

International Trade Structure of Countries from the Danube Region: Comparative Advantage Analysis of Export

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Abstract

The subject of this paper is comparative advantage and specialization level analysis in international trade of primary and industrial products of countries from the Danube region. Export structures, together with comparative advantages and specialization level of countries from the Danube region have been dynamically observed. The research utilizes the Balassa (RCA) and Lafay (LFI) indexes of comparative advantage and Grubel-Lloyd's index of intra-industrial exchange. This research has been found that the positive value of comparative advantage in the export of primary products is present in the cases of Romania and Bulgaria, and as regards the export of industrial products the same applies for: Austria, Germany, Hungary, Czech Republic, Slovakia, Slovenia and Ukraine.

Keywords: *international trade structure, export expansion, Danube region, Balassa index, Lafay index, intra-industrial exchange*

JEL Classification: P51, F14

1. Introduction

The Danube region has a special economic value and influence on the economies of EU and all member states. In the recent years, the Danube region countries have been implementing individual and common interests so as to most efficiently utilize the natural potentials, according to Gajić et al. (2011). According to the mentioned source, this requires the harmonization of a number of interests so as not to disturb the sovereignty of the Danube region countries.

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Developing countries base their strategies for economic development on openness and expansion of export. International trade, according to Acin (2003), has to contribute to the economic growth, changes in the economic structure, technology and technological processes development, improvement of salary balance and internal economic stability. Reinsdorf (2010) points to the fact that international trade enables the citizens of one country to consume more diverse products than its country produces. When speaking of international trade, a country strives to specialize in the production of those products for which it has comparative advantages. Alessandrini et al. (2009, p.14) emphasize that benefits from trade liberalization are multiple. "The creation of jobs is concentrated in the comparative advantage industries. Trade liberalization in these sectors creates export opportunities. This increases the *ex ante* profits in the industry and thus the incentive for new firms to enter, as well as raises the minimum level of productivity required for the survival of firms. These effects combined are more strongly pronounced in the sectors with comparative advantage, because these are where export opportunities increase the most. As a result, productivity gains are largest in firms featuring a comparative advantage."

Dealing with the effects of international trade on any country's economy, Reinsdorf (2010) emphasizes that in the last decades the world experiences growth in trade, improvement of communication and transport and decreased trading costs. Nevertheless, Toming (2006) emphasizes that controversial conditions and numerous limitations are present in international trade. Henson and Humphrey (2010) believe that the developing countries are not capable of meeting the required European standards in terms of safety and many others.

The Danube region comprises EU member countries, candidate countries and countries which are currently in the process of becoming candidate countries for EU membership. The region is characterized by an increase in the number of citizens and their migrations, and increase in international trade and demand for quality agricultural and food products, industrialization and urbanization. The differences in the degree of development among countries are pronounced. Thus, there are highly developed countries, developed transitional countries and countries with transitional problems. The structure of product export of the Danube region countries is not balanced and presents the limiting factor of export expansion of some countries. A logical question that can be asked is what then connects these countries and why is a research into the economies of Danube region countries relevant? In our paper we decided to conduct research into the Danube region countries because of that unexpected combination of differences, very few scientific studies related to international trade of the Danube region countries and the necessity of strengthening regional cooperation aimed at integral

development and overcoming developmental problems. In previous research studies authors dealt with international trade of the EU countries, South-East European (SEE) countries and countries CEFTA (Central European Free Trade Agreement), as well as candidate countries for EU membership. Among others, we would like to mention Buturac, Lovrinčević and Mikulić (2011) who dealt with macroeconomic performances and comparative advantage in international trade of the SEE countries, while Majkovič, Turk and Chevassus-Lozza (2006) dealt with the characteristics of candidate countries for membership into the EU. However, by identifying the similarities and differences in trade structure of the Danube region countries, by using the appropriate indicators, it is possible to observe the characteristics and qualitative changes in product structure of these countries. With economic integration of countries from this region, they also gained a possibility to improve and strengthen development and competitiveness. The fulfillment of goals of the EU strategy for the development of the Danube region countries should create favorable conditions for strengthening economy, overcoming developmental inconsistencies, increase in employment, development of education, transport and environmental protection. In brief, it should contribute to the overall economic development of member countries.

Bearing in mind the importance of openness and international trade for economic development, in our paper we observed the structural characteristics in international trade of the Danube region countries. The main aim was to observe the comparative advantage level of export in primary and industrial products and specialization in international trade of countries from the Danube region. With the comparative advantage of export of the Danube region countries, we tried to draw attention to the structural changes and characteristics of product export.

2. Literature Review

A study written by Yilmaz and Ergun (2003) tries to determine the models of international trade and define levels of comparative advantages in some of the EU candidate countries. The research utilized the Balassa and Lafay indexes to analyze comparative advantages of products grouped according to the degree of factor intensity. It was shown that all countries, except for Hungary, in the export of raw material – intensive goods have a negative comparative advantage. “Turkey, the Czech Republic, Romania and partly Bulgaria appear in broad terms to be in a strong competitive position with respect to the labor-intensive sector, but they did so in different degrees. Turkey and the Czech Republic have been maintaining their strong positions compared to others. Even though Bulgaria and Romania have been losing their comparative advantage they still seem to be in

a better situation compared to Turkey, Hungary and Poland. Except for Hungary in the easily imitable research oriented goods sector, all six countries have very noticeable disadvantages in terms of the easily and difficultly imitable research oriented goods which shows their strong dependence to the European Union in those sectors“ (Yilmaz and Ergun, 2003). Using the Lafay index, they pointed to the correlation with the Balassa index of comparative advantage. “For the Lafay index the comparative disadvantage for easily and difficultly imitable research oriented goods is nearer or sometimes less to the comparative disadvantage in the other sectors when compared with Balassa’s RCA index.“ The comparative advantage of Bulgaria was deteriorating in all sectors year after year, while the improvement in Hungary was obvious in easily imitable research oriented goods and capital intensive products of the Czech Republic as results of attracting foreign direct investments in those countries. It was concluded that the “failure of all these countries is their weakness in the performance of production in research-oriented goods where only Hungary could be an exception to some extent. Their performance in other sectors is still too weak to compensate the negative effective of the research oriented goods. Especially the Czech Republic, Hungary and Poland have to overcome their poor performance in the diversification of their exports which still seems to be profoundly dependent“.

Ferto and Hubbard (2002) tried to dynamically analyze the influence of price and comparative advantages. Literature shows that they find that “Hungarian producer prices are lower than those in Germany by between 20 and 50%, although they question whether this competitive advantage could be sustained if Hungary’s input prices were to adjust to EU levels“. Their research can be referred to the research of Banse et al. (1998), who emphasized a higher degree of competitiveness in crops, compared to livestock. “Food processing is found to be competitive, except the milk, sugar and tobacco industries.“ Improvement of competitiveness is a result of radical structural changes in agriculture and food production “for example in terms of farm size and ownership status, price liberalization and restructuring of the food processing and retailing sectors“. The mentioned authors conclude by saying that the rise in export and competitiveness in the international market is possible to achieve by considerable government support to the agricultural sector and improvement of the range of products.

Serin and Civan (2008) conducted research into the structure of international trade between Turkey and EU. There is a high participation in “the food manufacturing sector making up a 19% share of Turkey’s total production of manufactured goods and an 11% share of Turkey’s total exports“.

By analyzing comparative advantages (RCA) they tried to determine the degree of competitiveness in the export of tomato, fruit juices and olive oil in the

EU market. The comparative advantage index and regression analysis showed that Turkey has a great advantage in the production and export of fruit juices and olive oil in the EU market.

A study into the position of Croatia's processing industry on the international market shows that "the greatest number of sectors of manufacturing industry in Croatia does not have any comparative advantages in international trade". Comparative advantages are revealed in the production of tobacco products, wood processing, production of coke and oil derivatives, as well as production of transportation means (e.g. shipbuilding). The biggest benefits are achieved in the exchange of pharmaceutical products (Buturac, 2008). After 2006, there was observable stagnation or a decline in export competitiveness and a negative trend was especially revealed in the textile and apparel industry and leather and footwear industries.

Toming (2006) conducted research into the competitiveness of food products industry on the international market. He emphasizes that in the contemporary competitive market, the growingly important are non-price factors, primarily those related to the quality of products. He concludes by saying that the success on the market and competitiveness in the European market depends on the investment in product development and adds that "the food processing firms have to find new ways to gain customers, for example, by specializing in niche products that differ from their competitors".

Majkovič, Turk and Chevassus-Lozza (2006) tried to determine the main characteristics of trade in agricultural and food products in ten new EU member states: Cyprus, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Malta, Poland, Slovakia and Slovenia. The research study pointed to the negative trade balance of Slovenia and a low level of competitiveness on the international market, with the exception of the former Yugoslavia's market, where the largest surplus is generated for Slovenia. The analysis of comparative advantages, using the RCA index, the authors identified a decline of comparative advantage in meat and dairy products, while there was an evident rise in the level of competitiveness when it comes to oilseeds and drinks.

The study of Shinoj and Mathur (2008) revealed a different degree and dynamics of comparative advantage of India's agricultural products. There was a decline in the traditionally high comparative advantage in the production of tea. A similar tendency was evident in the export of coffee, rice and spices. Unlike other products, the position of India was improved in the export of oil meals. In the export of fruits and vegetables, Turkey and Israel have a great advantage, which impairs the competitiveness of India. In the export of meat and seafood India does not have a significant comparative advantage.

Qineti, Rajcaniova and Matejkova (2009) conducted research into the comparative advantage and competitiveness of Slovakia and EU 27 in the export of agricultural and food products in two countries' markets: Russia and Ukraine. They observed the dynamics of trade in the post-accession period. Using the Balassa index they noticed that there was a decline in trade specialization and comparative advantage for several product groups over a certain period of time. They arrived at the conclusion that Slovakia mainly exports cereals, animal fat and plant oil (among other agricultural products), whereas it imports tobacco, food condiments and cocoa products. What is more, they also conclude that in the analyzed period there was an increase in comparative advantage of export in Ukraine, and a decrease of CA of export in Russia.

Research studies of Vapa, Medović and Stojisavljević (2012) point to the increase of transport on the Danube and significance of the Western Balkans countries' ports, primarily Serbia and Croatia. EU strategy for the Danube region, where the Western Balkans' ports play an important role, explicitly reveals the intention of the European Union to further improve and develop the utilization of this inner transport channel.

Gajić et al. (2011) dealt with the development potentials of the Danube region with a special focus on Serbia. They pointed to the fact that the Danube connects countries and opens the possibility for the improvement of economic activities by their diversification. They emphasized the need for a clear vision in terms of resources utilization and appropriate strategy to achieve the set goals.

Jovanović and Radukić (2011) indicated that the goals and priorities of a few important strategies are interconnected. According to these authors, special focus is placed on linking the Danube region strategy with other strategies in order to get an integral approach to the development of this region.

In another research study, Ignjatijević and Raičević (2011) analyze the structure and comparative advantages of Serbia's export. The deterioration in the structure of export is evident primarily in the fact that primary products export is kept at a high level and there is a decreased share of technologically intensive and human capital intensive products. By researching comparative advantages of export in primary and industrial products in Serbia, the authors pointed to the presence of negative comparative advantage. In the period between 2004 and 2009 Serbia achieved positive comparative advantage only in the export of agricultural products, iron and steel and apparel (Ignjatijević and Raičević, 2011).

Ignjatijević, Milojević and Ivančević (2011) performed research into the comparative advantage of export in agricultural and food products of the Danube region countries, with a special focus on potentials and possibilities of Serbia. Using the Balassa index, they proved the existence of comparative advantage of

export in agricultural and food products of Hungary, Serbia, Moldova, Ukraine, Bulgaria and Romania. Positive comparative advantage is in correlation with the intra-industry specialization in international trade and a result of “openness of economy, market liberalization and increased export”.

In the study by Raičević, Ignjatijević and Matijašević (2012), the mentioned authors performed research into the comparative advantage and export of food processing industry, using the Balassa, Lafay and modified comparative advantage (*Sm*) indexes. They also analyzed specialization in international trade using the Grubel-Lloyd's index (GL), wishing to measure the comparative advantage and specialization, and suggest economic and legal measures for the improvement of competitiveness and comparative advantage in international markets.

Subić and Jeločnik (2012) were focused on the analysis of investments into agriculture of the Danube region countries, while Popović and Živanović-Miljković (2012) pointed to the significance of wine tourism for sustainable rural development of the Danube basin area in Serbia.

Ignjatijević, Đorđević and Ćirić (2012) observed the comparative advantage of export in textile and apparel industry of Serbia in international markets. They discovered that there is a negative value of comparative advantage of textile and apparel industry and increased specialization in intra-industry exchange, at the level of industry. On the other hand, there was a satisfactory value of comparative advantage of export and intra-industry character of exchange for some product groups.

Ignjatijević et al. (2013) carried out a structural analysis of international trade for the Danube region countries. By using the Balassa index, they observed 14 production sectors (WTO, 2011, p. 164). Their research proved the existence of a comparative advantage for a small number of sectors which have positive values of net export correlating with the structure of export.

3. Methods

The subject of this research is the analysis of the specialization level and comparative advantages of export in international trade of primary and industrial products in Serbia and other countries from the Danube region. The aim of this research was to measure comparative advantages and specialization levels in export of primary and industrial products in order to increase export.

According to the methodology of the UN Conference for Trade and Development (UNCTAD), products were divided into three main groups: *primary, industrial and other product*. Primary products are: *agricultural products* (sectors

and departments of the Standard International Trade Classification SITC 0, 1, 2, 4 without 27 and 28) and *fuels and mining products* (SITC 3, 27, 28, 68). Industrial products are: *iron and steel* (SITC 67), *chemical products* (SITC 5), *other semi-products* (SITC 61, 62, 63, 64, 66, 69), *machinery and means of transportation* (SITC 7), *textile* (SITC 65), *clothes/apparel* (SITC 84), *other products* (SITC 81, 82, 83, 85, 87, 88, 89 without 891). A group of *other products* includes products from sector SITC 9 and product group 891.

Numerous studies were devoted to the calculation and measurement of the comparative advantage of product export. What is typically used is the concept of Balassa (RCA) index, which is actually a logarithmic value of the relative coverage of import by export. This method presupposes that a country specializes in the production of those products which are its relative advantages. After observing the available resources, it becomes clear that the Balassa index is one of the most frequently used methods. Following some important authors and their works (e.g. Yilmaz and Erguna, 2003; Buturac, 2008; Serin and Civan, 2008; Majkovič, Turk and Chevassus-Lozza, 2006; Qineti et al., 2009) Ignjati-jević and co-authors had in their previous studies used the Balassa index. Although in so-far studies the Balassa method has been used to identify the comparative advantage of export in different products or production sectors, we tried to use the most frequently used method in order to measure the comparative advantage of export for the Danube region countries and by doing so-get results which can be analyzed and compared.

Using the Balassa index in the research, we observed the comparative advantages of export in processing industry. The Balassa formula for calculating comparative advantage is given below (Balassa, 1965):

$$RCA = \ln \left[\frac{X_i}{M_i} \right] \times \left(\frac{\sum_{i=1}^n X_i}{\sum_{i=1}^n M_i} \right) \times 100 \quad (1)$$

In the given formula X represents the value of export, while M is the value of import. Index i stands for the sector of Serbia's processing industry. When it happens that one country has specialized in producing a certain product group cheaper than other countries, the RCA indicator has positive values.

For the analysis of the specialization level in intra-industrial exchange (export and import), we use Grubel Lloyd's index. GL_i^t is the value of Grubel Lloyd's index for a group of products i . X_i^t represents the value of export, while M_i^t is the value of import. The index values fall in the range between 0 and 1.

Intra-industrial exchange is defined as the simultaneous processes of export and import of the same product groups within the same sector. A higher index value indicates a higher level of specialization in intra-industrial exchange, whereas a lower value of GL index indicates that the foreign trade is closer to the inter-industrial trade. The GL index is calculated using the following formula (Grubel, and Lloyd, 1975):

$$GL_i^t = \left(\sum_{i=1}^n X_i^t + M_i^t - \sum_{i=1}^n |X_i^t - M_i^t| \right) / \sum_{i=1}^n X_i^t + M_i^t \quad (2)$$

For the analysis of comparative advantages we used the Lafay index (LFI). This index takes into account intra-industrial trade processes. Compared to the Balassa index of comparative advantage for the given country i , and for any given product J , the Lafay index is defined as in the following formula (Affortunato et al., 2010):

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

where i is the export and import of product J in the country i , to and from the rest of the world, and n is the number of items. Comparative advantage in the country i in the production of products j measures the deviation of product J from the total trade balance. Positive values of the Lafay index indicate the presence of comparative advantage, with a higher value pointing to the higher level of specialization and negative values the opposite. Lafay index, as opposed to the Balassa index, takes into account the difference between the values of export and import and tries to compensate for certain shortcomings of the Balassa index, taking into account the internal trade processes and GDP.

4. Results

In the analyzed period there was an obvious increase in the export of primary products of all countries, except for the export of Moldova and there was an observable decrease in the export of industrial products, except in Austria. The structures of export and import have been represented using the data in percentage values, showing the shares of export and import (for primary and industrial products) in the total foreign trade.

Table 1

The Share of Export and Import of Primary and Industrial Products in the Total Foreign Trade of the Countries from the Danube

Countries		2004		2011	
		export %	import %	export %	import %
Austria	Primary products	13.59	16.09	15.83	26.99
	Industrial products	82.13	78.69	83.11	67.24
Czech Republic	Primary products	9.71	17.06	11.45	20.98
	Industrial products	90.08	82.83	88.28	78.70
Hungary	Primary products	11.15	14.91	14.22	21.68
	Industrial products	88.20	84.09	81.59	71.22
Slovakia	Primary products	14.58	22.59	15.59	25.97
	Industrial products	85.22	77.22	84.51	73.47
Germany	Primary products	9.10	20.88	11.83	27.31
	Industrial products	83.52	69.29	82.73	67.27
Serbia	Primary products	35.51	28.71	36.85	32.95
	Industrial products	62.75	70.85	59.50	59.96
Moldova	Primary products	61.72	35.67	47.11	29.25
	Industrial products	35.06	58.84	52.66	63.32
Slovenia	Primary products	9.61	22.27	17.92	34.81
	Industrial products	90.17	77.55	83.27	66.81
Bosnia and Herzegovina	Primary products	40.75	28.67	41.73	43.88
	Industrial products	42.77	53.44	55.68	56.07
Ukraine	Primary products	28.59	44.97	36.79	45.91
	Industrial products	70.31	52.33	62.59	52.77
Bulgaria	Primary products	32.91	16.98	48.75	43.95
	Industrial products	62.33	68.66	48.28	53.33
Romania	Primary products	17.52	22.01	21.67	23.07
	Industrial products	82.07	77.82	77.77	74.32
Croatia	Primary products	27.37	23.88	35.26	21.74
	Industrial products	72.46	76.04	66.34	63.16
Montenegro	Primary products	*	*	80.09	47.23
	Industrial products	*	*	17.56	52.30

Source: UN Comtrade and author's calculation (UN Comtrade does not have the data on the export of Montenegro for 2004).

In the export of countries from the Danube region, huge structural disparities can be observed. A high participation of primary products export in the total export, for the observed period, was evident in the following countries: Moldova, Ukraine, Serbia, Montenegro, Croatia, Bosnia and Herzegovina and Bulgaria.

In the export structure of primary products in these countries, a high participation was evident in the export of agricultural products, especially food. From the perspective of our research, it is important to emphasize that there was a significant expansion of export of agricultural products into Austria, Slovenia, Bulgaria and neighboring countries – Montenegro, Croatia and Bosnia and Herzegovina (Ignjatijević, Milojević and Ivančević, 2011). In the observed period there was a significant increase in the participation of export of agricultural products in: Bulgaria, Romania, Croatia and Ukraine. Fuels and ores belong to

primary products with high participation in the export of Ukraine, Bosnia and Herzegovina, Bulgaria, Montenegro and Croatia.

The developed countries from the Danube region are characterized by a high participation of export in industrial products and predominance in the export of these products leading to intense economical development. The share of technologically intensive products, which are predominantly machinery and transportation means, is high in the export of countries from the Danube region and developed transitional countries. The largest part of export involves high quality final products of high added value. The export share of these products for Serbia is at a very low level, which reveals the qualitative difference in the export structure. The decreased share of these products in export leads to slowing down economic development. The increase in export of these products in the analyzed period is present in the Czech Republic, Slovakia and Slovenia. A group of resource-intensive products includes products from 6 sectors, according to SITC (Standard International Trade Classification) which are: paper, cardboard, cellulose products, textile, iron and steel. These products are based on cheap and skilled workforce or the exploitation of mineral resources. A high share of these products is present in the export of Ukraine, Bulgaria, Slovenia, Bosnia and Herzegovina, Slovakia and Czech Republic. A high share in the export of clothes, footwear and other final products which require a high level of work, is present in Serbia, Croatia, Bulgaria, Romania, Bosnia and Herzegovina and Moldova.

Comparative analysis of export in primary and industrial products showed that the positive value of comparative advantage index is revealed in products with greater export than import. Perspectives of the mentioned sector derive from an increase in the world trade and demand in the international market (Ignjatijević, 2011). The analysis of foreign trade in primary and industrial products of countries from the Danube region, using Grubel-Lloyd's index, shows great openness in trade, the presence of differentiated products and high participation in export and import.

The value of comparative advantage index in the export of primary and industrial products, especially agricultural products and food in the analyzed period has not changed significantly. In other words, a positive value of comparative advantage in the export of industrial products, in the analyzed period, is present in the same countries. In the export of Hungary, the situation is better, i.e. a positive comparative advantage value was achieved, compared to the negative comparative advantage value for the year 2004. An increase in the comparative advantage value was observed in the export of industrial products in Austria, Czech Republic, Slovakia and Slovenia.

Table 2
RCA, LFI and GL Indicators of Product Export, According to the Methodology of the UN Conference for Trade and Development (UNCTAD) of the Danube Region Countries, in 2004 and 2011

	2004	2004			2011		
		RCA	GL index	LAF index	RCA	GL index	LAF index
Austria	Agricultural products	0.77	0.63	2.10	-0.13	0.93	-0.28
	Food	1.42	0.39	2.22	-0.07	0.96	-0.01
	Primary products	-0.17	0.91	-1.25	-0.58	0.71	-5.57
	Industrial products	0.04	0.98	1.72	0.13	0.93	7.93
Czech Republic	Agricultural products	-0.28	0.86	-0.79	-0.19	0.91	-0.79
	Food	-0.38	0.81	-0.78	-0.26	0.88	-0.74
	Primary products	-0.57	0.72	-3.67	-0.57	0.74	-4.76
	Industrial products	0.07	0.97	3.62	0.20	0.91	4.78
Bulgaria	Agricultural products	0.16	0.88	2.75	0.24	0.83	3.21
	Food	0.19	0.86	2.42	0.26	0.82	3.11
	Primary products	0.20	0.86	7.69	-0.03	0.98	2.39
	Industrial products	-0.32	0.77	-3.06	-0.17	0.88	-2.52
Hungary	Agricultural products	0.26	0.86	1.14	0.45	0.79	1.22
	Food	0.42	0.78	1.37	0.59	0.73	1.49
	Primary products	-0.34	0.82	-1.88	-0.35	0.84	-3.72
	Industrial products	-0.03	0.98	2.05	0.24	0.89	5.17
Slovakia	Agricultural products	-0.24	0.88	-0.57	-0.19	0.90	-0.74
	Food	-0.33	0.83	-0.64	-0.26	0.87	-0.78
	Primary products	-0.47	0.76	-4.00	-0.49	0.76	-5.19
	Industrial products	0.04	0.98	4.00	0.16	0.92	5.52
Romania	Agricultural products	-0.39	0.73	-0.70	0.07	0.95	1.50
	Food	-0.76	0.51	-1.59	-0.04	0.97	0.56
	Primary products	-0.40	0.73	-2.18	-0.19	0.87	-0.69
	Industrial products	-0.20	0.86	2.07	-0.11	0.92	1.71
Germany	Agricultural products	-0.36	0.86	-1.66	-0.23	0.90	-1.33
	Food	-0.33	0.87	-1.32	-0.18	0.93	-0.97
	Primary products	-0.75	0.71	-5.81	-0.81	0.67	-7.69
	Industrial products	0.54	0.79	7.02	0.44	0.82	7.68
Slovenia	Agricultural products	-0.85	0.56	-2.48	-0.63	0.68	-3.40
	Food	-0.80	0.58	-1.61	-0.70	0.64	-2.46
	Primary products	-0.85	0.56	-6.32	-0.69	0.65	-8.43
	Industrial products	0.04	0.98	6.29	0.14	0.93	8.22
Croatia	Agricultural products	-0.23	0.77	1.25	0.01	0.99	3.96
	Food	-0.31	0.69	0.29	-0.16	0.84	1.24
	Primary products	-0.29	0.71	1.54	-0.02	0.98	6.31
	Industrial products	-0.37	0.63	-1.58	-0.24	0.76	1.49
Serbia	Agricultural products	-0.03	0.96	6.21	0.25	0.76	6.65
	Food	-0.02	0.97	5.26	0.34	0.69	6.59
	Primary products	-0.30	0.58	2.53	-0.21	0.80	1.82
	Industrial products	-0.41	0.45	-3.01	-0.28	0.74	-4.83
Bosnia and Herzegovina	Agricultural products	-0.39	0.45	-0.57	-0.43	0.53	-2.76
	Food	-0.79	0.16	-4.43	-0.67	0.34	-4.87
	Primary products	-0.25	0.62	4.43	-0.29	0.67	-0.97
	Industrial products	-0.44	0.41	-3.92	-0.27	0.69	-0.18
Moldova	Agricultural products	0.47	0.60	20.27	0.09	0.88	11.75
	Food	0.65	0.48	19.77	0.12	0.84	11.91
	Primary products	-0.02	0.98	11.97	-0.15	0.82	7.49
	Industrial products	-0.61	0.50	-10.92	-0.41	0.52	-4.47
Ukraine	Agricultural products	0.62	0.73	2.10	0.58	0.68	5.62
	Food	0.68	0.71	2.00	0.64	0.65	5.58
	Primary products	-0.38	0.83	-8.16	-0.36	0.80	-4.52
	Industrial products	0.47	0.80	8.96	-0.02	0.99	4.87
Montenegro	Agricultural products	/	/	/	-0.38	0.29	-2.39
	Food	/	/	/	-0.46	0.21	-3.88
	Primary products	/	/	/	-0.19	0.59	10.43
	Industrial products	/	/	/	-0.54	0.15	-11.03

Source: UN Comtrade and author's calculation (UN Comtrade does not have the data for Montenegro for 2004).

Positive comparative advantage of export in industrial products (RCA) is evident in the following countries: Austria ($RCA^{2004} = 0.04$, $RCA^{2011} = 0.13$); Germany ($RCA^{2004} = 0.54$, $RCA^{2011} = 0.44$); Hungary ($RCA^{2004} = -0.03$, $RCA^{2011} = 0.24$); Czech Republic ($RCA^{2004} = 0.07$, $RCA^{2011} = 0.20$); Slovakia ($RCA^{2004} = 0.04$, $RCA^{2011} = 0.16$); Slovenia ($RCA^{2004} = 0.04$, $RCA^{2011} = 0.14$).

Positive comparative advantage of export in primary products is evident in Romania in 2009 ($RCA^{2009} = 0.04$) and also Bulgaria in 2004 ($RCA^{2004} = 0.20$). In the year 2011 none of the Danube region countries had a positive comparative advantage in the export of primary products. In the analyzed period, the position of Romania improved as far as the export of primary products is concerned, due to the decreased import of agricultural products, food, fuel and ores. In the export of Bulgaria, the situation got worse, as a result of increased import of fuel and ores. Comparative advantage of export in primary products, measured using the LFI index for year 2011, is evident in Bulgaria, Montenegro, Croatia, Serbia and Moldova.

In international trade with primary products countries with positive comparative advantage make a surplus. An increase in comparative advantage and improvement of competitiveness are a result of greater trade openness and specialization in international trade. However, the analysis of export reveals that those are the products at lower processing stage-agricultural products, food and resource intensive products, which indicates that it is the case of export expansion with products at a lower processing stage. By exporting primary instead of industrial products, countries get a smaller influx of foreign currency, which negatively affects the basic macro-economic indicators of the countries in question. It is exactly those countries with greater participation of primary products in export that make a considerably smaller GDP per capita (The average in the analyzed period is: Moldova – USD 1.156, Ukraine – USD 2.381, Bosnia and Herzegovina – USD 3.527, Serbia – USD 4.756, Bulgaria – USD 4.817) (The World Bank, 2011).

In international trade with agricultural products a positive comparative advantage is achieved in: Hungary ($RCA^{2004} = 0.26$, $RCA^{2011} = 0.45$); Romania ($RCA^{2004} = -0.39$, $RCA^{2011} = 0.07$); Serbia ($RCA^{2004} = -0.03$, $RCA^{2011} = 0.25$); Moldova ($RCA^{2004} = 0.47$, $RCA^{2011} = 0.09$); Ukraine ($RCA^{2004} = 0.62$, $RCA^{2011} = 0.58$) and Bulgaria ($RCA^{2004} = 0.16$, $RCA^{2011} = 0.24$). The research showed positive comparative advantage of the said countries in the export of agricultural products and food, where the value of RCA index is higher.

Research into the specialization in international trade with primary and industrial products, especially agricultural products and food, using Grubel-Lloyd's index, shows that intra-industrial specialization prevails and indicates the openness of that sector in international trade. A high value of intra-industrial exchange

index is a result of specialization in production and international trade. The performed analysis of specialization in international trade shows that there is correlation between comparative advantage and intra-industrial specialization in international trade. The presence of imbalance in foreign trade results in the low value of GL index. The intra-industrial character of exchange in primary and industrial products indicates the presence of export and import and the openness of industry in international trade. Trading products are differentiated and are not complete substitutes.

The openness of economy towards international trade and trade liberalization contribute to resource allocation. When participating in international trade, domestic economies face structured and organized market operations and cutting edge technologies of the developed countries from the region. Liberalization in international trade between the developed and transitional countries of the Danube region countries resulted in the expansion of trade and export. The developed countries from the region opened their markets for other countries' products, but structural imbalance remained a limiting factor in the expansion of export. Countries with prevailing export in primary products have to make considerable effort if they wish to compete with the developed countries from the region. These countries' common weakness is the consequence of production structure and insufficient product and market research.

Although there are no import taxes/custom duties for the import of products from Serbia (there are quotas on the import of sugar, meat, wine into EU countries), due to the lack of new products and improvements of existing products, Serbia's competitiveness on the international market has decreased. Insufficient technical and technological capacities and low utilization of certain production and processing capacities in industry (except in soft drinks industry and tobacco industry), a lack of investments and innovations represent a limiting factor in the production of highly processed final products for export into competitive foreign markets. An increase in domestic demand resulted in increased import, which positively affected the improvement of competitiveness in the home market. Trade liberalization caused an increase in the import of raw materials, which resulted in the deficit in foreign trade balance and additional pressure on the domestic companies to increase productivity, improve their offer and export.

5. Discussion

We would like to emphasize that it is difficult to compare the results of the so-far research with the results we got in the course of our study. In the available studies, products were grouped according to different criteria: factor intensity,

sectors of the processing industry, groups of agricultural products, sectors of the food processing industry and production sectors (according to ITC methodology) and time intervals are different as well. Yilmaz and Ergun (2003) concluded that in the export of Hungary raw material – intensive goods have a comparative advantage, which is in line with our results. Ignjatijević et al. (2013) point out that Hungary has a positive comparative advantage in the export of fresh food and processed food, which confirms our result that agricultural and food products are more represented in export than import and so bring a comparative advantage. We found that the increased advantage of export in agricultural and industrial products in Hungary is a result of drastic changes of production with a more significant state intervention, which is also emphasized by Banse et al. (1998). We proved the comparative advantage of export in industrial products, as a result of previously conducted research by Ignjatijević et al. (2013). We agree with the viewpoint of Yilmaz and Ergun (2003), according to whom Hungary has a positive comparative advantage in the export of easily imitable research goods and difficultly imitable research goods, which also is in accordance with our finding showing a high percentage of export in industrial products and a positive comparative advantage of export in non-electronic machinery and computers, telecomm and consumer electronics sector. The Czech Republic achieves an increase in comparative advantage by exporting industrial products, which has been shown by Ignjatijević et al. (2013), and Yilmaz and Ergun (2003). They state that a strong competitive position is achieved thanks to labor intensive goods and products of the following sectors: basic manufactures, non-electronic machinery and IT & consumer electronics, which is in accordance with the increase in the share of export in industrial products. A high value of the GL index of export in industrial products of the Czech Republic proves a high degree of product diversification, which is in accordance with the findings of Yilmaz and Ergun. A high share of export with agricultural and food products in Slovenia is in accordance with the findings of Majkovič, Turk and Chevassus-Lozza (2006), according to whom there is a negative value of comparative advantage in the export of meat and dairy products. This negative value of export in fresh food and processed food had been confirmed in one of the previous studies by Ignjatijević et al. (2013). We discovered that the positive value of export in industrial products corresponds with the research result of Ignjatijević et al., regarding the advantages of export in the following product groups: Miscellaneous manufacturing, Electronic components and Transport equipment. By comparing the comparative advantage of export in agricultural and food products for Slovakia, which was one of our findings, with the results of Qineti, Rajcaniova and Matejkova (2009), we can notice absolute matching. As a matter of fact,

we agree that in the analyzed period there was a decrease in the comparative value of export in agricultural products. A negative value of export in industrial products of Croatia is in accordance with the conclusions of Buturac (2008) regarding the negative trend in Croatian processing industry. In year 2011 a positive value of comparative advantage was achieved in the export of agricultural products, which is a time period that was not considered for analysis in Buturac's research. After our research, we can confirm the finding of Yilmaz and Ergun (2003) regarding the negative position of export in industrial products in Bulgaria and Romania. Since our research presents a continuation to the previously mentioned research, we can see that the negative trend has stopped and the position of export in agricultural and food products of Bulgaria and Romania have improved. A high value of comparative advantage of export in industrial products in Germany and slightly lower values for Austria and Hungary are all in accordance with the results of Yilmaz and Ergun, regarding the advantage of Hungary in the export of capital-intensive products. We have confirmed and proven the result of research by Ferto and Hubart, showing a low level of production costs in Hungary and the advantage of agricultural and food products based on that, which becomes especially obvious in comparison with Germany. What is more, we also got a confirmation of the analysis by Ignjatijević, Milojević and Ivančević (2013) regarding the advantage of export in Germany in the following sectors: Non-electronic machinery, Electronic components and Transport equipment, which are highly represented industrial products in export. Our research into the comparative advantage of export in Serbia is a continuation to the previously mentioned research by Ignjatijević et al. (2011). We confirmed and proved the positive value of export in agricultural and food products and also the export of labor-intensive products, where products of the apparel industry present the largest part of export.

Conclusion and Recommendations

Results of research into international trade of countries from the Danube region reveal an unfavorable structure of production and export.

A positive comparative advantage value in the export of primary products is evident in the cases of Romania and Bulgaria and in the analyzed period the position of Romania was improved due to decreased import of agricultural products, food, fuel and ores. Comparative advantage of export in primary products measured using the LFI index is evident in Bulgaria, Montenegro, Croatia, Serbia and Moldova.

The research into the comparative advantage of export in agricultural products and food for the Danube region countries revealed a positive value of comparative advantage in the following countries: Hungary, Serbia, Moldova, Ukraine, Bulgaria and Romania. In the analyzed period, there was an increase in comparative advantage and competitiveness of export in agricultural products and food.

In the analyzed period, a positive value of comparative advantage in export of industrial products is present in: Austria, Germany, Hungary, Czech Republic, Slovakia, Slovenia and Ukraine. In the coming period, it is necessary to study and implement the experiences of these countries so as to avoid the so-far negative characteristics in the structure of production and export.

Grubel-Lloyd's index of specialization reveals that there is correlation between comparative advantage and intra-industrial specialization in foreign trade. An increase in comparative advantage value of primary and industrial products export is coupled with an increase in the value of GL index, i.e. intra-industrial type of exchange- due to greater openness of economy. A high level of specialization in intra-industrial trade will enable effective involvement of domestic companies in the international market.

Integral development of the Danube region should be stimulated by intensive investment into the improvement of production oriented towards export. Therefore, it is important to promote education and research, as well as the implementation of so-far achievements and innovations. The usage of the common transport channel is of extreme importance for the improvement of trade in this region. The increase in low-cost and profitable production process and provision of equal quality of raw materials, coupled with observance of the quality standards, should trigger the increase in revenues from export. Encouraging cooperation between the Danube region countries, organization of different manifestations, expositions and fairs should make information as well as products readily available, which will finally result in multiple positive effects, such as increased employment, competitiveness and a rise in comparative advantage.

In the coming period, it is necessary to stimulate the export of products which prevail in export using fiscal and monetary measures, but also to make an effort in order to improve production and export structure. In the transitional countries it is necessary to improve the business conditions and continue the process of reforms. Special attention should be paid to the implementation of laws and regulations which stimulate investment and improvement of productivity. It is also of vital importance to establish business connections between foreign partners and domestic businessmen and tradesmen, eliminate economic risks, implement the started economic changes faster and continue with further involvement of countries in international flows and processes.

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