

If $B > 1$, then a comparative advantage is revealed. The standard deviation of this index across products can be used as measure of the comparative importance of inter-industry specialization or intra-industry trade.

An alternative specialization of the revealed comparative advantage was developed by Vollrath (Vollrath, 1991) and was called Relative Trade Advantage (RTA). The RTA index is calculated as the difference between the relative export advantage (RXA) or Balassa index and the relative import advantage (RMA):

$$RTA = RXA - RMA \quad (2)$$

where, $RXA = B = (X_{ij}/X_{it}) / (X_{nj}/X_{nt})$;

$RMA = (M_{ij}/M_{it}) / (M_{nj}/M_{nt})$;

M – import.

The positive value of RTA indicates comparative trade advantages, while negative value indicates comparative trade disadvantages. When RTA is greater than zero, then a comparative advantage is revealed, which means that a sector of the country is relatively more competitive in terms of trade.

In order to evaluate the competitiveness of Moldova's agri-food products on the EU markets it was calculated the Revealed Trade Advantages index (RTA) as a measure for inter-industry trade.

Moldova has relative trade advantages on the EU market for 7 out of 24 agricultural commodities and foodstuffs. The highest RTA index values in 2012 were registered for preparations of vegetables, fruit, walnuts or other parts of plants (10.68), Edible fruits and walnuts; peel of citrus fruits or melons (7.71), live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage (5.54). Comparative trade disadvantages, in 2012, were recorded in the following commodity groups: live animals (-1.4), Fish and crustaceans, mollusks and other aquatic invertebrates (-2.13), Edible vegetables and certain roots and tubers (-1.53), cereals (-0.54), Preparations of cereals, flour, starch or milk; pastrycooks' products (-1.14), Tobacco and manufactured tobacco substitutes (-2.09). Beside the commodity groups with revealed trade advantages and comparative trade disadvantage, we can observe that a number of products during the analyzed period have switching values for RTA index. The commodity group HS 05 (Products of animal origin, not elsewhere specified or included) and HS 12 (Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruits; industrial or medicinal plants; straw and fodder) increased their relative trade advantages on the EU market. Therefore, the RTA index for these commodity products had increased during 2001-2012 from -0.68 to 4.11 for HS 05, and from -1.15 to 2.05 for HS 12. An opposite tendency was observed for the commodity group HS 24 (Tobacco and manufactured tobacco substitutes) whose values decreased from 0.19 to -2.09.

Table 2. Moldova's Relative Trade Advantages with EU, by agri-food products

RTA > 1	RTA < 1	RTA switching values
06 ..Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage	02 ..Meat and edible meat offal	04 ..Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included
08 ..Edible fruits and walnuts; peel of citrus fruits or melons	07 ..Edible vegetables and certain roots and tubers	11 ..Products of the milling industry; malt; starches; inulin; wheat gluten
15 ..Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	10 ..Cereals	12 ..Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruits; industrial or medicinal plants; straw and fodder
20 ..Preparations of vegetables, fruits, walnuts or other parts of plants	17 ..Sugars and sugar confectionery	24 ..Tobacco and manufactured tobacco substitutes
22 ..Beverages, spirits and vinegar	19 ..Preparations of cereals, flour, starch or milk; pastrycooks' products	
	21 ..Miscellaneous edible preparations	

Source: author's calculations based on data from the National Bureau of Statistics

In order to assess the intra industry trade there were developed some indicators, out of which the most used is the Grubel-Lloyd index (GL) (Grubel, Lloyd 1975). According to it, intra industry trade is determined as the trade between countries, where the costs of exports of a particular sector corresponds to the costs of imports of the same sector. The GL index determines the share of intra industry trade in the total amount of exports of a particular sector. For computing this index it is needed to sum particular trade flows. The index is changing in values from 0 to 100.

$$GL_i = \frac{[(X_i + M_i) - |X_i - M_i|]}{X_i + M_i} \times 100\%, \quad (3)$$

where, GL_i – index of intra industry trade;

X_i - value of export in industry i;

M_i - value of import in industry i;

$X_i + M_i$ - total value of trade;

$|X_i - M_i|$ - trade balance of industry i.

The closer the GL value is to 100, the more important is the intra industrial trade, and the closer is GL value to 0 the more important is the inter-industry trade. In order to establish an average level of intra-industry trade, Grubel and Lloyd proposed the weighted index to arrive at an overall measure of intra industry trade.

The traditional measure of intra industry trade is used and the Grubel Lloyd index is calculated as follows:

$$GL_i = \frac{|X_i - M_i|}{(X_i + M_i)} \quad (4)$$

Where, X_i is the export in a certain line of goods and M_i is the import in the same commodity group.

The value of GL_i index can vary between 0 and 1. The higher the value of this index, the higher the level of intra industrial trade.

The analysis of Moldova's intra-industry trade with agri-food products is based on the Grubel-Lloyd index (GL). The intra-industry trade index for Moldova was calculated by commodity groups, as well as by trading partners (CIS countries, EU countries), and by agricultural products and foodstuffs.

The level of intra-industry trade varies by commodities groups and trading partners. High trade intensity of both agricultural products and foodstuffs during 2001-2012 is noticed. The GL index increased for the total agri-food trade, on average from 62,9% during 2001-2006 to 69.3% during 2007-2012. Also, an increase in the intensity of intra-industry trade on average is noticed for the agricultural commodities (01-15) from 79.7% during 2001-2006 to 83.6% in 2007-2012; and for foodstuffs from 52,6% to 60,1%. The increasing values are related to the increase of imports and decrease of exports for agricultural and foodstuffs commodities.

Table 3. *The level of intra-industry trade with agri-food products of the Republic of Moldova with all trading partners*

Commodity groups	2001-2006	2007-2012
01 Live animals	68.4	66.0
02 Meat and edible meat offal	50.7	46.4
03 Fish and crustaceans, mollusks and other aquatic invertebrates	4.5	0.79
04 Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included	72.5	41.5
05 Products of animal origin, not elsewhere specified or included	7.72	19.3
06 Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage	34.8	32.4
07 Edible vegetables and certain roots and tubers	68.7	44.5
08 Edible fruits and walnuts; peel of citrus fruits or melons	38.5	50.4
09 Coffee, tea, mate and spices	13.5	9.01
10 Cereals	34.9	46.9
11 Products of the milling industry; malt; starches; inulin; wheat gluten	7.8	6.43
12 Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder	65.51	43.9
13 Lac; gums, resins and vegetable saps and extracts	0.36	4.92
14 Vegetable plaiting materials; vegetable products not elsewhere specified or included	62.14	55.89
15 Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	44.18	49.58
16 Preparations of meat, of fish or of crustaceans, mollusks or other aquatic invertebrates	54.98	12.11
17 Sugars and sugar confectionery	81.58	72.37
18 Cocoa and cocoa preparations	25.8	21.08
19 Preparations of cereals, flour, starch or milk; pastrycooks' products	48.9	37.8
20 Preparations of vegetables, fruits, nuts or other parts of plants	34.3	57.3
21 Miscellaneous edible preparations	19.2	14.9
22 Beverages, spirits and vinegar	20.2	47.7
23 Residues and waste from the food industry; prepared animal fodder	70.2	90.4
24 Tobacco and manufactured tobacco substitutes	57.4	43.02

Source: authors' calculations based on data from the National Bureau of Statistics

Looking at the level of intra-industry trade by commodity groups we can see an increasing value of some product groups (05, 08, 10, 13, 15, 20, 22, 23) caused by the increase in imports of these products and decrease of exports. This increase in imports has advantage only for consumers because they receive a higher variety of commodities on the market, but for producers, an increase in the level of intra-industry trade doesn't mean receiving higher incomes. On the contrary, for certain commodity groups (01, 02, 03, 04, 06, 07, 09, 11, 12, 14, 16, 17, 18, 19, 21, 24) the decreasing values in the level of intra-industry trade supposes having advantages or receiving higher incomes from specialization, due to concentration of production, decrease of costs and higher production efficiency.

Table 4. *GL index results for Moldova's agri-food products, by country groups*

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CIS countries	0.63	0.66	0.76	0.76	0.79	0.92	0.98	0.99	0.96	0.93	0.95	0.96
EU countries	0.98	0.95	0.98	0.98	0.98	0.96	0.98	0.99	0.97	0.97	0.94	0.97
Total	0.86	0.85	0.88	0.88	0.91	0.96	0.99	0.99	0.98	0.97	0.96	0.98

Source: authors' calculations based on data from the National Bureau of Statistics

As for the agri-food trade during the period 2001-2012 by main trading partners, a high level of intra-industry trade is common for both EU and CIS countries. If for CIS countries the index was increasing during this period, for EU countries the level of intra-industry trade basically did not change.

A high level of intra-industry trade might be based on such factors as: geographical closeness, shared border, same level of development, similar preferences, language, institutional conditions and transport routes (Levkovich I. et al 2007). Such a situation is specific for the increasing values of GL index in CIS countries, particularly for the nearest neighbours as Ukraine.

CONCLUSIONS

1. In this paper, we have analyzed the international trade flows of agri-food products in order to assess their potential on the EU market. We analyzed and discussed the changes during the period 2001-2012 in both import and export structure of Moldova's agri-food products and calculated such trade indicators of inter and intra industrial trade as RTA index and Grubel-Lloyd index. The agri-food trade has a large share in country's overall trade. Moldova particularly specializes in such products as vegetable products, vegetable or animal fats and oils, foodstuffs.

2. According to the obtained results for RTA index we can notice some advantage for certain agri-food products with EU countries, such as: edible fruits and walnuts; animal or vegetable fats and oils; preparations of vegetables, fruits, nuts; beverages. Nowadays, the comparative advantages of Moldova are not fully used. This is explained by the decreasing or switching values of RTA index for some commodities groups.

3. Also, we calculated the GL index to indicate the level of intra-industry specialization and to observe the changes that happened during the analyzed period. Looking at the level of the intra-industry trade by commodity groups such as: dairy products; edible vegetables; oil seeds and oleaginous fruits; sugar; and tobacco, the decreasing values in the level of intra-industry trade supposes having advantages or receiving higher incomes from specialization, due to concentration of production, decrease of costs and higher production efficiency.

4. The analyzed period was characterized by the increase in trade flows with EU countries, tendency that will be maintained and increased in the near future probably, particularly after the DCFTA is signed. For the agricultural producers, the DCFTA will open new opportunities on larger markets with high purchasing power and price level stability. In this context, it is needed to enhance the competitiveness of Moldova's agri-food products by increasing the quality and efficiency of the agricultural production.

REFERENCES

1. BALASSA, B., 1965. Trade Liberalization and Revealed Comparative Advantage. In: The Manchester School of Comparative Advantage, vol. 33, issue 2, pp. 99-123.
2. BERGSCHMIDT, A., HARTMANN, M., 1998. Agricultural Trade Policies and Trade relations in transition economies: Discussion Paper 12, IAMO. Halle (Saale).
3. BONJEC S., FERTO, I., 2007. Comparative advantages in agro-food trade of Hungary, Croatia and Slovenia with the European Union: Discussion paper 106, IAMO. Halle (Saale).
4. BONJEC S., HARTMANN, M., 2004. Agricultural and Food Trade in Central and Eastern Europe: The Case of Slovenian Intra-Industry Trade and Induced Structural Adjustment Costs: Discussion Paper 65, IAMO. Halle (Saale).
5. GRUBEL, H.G., LLOYD, P.J., 1975. Intra-Industry Trade: The Theory and Measurement of International Trade in Differentiated Products. In: The Economic Journal, vol. 85, No. 339, pp. 646-648.
6. LATRUFFE, L., 2010. Competitiveness, productivity and efficiency in the agricultural and agri-food sectors: OECD Food, Agriculture and Fisheries Papers, No 30. Available from: <http://dx.doi.org/10.1787/5km91nkdt6d6-en>
7. LEVKOVICH, I., HOCKMANN, H., 2007. Foreign Trade and Transition process in agri-food sector of Ukraine: Discussion paper No 114, IAMO. Halle (Saale).
8. LUKA, O., LEVKOVICH, I., 2004. Intra-industry trade in agricultural and food products: the case of Ukraine: Discussion paper 78, IAMO. Halle (Saale).
9. VOLLRATH, T.L., 1991. A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. In: Review of World Economics (Weltwirtschaftliches Archiv), vol. 127, issue 2, pp. 265-280.
10. YERCAN, M., ISIKLI, E., 2006. International competitiveness of Turkish agriculture: a case for horticultural products: paper prepared for presentation at the 98th EAAE seminar, Chania, Crete, Greece. 29 June– 2 July.

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