Scientific Journal
Warsaw University of Life Sciences – SGGW

PROBLEMS OF WORLD AGRICULTURE

Volume 14 (XXIX)
Number 4

Warsaw University of Life Sciences Press
Warsaw 2014

Scientific Journal Warsaw University of Life Sciences – SGGW
Problems of World Agriculture volume 14 (XXIX), number 4, 2014: 158–172

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Visegrad countries - agrarian foreign trade development in relation to their total merchandise trade performance

Abstract. The paper analyzes merchandise and especially agrarian trade of Visegrad (V4) countries. It especially analyzes their mutual trade relations. The main aim is to identify changes in the agricultural sector which have happened during the last decade and to compare differences existing in the area of merchandise and agricultural trade development. Another very important objective is related to mutual trade realized among V4 countries. In this case the paper identifies basic trends in the area of each country's trade development. Mutual agrarian trade competitiveness is also analyzed. On the basis of the findings, it can be said that merchandise and agricultural trade for each V4 country changed significantly during the analysed time period. In relation to agricultural trade it can be mentioned that it represents only a marginal part of the total merchandise trade. Agrarian trade for individual V4 countries' commodity structures as well as the territorial structure are very significantly concentrated. The predominant majority of agricultural trade – export as well as import – is carried out with EU countries. In this case it is necessary to emphasize that V4 countries are also important trade partners for each other. On the basis of Visegrad countries' mutual trade analysis it is possible to say that the main traders active on the V4 market are the Czech Republic and Slovakia. The most competitive actors operating in the V4 market are Poland and Hungary. If we analyze each country's export performance we can see that the V4 market is dominated by Poland and the Czech Republic.

Key words: Visegrad, V4, agriculture, food, merchandise, trade, mutual, external, EU, competitiveness, Poland.

Introduction

Visegrad countries (Czech Republic, Hungary, Slovakia and Poland) represent a specific group of countries. They are located in the center of Europe and they have very intensive historical, economic and political relations. They have in recent years undergone dramatic development, which has significantly influenced the structure of their economy, including the agricultural sector and trade in agricultural products. Immediately after the collapse of the "Eastern bloc", all V4 countries faced a significant economic downturn that coincided with the collapse of the former socialist system and its market linkages. Their economies and especially their agrarian sectors suffered significant losses in the process of the transition from a centrally planned economy to a market economy – as has been highlighted, for example, by Pokrivcak, Ciaian [2004]; Ciaian, Swinnen [2006]; Ciaian, Pokrivcak [2007]; Bojnec, Ferto [2009]; Basek, Kraus [2009]; Bartosova et al. [2008].

The process of restructuring of each V4 economy significantly affected/influenced their merchandise and also agricultural trade performance. The changes pertained to both exports and imports [Pokrivcak Drabik 2008; Drabik, Bartova, 2008]. The share of agricultural exports in total exports in the case of the V4 countries fell below 10%. A very

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important factor characterizing V4 foreign trade activities development was the growth of their dependency in relation to the EU and the reduction of non-EU countries' share in their foreign trade performance [Bussiere, Fidrmuc and Schnatz 2005].

The EU share in total agrarian trade of the V4 countries increased mainly because of the integration process of the former Eastern European countries into the European structures [Pohlova, Tucek, Kraus 2007]. The EU accession brought about significant changes in merchandise and agrarian trade for individual countries. The Czech Republic, Slovakia, Hungary and Poland became part of the EU single market, and all the obstacles that had limited the movement of goods between them and the EU countries up to that time, ceased to exist [Svatos 2008].

The mutual links among Visegrad countries represent an important part of each countries' economy. Regardless their EU membership, individual Visegrad countries are important partners for each other in all areas of their economy.

The paper is concentrated on the agricultural trade of the Visegrad group. Agrarian trade performance is analyzed from two different perspectives (agrarian trade vs. total merchandise trade) and each perspective is analyzed in three different dimensions (V4 market, EU market and third countries). The main objectives of the paper are the identification of basic development trends related to individual V4 country's agrarian export; import and trade balance value and structure development (the analysis is conducted in respect to individual country's total merchandise trade performance). The paper also identifies the distribution of an individual country's comparative advantages distribution (in this case the paper is focused especially on the agrarian trade competitiveness analysis).

Methodology and objectives

The conducted paper analyzes the mutual trade relations existing among V4 countries. The main aim of the paper is to identify changes in their agricultural sector which happened during the monitored time period and to compare differences existing in the agricultural sector and in trade development. Another aim of the paper is related to mutual trade relations. In this case the paper identifies basic trends in trade development. Mutual agrarian trade competitiveness is also analyzed. The main idea of this part of the analysis is to identify the impact of past years' development on mutual agricultural trade development and relations.

The paper is divided into two basic parts. The first part analyzes individual Visegrad countries' agricultural trade development both in relation to the EU and to the rest of the World. The second part of the paper analyzes mutual trade development existing between Visegrad countries. Each Visegrad country's merchandise and especially agricultural trade performance is analyzed both in relation to the total Visegrad market and in relation to individual members of the Visegrad group. The paper also analyzes individual Visegrad foreign trade commodity structures. The commodity structure is analyzed according to the SITC, rev. 3 nomenclature. The basic division of agricultural trade according to SITC is the following: for the purpose of this paper the commodity structure is divided into 15 sub-groups.

The paper analyzes individual Visegrad countries' merchandise and agricultural trade performance and competitiveness during the last ten years or more. Individual time series are analyzed through the basic and chain indices (the average values of inter-annual growth

rate related to individual countries' characteristics are analyzed through the geomean). Individual countries are compared to identify changes existing among them. Except for each country's export and import performance, the paper also analyzes the Visegrad countries' mutual trade performance and their mutual trade relations. The paper analyzes especially the mutual agricultural trade competitiveness of Visegrad countries.

Table 1. SITC rev. 3

Commodity Code	Commodity Description
S3-00	LIVE ANIMALS
S3-01	MEAT, MEAT PREPARATIONS
S3-02	DAIRY PRODUCTS,BIRD EGGS
S3-03	FISH,CRUSTACEANS,MOLLUSC
S3-04	CEREALS,CEREAL PREPRTNS.
S3-05	VEGETABLES AND FRUIT
S3-06	SUGAR,SUGR.PREPTNS,HONEY
S3-07	COFFEE,TEA,COCOA,SPICES
S3-08	ANIMAL FEED STUFF
S3-09	MISC.EDIBLE PRODUCTS ETC
S3-11	BEVERAGES
S3-12	TOBACCO,TOBACCO MANUFACT
S3-41	ANIMAL OILS AND FATS
S3-42	FIXED VEG. FATS AND OILS
S3-43	ANIMAL,VEG.FATS,OILS,NES

Source: UN Comtrade, 2014.

The competitiveness analysis of individual Visegrad countries' foreign trade is realized through two indices - Balassa index and Lafay index of "revealed" comparative advantage. These indices are selected for this study for the following reasons: Firstly, they allow us to conduct the competitiveness analysis using available data. Secondly, these indices complement each other. Balassa index [Balassa 1965] estimates competitiveness of export flows of individual V4 countries in relation to the EU, the rest of the world and the Visegrad market. The Lafay [Lafay 1992] index can be used for bilateral trade relations competitiveness existing directly among individual V4 countries.

The Balassa index tries to identify whether a country has a "revealed" comparative advantage rather than to determine the underlying sources of comparative advantage [Qineti, Rajcaniova, Matejkova 2009]. The index is calculated as follows.

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

where x represents exports, i is a country, j is a commodity and n is a set of countries, t is a set of commodities. RCA is based on export performance and observed trade patterns. It measures a country's exports of a commodity relative to its total exports. If RCA>1, then a comparative advantage is revealed.

The next index is the Lafay index. Lafay index is a very useful instrument for the analyses of trade competitiveness between two countries. Using this index we consider the difference between each item's normalized trade balance and the overall normalized trade balance [Zaghini 2003]. For a given country, *i,* and for any given product *j*, the Lafay index is defined as:

$$LFI\ {}^{i}_{j} = 100 \left(\frac{x^{i}_{j} - m^{i}_{j}}{x^{i}_{j} + m^{i}_{j}} - \frac{\sum_{j=1}^{N} (x^{i}_{j} - m^{i}_{j})}{\sum_{j=1}^{N} x^{i}_{j} + m^{i}_{j}} \right) \frac{x^{i}_{j} + m^{i}_{j}}{\sum_{l=1}^{N} x^{i}_{j} + m^{i}_{j}} \tag{2}$$

where x^{i}_{j} and m^{i}_{j} are exports and imports of product *j* of country *i*, towards and from the particular region or the rest of the world, respectively, and *N* is the number of items. Positive values of the Lafay index indicate the existence of comparative advantages in a given item; the larger the value the higher the degree of specialization. On the other hand, negative values point to de-specialization [Zaghini 2005].

The paper is based on the long term research (cc 5 years) conducted at the faculty of economics and management. Both authors are summarizing their findings related to Visegrad countries' trade performance. The paper is closely related to several papers which have already been published [Smutka 2014; Smutka, Svatoš, Qineti, Selby 2013; Svatoš, Smutka, Elshibani, Mousbah 2013; Svatoš, Smutka 2012a; Svatoš, Smutka 2012b etc.].

Development and structure of merchandise trade of the Visegrad group countries with a focus on agricultural trade

The countries of the Visegrad group are representative of the new member countries of the EU. A general characteristic of such countries is their very significant orientation toward foreign trade, which is primarily significant in the case of the Czech Republic and Slovakia, as well as in the case of Hungary. Poland also likewise significantly engages in foreign trade activities, however, the share of foreign trade in the Polish GDP is significantly lower in comparison with the share of foreign trade in the GDP of the other three countries. If we analyse the commodity structure of merchandise trade of the V4 countries, we find that it is dominated by trade in processed industrial products, especially in relation to the EU. Another interesting finding that pertains to the development of goods trade of the Visegrad group countries is the fact that the average year-on-year rate of growth in merchandise trade of the V4 countries significantly exceeds both the average year-on-year rate of growth in the world merchandise trade, as well as the average year-on-year rate of growth in the goods trade of EU countries.

Thus, this also shows a significant increase in the value of effected trading operations in the years 2000 – 2010, when, in the case of exports, there was an increase in value from 100 billion USD to almost 500 billion USD (in the year 2008). In the case of imports, the value increased from 125 billion USD to approximately 530 billion USD (in the year 2008). It is also appropriate to mention that in terms of merchandise trade – the V4 group leaders are undoubtedly Poland and the Czech Republic.

Table 2. Development of value and structure of foreign trade (export and import) of Visegrad group countries in the years 2000 – 2010

Export		mld. USD	2000 Export	2004 Export	2008 Export	2010 Export	tempo růstu	2000 Import	2004 Import	2008 Import	2010 Import
CR	EU27	Agricultural products	0.86	1.89	5.08	4.51	1.180	1.12	2.59	5.98	5.64
		Fuels and raw materials	1.79	3.42	7.75	8.12	1.163	1.45	2.8	6.1	5.18
		Processed industrial products	22.31	51.84	108.3	95.11	1.156	21.31	42.87	81.67	65.45
SR	EU27	Agricultural products	0.32	0.89	2.24	2.39	1.223	0.59	1.07	3.03	2.82
		Fuels and raw materials	1.17	2.52	4.97	4.69	1.149	0.51	1.43	2.92	3.22
		Processed industrial products	9.17	20.75	52.59	46.82	1.177	7.81	17.75	37.1	28.11
Hungary	EU27	Agricultural products	1.32	2.52	5.68	5.25	1.148	0.55	2.02	4.29	3.82
		Fuels and raw materials	0.9	1.68	3.68	3.51	1.146	0.84	1.72	3.86	3.36
		Processed industrial products	20.94	41.87	68.11	59.38	1.110	19.72	40.35	59.17	44.57
Poland	EU27	Agricultural products	1.6	4.52	13.07	13.27	1.236	1.81	3.2	9.57	8.86
		Fuels and raw materials	2.2	5.29	9.31	8.61	1.146	1.66	2.83	8.88	6.18
		Processed industrial products	21.53	49.47	108.7	102.12	1.168	29.82	54.62	109.08	87.6
CR	World	Agricultural products	1.11	2.18	5.53	4.94	1.161	1.56	3.27	7.1	6.65
		Fuels and raw materials	1.91	3.63	8.13	8.69	1.164	4.13	6.47	18.45	15.19
		Processed industrial products	26.03	59.96	132.43	118.51	1.164	26.55	56.97	116.28	103.85
SR	World	Agricultural products	0.37	0.98	2.37	2.49	1.210	0.71	1.47	3.97	3.97
		Fuels and raw materials	1.22	2.59	5.19	4.84	1.148	2.73	4.78	11.36	10.55
		Processed industrial products	10.3	24.29	62.64	56.67	1.186	9.33	23.21	57.28	49.86
Hungary	World	Agricultural products	1.96	3.41	7.12	6.5	1.127	0.92	2.29	4.7	4.12
		Fuels and raw materials	1.02	2.08	5.33	4.5	1.160	2.13	5.34	10.69	10.74
		Processed industrial products	25.12	49.98	95.76	83.7	1.128	29.03	52.62	93.39	72.5
Poland	World	Agricultural products	2.43	6.11	16.13	16.79	1.213	2.86	4.95	13.6	13.08
		Fuels and raw materials	2.48	5.94	11.01	10.07	1.150	6.91	11.11	30.18	24.18
		Processed industrial products	26.05	61.73	144.72	130.21	1.175	38.36	72.1	166.7	136.87

Source: Comtrade, own processing, 2012.

In relation to the position of agricultural trade of the Visegrad group countries within the overall merchandise trade, it may be stated that likewise as in the case of the global and European market, agricultural trade represents only a supplement. In the case of total exports and imports, agricultural products have approximately a 7% respectively 6.2% share in the total value. In this regard, it is important to state that the value of both agricultural exports as well as imports of the V4 countries is dynamically increasing. Just in the years 2000-2010, the value of agricultural export of the V4 countries increased from USD 6 billion to more than USD 30 billion, and in the case of agricultural import, there

was an increase in the traded value from USD 6 billion to 28 billion. In terms of their own development of agricultural trade, the V4 countries achieve, other than certain exceptions, a positive balance of agricultural trade. Nevertheless, it is appropriate to state that currently, such positive balance is fully to the debit of the agricultural trade of Poland and Hungary, while the agricultural trade of the Czech Republic and Slovakia regularly finishes in negative values.

A specific characteristic of merchandise trade of the V4 countries is the competitiveness of realized trade transactions, both in relation to the market of the EU countries, and in relation to the market of third countries. In this regard, it is appropriate to emphasize that currently, in terms of the development of the value of effected trade flows, the important thing is primarily the ability to retain comparative advantages in relation to the EU market, which represents the main outlet for exports originating from V4 countries.

In the case of the Czech Republic, the most significant EU partners are: Germany, Slovakia, Austria, Hungary, Italy, Poland and Romania (these countries participate in the total agricultural export and import with a share from 75% to 55% respectively). In the case of Slovakia, the most significant partners are: Czech Republic, Austria, Germany, Hungary, Italy and Poland (these countries participate in the agricultural export and import with a share from 85% to 60% respectively). In the case of Hungary and Poland, the territorial concentration on a limited number of EU countries is not as prominent as is the case for the Czech Republic and Slovakia, but, nevertheless, a narrow orientation toward several key members of the EU territory is more than clear. In the case of Hungary, the most significant partners are: Germany, Italy, Romania, Slovakia, Austria, Poland and the Czech Republic (these countries participate in the agricultural export and import with a share from 60% to 65% respectively). And, finally, the most significant Polish trading partners from the territory of the EU countries are: Germany, Czech Republic, France, Italy, Hungary, Great Britain, Netherlands and Slovakia (these countries participate in the agricultural export and import with a share from 60% to 50% respectively).

The data further shows that the individual V4 countries are mutual significant business partners to each other. In the case of the Czech Republic, the countries of the V4 are currently participating with a share of approximately 40-45% in the total agricultural exports and 25-30% of imports. In the case of Slovakia, the share of V4 countries represents approximately 65% for export and approximately 40-45% for agricultural import. Further, the V4 countries also participate in agricultural exports and imports of Hungary with a share of approximately 20%, or 25% respectively. Only in the case of Poland is the share of V4 countries in the actual agricultural export (10-15%) and import (cc 10%) marginal, due to Poland's significantly higher production as compared to the other countries. Polish production significantly exceeds the absorbing capacities of the market of the V4 countries. The reason for the low share of V4 countries in Polish imports is the fact that, in relation to Poland, the V4 countries do not have such significant comparative advantages as it is the other way around.

Table 3 provides information on the development of values of the RCA index in the case of individual goods categories traded by the individual V4 countries. The data shows that comparative advantages are being maintained on a long-term basis by all of the monitored countries primarily in the case of trade in processed industrial products, both in relation to the EU market, as well as in relation to the market of third countries. Trade in fuels and mineral resources is, as a whole, uncompetitive on a long-term basis, both in relation to EU countries, as well as in relation to third countries. As regards agricultural

trade, there we can state that agricultural trade of the V4 countries is currently uncompetitive, both in relation to the EU market, as well as in relation to the market of third countries. Nevertheless, in the case of Poland, the situation is the opposite. Polish agricultural trade, unlike agricultural trade of the Czech Republic, Slovakia and Hungary, is capable of achieving comparative advantages, and, importantly – it is also capable of amplifying them.

Table 3. Competitiveness of commodity structure of goods trade of V4 countries in relation to the EU market and to the global market

Export		RCA	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
CR	EU27	Agriculture	0.41	0.37	0.35	0.35	0.38	0.44	0.43	0.45	0.45	0.44	0.42
		Fuels and Raw mat.	1.08	1.07	1.31	1.01	0.92	0.79	0.74	0.77	0.73	0.97	0.88
		Processed products	1.05	1.06	1.05	1.07	1.07	1.08	1.08	1.08	1.09	1.07	1.08
SR	EU27	Agriculture	0.36	0.37	0.37	0.33	0.42	0.53	0.52	0.47	0.41	0.45	0.44
		Fuels and Raw mat.	1.66	1.72	1.64	1.40	1.60	1.33	1.10	0.99	0.94	1.09	1.02
		Processed products	1.01	1.01	1.02	1.04	1.01	1.02	1.04	1.06	1.07	1.06	1.07
Hungary	EU27	Agriculture	0.68	0.72	0.62	0.63	0.63	0.63	0.61	0.79	0.79	0.75	0.77
		Fuels and Raw mat.	0.59	0.58	0.56	0.54	0.56	0.58	0.45	0.56	0.54	0.58	0.60
		Processed products	1.06	1.06	1.07	1.07	1.07	1.08	1.09	1.06	1.07	1.07	1.07
Poland	EU27	Agriculture	0.75	0.72	0.69	0.72	0.88	1.06	1.12	1.12	1.08	1.05	1.06
		Fuels and Raw mat.	1.31	1.47	1.37	1.24	1.37	1.13	0.95	0.91	0.81	0.74	0.81
		Processed products	1.00	0.99	1.01	1.01	0.98	0.98	0.99	1.00	1.01	1.02	1.01
CR	Others	Agriculture	1.04	0.79	0.50	0.70	0.57	0.65	0.46	0.38	0.31	0.30	0.28
		Fuels and Raw mat.	0.19	0.19	0.20	0.17	0.15	0.13	0.09	0.09	0.06	0.11	0.12
		Processed products	1.16	1.17	1.18	1.18	1.21	1.24	1.28	1.28	1.37	1.30	1.30
SR	Others	Agriculture	0.69	0.65	0.61	0.46	0.42	0.53	0.44	0.23	0.21	0.17	0.16
		Fuels and Raw mat.	0.26	0.28	0.23	0.17	0.12	0.11	0.13	0.09	0.09	0.09	0.07
		Processed products	1.18	1.16	1.16	1.21	1.23	1.26	1.27	1.29	1.37	1.32	1.32
Hungary	Others	Agriculture	2.20	2.08	2.08	1.83	1.62	1.26	1.28	0.72	0.80	0.69	0.76
		Fuels and Raw mat.	0.16	0.15	0.21	0.22	0.26	0.24	0.25	0.25	0.23	0.22	0.19
		Processed products	1.08	1.08	1.06	1.09	1.11	1.17	1.18	1.21	1.27	1.24	1.24
Poland	Others	Agriculture	2.49	2.24	2.10	2.26	1.87	1.74	1.68	1.44	1.29	1.46	1.72
		Fuels and Raw mat.	0.32	0.34	0.32	0.26	0.28	0.20	0.18	0.16	0.18	0.18	0.22
		Processed products	1.02	1.02	1.04	1.04	1.08	1.14	1.17	1.18	1.25	1.18	1.15

Source: Comtrade, own processing, 2012.

It must be emphasized that despite of the fact that Czech, Hungarian and Slovak total agrarian exports are not competitive, the total realized export value of all countries is constantly growing. The reason for this development is the fact that individual items (individual aggregations) representing total agrarian trade are able to get competitive advantage both in relation to global markets and the EU market. The details related to comparative advantage distribution of export items of individual V4 members' agrarian trade are available in the following table (Table 4).

Table 4. Comparative advantage of individual V4 members agrarian exports items (aggregations) in relation to EU members and the rest of the World (the market of so called "third countries")

RCA	EU27				World			
	CR	Hungary	Poland	Slovakia	CR	Hungary	Poland	Slovakia
S3-00	**1.99**	**1.52**	0.73	**1.96**	**3.82**	**5.37**	**2.34**	**9.48**
S3-01	0.49	**1.17**	**1.41**	0.54	0.20	**1.81**	**1.58**	0.33
S3-02	**1.29**	0.45	**1.12**	**1.67**	**4.86**	0.91	**2.27**	**2.43**
S3-03	0.31	0.01	**1.49**	0.08	0.04	0.00	0.30	0.01
S3-04	**1.54**	**2.76**	0.71	**1.93**	0.55	**1.49**	0.44	**1.30**
S3-05	0.41	0.80	**1.11**	0.55	0.60	**1.11**	**1.28**	0.59
S3-06	**2.28**	**2.09**	**1.18**	**3.14**	**1.91**	**1.10**	**1.62**	0.85
S3-07	**1.14**	0.70	0.96	**1.92**	**1.04**	0.28	**1.35**	**2.42**
S3-08	**1.08**	**1.67**	0.51	0.71	0.58	**1.71**	0.57	0.45
S3-09	**1.72**	0.54	**1.13**	**1.20**	**1.74**	**1.22**	**1.78**	**2.60**
S3-11	0.95	0.45	0.29	0.48	**2.60**	0.41	0.67	0.68
S3-12	**2.14**	0.27	**1.76**	0.00	0.74	0.13	**2.16**	0.00
S3-41	0.16	0.63	0.45	**1.05**	0.12	0.37	**2.77**	**1.12**
S3-42	0.63	**1.03**	0.51	0.26	0.28	0.51	0.01	0.02
S3-43	0.74	0.06	0.16	**1.08**	0.31	0.01	0.02	0.08

Source: Comtrade, own processing, 2012.

Mutual merchandise trade of the V4 countries

The following Table 5 provides a detailed overview of realized trade flows between the individual monitored countries and territory of the V4. The mentioned data shows that in terms of the market of the V4 countries, the dominant aggregation being traded is processed industrial products. The share of agricultural trade to the total trade flows realized within the market of the V4 countries only ranges around ten per cent.

In terms of the distribution of comparative advantages within the market of the V4 countries, the Czech Republic achieves long-term comparative advantages in the case of industrial products, and Slovakia achieves comparative advantages in fuels and mineral resources. Hungary has comparative advantages in processed industrial products and agricultural products, and Poland has a comparative advantage primarily in the case of agricultural production. However, the results of the analysis of the distribution of RCA index values within the territory of the V4 countries generally show that all of the countries have a tendency to specialize in trade of processed industrial production, where the value of the RCA index is higher than one or very close to one. In relation to trade in agricultural and food production, the finding is that the Czech Republic and Slovakia do not achieve comparative advantages in terms of agro-trade within the monitored territory. On the other hand, Poland has a continuously growing comparative advantage. In the case of Hungary, we can see strong fluctuations in the RCA index value, which shows that the comparative advantages of Hungarian agricultural trade are gradually fading away. More detailed data pertaining to the development of RCA index values can be found in Table 6.

Table 5. Merchandise trade structure of foreign trade of the V4 countries in relation to the market of the V4 countries

Export		mld. USD	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
CR	V4	Agriculture	0.45	0.49	0.60	0.65	0.90	1.25	1.38	1.94	2.45	1.99	2.13
		Fuels and Raw mat.	0.39	0.49	0.73	0.64	1.02	1.28	1.55	2.06	2.82	2.09	2.78
		Processed products	3.50	4.07	5.20	6.04	8.82	10.56	12.99	17.46	20.74	14.71	16.76
SR	V4	Agriculture	0.23	0.27	0.32	0.41	0.58	0.83	1.04	1.36	1.47	1.51	1.63
		Fuels and Raw mat.	0.72	0.75	0.77	0.96	1.40	1.57	1.96	2.28	3.03	2.11	2.58
		Processed products	2.39	2.49	2.67	3.54	4.74	6.01	8.02	11.11	13.63	11.49	13.49
Hungary	V4	Agriculture	0.21	0.21	0.23	0.27	0.37	0.40	0.52	0.77	1.10	0.88	1.15
		Fuels and Raw mat.	0.10	0.10	0.10	0.13	0.24	0.34	0.29	0.57	0.56	0.39	0.50
		Processed products	1.01	1.24	1.51	2.26	3.36	4.62	7.61	9.26	10.94	7.94	9.30
Poland	V4	Agriculture	0.23	0.26	0.30	0.39	0.66	1.03	1.38	1.68	2.22	2.05	2.20
		Fuels and Raw mat.	0.31	0.40	0.45	0.69	1.17	1.12	1.68	1.76	2.08	1.55	1.93
		Processed products	1.67	1.96	2.31	3.17	4.56	5.94	8.41	11.06	14.04	10.84	13.70
Import		mld. USD	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
CR	V4	Agriculture	0.35	0.37	0.50	0.59	0.76	0.99	1.32	1.62	1.86	1.83	1.77
		Fuels and Raw mat.	0.63	0.71	1.61	1.02	1.59	1.63	1.93	2.25	2.84	1.86	2.22
		Processed products	2.63	2.88	3.62	4.22	5.84	7.01	9.10	12.39	15.07	10.73	12.53
SR	V4	Agriculture	0.32	0.39	0.42	0.49	0.61	0.96	1.04	1.38	1.83	1.60	1.74
		Fuels and Raw mat.	0.27	0.34	0.42	0.59	0.96	0.90	1.14	1.29	1.81	1.22	1.85
		Processed products	1.95	2.35	2.79	3.87	4.58	5.13	6.77	9.18	11.01	8.04	8.80
Hungary	V4	Agriculture	0.11	0.14	0.17	0.24	0.49	0.66	0.76	0.95	1.10	1.03	1.11
		Fuels and Raw mat.	0.29	0.29	0.32	0.42	0.57	0.76	0.95	1.00	1.23	0.85	0.76
		Processed products	1.40	1.60	1.96	2.72	3.79	4.16	6.13	7.21	8.85	6.13	6.93
Poland	V4	Agriculture	0.30	0.26	0.28	0.32	0.39	0.46	0.60	0.89	1.10	0.87	0.94
		Fuels and Raw mat.	0.28	0.33	0.29	0.35	0.61	0.72	0.87	1.15	1.95	1.10	1.49
		Processed products	2.41	2.63	2.89	3.85	5.30	5.95	7.66	9.91	11.89	9.07	10.67

Source: Comtrade, own processing, 2012.

Table 6. Distribution of comparative advantages of individual goods segments carried out by the V4 countries amongst themselves mutually

Export		RCA	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
CR	V4	Agriculture	1.03	1.01	0.96	0.98	0.93	0.95	0.94	0.96	0.98	0.95	0.94
		Fuels and Raw mat.	0.66	0.71	0.83	0.69	0.69	0.79	0.83	0.88	0.96	1.04	1.12
		Processed products	1.05	1.05	1.03	1.05	1.06	1.04	1.03	1.02	1.01	1.00	1,01
SR	V4	Agriculture	0.68	0.79	0.88	0.92	0.96	0.98	1.02	0.98	0.84	0.89	0.88
		Fuels and Raw mat.	1.58	1.56	1.52	1.54	1.51	1.51	1.52	1.42	1.48	1.31	1.27
		Processed products	0.94	0.92	0.92	0.92	0.91	0.92	0.92	0.94	0.95	0.97	0.98
Hungary	V4	Agriculture	1.58	1.40	1.31	1.12	1.03	0.74	0.67	0.77	0.91	0.86	1.01
		Fuels and Raw mat.	0.56	0.47	0.40	0.39	0.44	0.51	0.29	0.49	0.39	0.40	0.40
		Processed products	1.00	1.04	1.07	1.09	1.10	1.11	1.14	1.10	1.10	1.10	1.09
Poland	V4	Agriculture	1.03	1.03	1.02	1.02	1.14	1.27	1.30	1.23	1.26	1.27	1.18
		Fuels and Raw mat.	1.03	1.12	1.09	1.28	1.32	1.12	1.25	1.12	1.00	1.01	0.95
		Processed products	0.99	0.98	0.98	0.95	0.92	0.95	0.93	0.96	0.97	0.96	0.98

Source: Comtrade, own processing, 2012.

Mutual agricultural trade of the countries of the Visegrad group

The following text focuses on a detailed analysis of the commodity structure and territorial structure of V4 mutual agricultural trade. The leader of the agricultural market of the V4 countries is undoubtedly the Czech Republic, which realized a share of over 30%. of total agricultural trade within the V4 countries. Second place is held by Slovakia – which, by way of intensive trade between it and the Czech Republic, had a share of approximately 28%. Poland attained a share of approximately 24% and Hungary had approximately 16%.

The data set out in Table 7 shows that the value of mutual trade among the V4 countries is growing dynamically. In the years 2000–2012, the value of mutual agricultural trade rose from approximately 1.1 billion USD to almost 10 billion USD. If we look at the commodity structure of mutual agricultural trade of the V4 countries in detail, we find that this structure is dominated primarily by trade in the following aggregations: grains, vegetables and fruit, milk and dairy products, meat and meat products, stimulants and beverages. Further, in terms of the dynamics of growth in value, the most distinctly growing aggregations include: meat and meat products, sugar and candy products, live animals, milk and dairy products and vegetable and animal fats and oils.

Table 7. Commodity structure of agricultural trade of V4 countries

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4
mil. USD	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4
S3-00	18.7	20.7	26.4	27.50	64	89	143.3	165.6	162.2	149.7	216.5	317.5	361.2
S3-01	51.3	52.3	76.7	87.20	166	376.1	441.4	589.4	821.4	855.6	1050.1	1277.7	1332.9
S3-02	94.2	108.9	120.9	155.80	268.9	416.9	542.5	695.1	887.5	718.2	830.9	991.2	852.3
S3-03	22.3	25.9	28.6	33.50	48.9	60.2	71.3	88	107.5	110.1	114.8	147.1	123.1
S3-04	224.6	212.4	211.3	280.20	354.2	418.2	583.8	877.8	1189.9	873.5	931.2	1431.0	1318.6
S3-05	155.4	188.6	203.4	256.30	373.1	493.3	558.6	735.2	856.5	706.9	765.9	798.2	755.2
S3-06	47.6	57.2	73	79.90	172.7	211.8	315.5	411.3	412.5	435.4	624.4	864.8	1202.6
S3-07	150.2	172.8	195.6	266.80	336.7	409.5	491.4	581.4	683.1	666.3	659.3	857.2	874.6
S3-08	50.8	58.4	64.6	78.30	104.2	141.1	175.1	258.5	372.9	276.8	321.8	437.7	459.4
S3-09	138.6	135.6	165.7	178.60	242.7	341.6	377.7	485.5	638.6	522.9	512.2	630.2	582.9
S3-11	68.4	79.2	101.9	120.50	187.4	267	312.9	438	532.7	487.8	477.7	599.8	565.3
S3-12	61.2	68.2	150	106.40	110.1	188.6	201.7	312.4	282	293.1	271.9	326.1	349.3
S3-41	4	5.4	7.1	11.30	15.6	12.7	14.9	16.3	19.9	23.8	28.9	41.7	39.3
S3-42	31.4	36.1	25.2	34.80	52.9	60	64.7	80.1	225.9	219.6	258.9	553.0	907.3
S3-43	8.5	6.1	6.1	8.70	16.4	19.8	20.1	25.6	40.3	86.7	38.3	57.5	55.7
Total	1127.2	1227.8	1456.6	1726.0	2513.9	3506	4315	5760.3	7233	6426.3	7102.7	9330.8	9779.8

Source: Comtrade, own processing, 2012.

Below, Tables 8 and 10 provide an overview of the development of export, import and the balance of agricultural trade carried out on the market of the V4 countries in the case of each individual country. The tables show the especially bad situation of Slovakia, which has a long-term negative balance in agricultural trade in relation to the V4 countries. In the Czech Republic and Poland, on the other hand, a positive balance predominates. In the case of Poland, this is caused by substantial comparative advantages primarily in relation to the Czech Republic and Slovakia. For the Czech Republic, its positive balance within the territory of the V4 countries is caused by a distinctly positive balance in relation to Slovakia.

Table 8. Position of individual member countries within agricultural trade carried out among the V4 member countries themselves

Mil. USD		2000	2 002	2004	2005	2006	2007	2008	2009	2010	2011	2012	2000-12	Geomean - inter annual growth rate
V4	trade	1127.2	1456.6	2513.9	3506	4315	5760.3	7233	6426.3	7102.7	9330.8	9779.8	61505.4	1.197
CR	export	454.9	603.2	900.8	1249.8	1379.3	1938.1	2446.5	1986.5	2128.2	2850.5	3075.4	20148.6	1.173
CR	import	355.2	465.9	830.5	1065.2	1384.3	1747.5	2127.8	1992.7	2013.2	2505.4	2664.2	18144.7	1.183
CR	balance	99.7	137.3	70.3	184.6	-5	190.6	318.7	-6.2	115.1	345.1	411.2	2004	
Hungary	export	212.7	231.2	369.1	402.4	517.5	774.8	1097.1	876	1148.1	1651.4	1462.4	9218	1.174
Hungary	import	316.3	306.2	443.5	537.1	703.2	947.6	1217.4	945.7	1018.6	2024.9	2143.4	11260.1	1.173
Hungary	balance	-103.6	-75.1	-74.4	-134.7	-185.7	-172.8	-120.4	-69.8	129.5	-373.5	-681	-2042.4	
Poland	export	230.2	300.6	662.3	1026.5	1382.9	1685	2220	2052.2	2197	2600.5	2615.9	17630.5	1.225
Poland	import	120.9	182.5	496.6	763.2	909.7	1221.5	1418.6	1325.5	1499.2	1424.5	1595.3	11349.6	1.240
Poland	balance	109.3	118.1	165.7	263.3	473.2	463.5	801.4	726.7	697.8	1176	1020.6	6280.9	
SR	export	229.4	321.7	581.7	827.2	1035.4	1362.5	1469.3	1511.7	1629.3	2228.4	2626.1	14508.4	1.225
SR	import	334.8	502.0	743.2	1140.4	1317.9	1843.8	2469.1	2162.4	2571.8	3375.9	3376.8	20750.7	1.212
SR	balance	-105.4	-180.3	-161.5	-313.2	-282.5	-481.3	-999.8	-650.7	-942.4	-1147.5	-750.7	-6242.2	

Source: Comtrade, own processing, 2012.

The last part of this paper provides an overview of the distribution of agrarian trade comparative advantages on a bilateral level among individual countries of the Visegrad group. As was stated above, agricultural trade as a whole holds comparative advantages in relation to global markets only in the case of Poland and Hungary. In relation to the market of the V4 countries, only the agricultural trade of Poland has comparative advantages as a whole, and in some years, also Hungarian agricultural trade. Agricultural trade of the Czech Republic and Slovakia as a whole does not have comparative advantages even in within the market of the V4 countries. Nevertheless, it is appropriate to state that agricultural trade as a whole is growing in the case of all of the V4 countries, and not only for imports, but also for exports. The above thus clearly proves the existence of comparative advantage - if not on the level of total agricultural trade, then at least on the level of individual aggregations. Table 9 provides an overview of the distribution of comparative advantages for individual aggregations traded between the monitored countries mutually. In the case of each of the monitored countries, there are 45 flows monitored within 15 aggregations realized between the given economy and its three partners.

The results show (for the year 2012) that the Czech Republic has comparative advantages for 7 monitored aggregations in relation to Hungary, for 6 in relation to Poland, and for 10 in relation to Slovakia. Slovakia has comparative advantages for 8 aggregations in relation to Hungary, 7 aggregations in regard to Poland, and 5 aggregations in relation to the Czech Republic. Hungary achieves comparative advantages in relation to the Czech Republic for 8 aggregations, for 7 aggregations in relation to Slovakia, and for 7 aggregations in relation to Poland. Polish agricultural trade in relation to the V4 countries achieves comparative advantages in the case of the Czech Republic for 9 aggregations, for 8 aggregations in the case of Slovakia, and for approximately 9 aggregations with Hungary.

Table 9. LFI Index – Comparative advantages of agricultural trade among individual V4 countries at the level of individual aggregations representing agricultural trade

2012	LFI	S3-00	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07
Slovakia	Czech R.	-0.45	-2.48	0.32	-0.68	0.80	-1.59	6.37	-0.54
Slovakia	Hungary	3.12	1.42	3.12	-0.12	0.13	1.70	7.57	1.95
Slovakia	Poland	4.09	-11.02	-4.82	-0.67	13.90	-1.68	2.35	1.58
Czech R.	Hungary	4.64	-3.06	4.09	1.37	0.78	-0.33	1.92	-0.41
Czech R.	Poland	1.45	-7.76	-4.04	-0.29	8.20	-1.18	-0.27	-1.76
Czech R.	Slovakia	0.45	2.48	-0.32	0.68	-0.80	1.59	-6.37	0.54
Hungary	Czech R.	-4.64	3.06	-4.09	-1.37	-0.78	0.33	-1.92	0.41
Hungary	Poland	-0.65	-5.14	-4.57	-0.83	5.95	4.41	4.16	-2.40
Hungary	Slovakia	-3.12	-1.42	-3.12	0.12	-0.13	-1.70	-7.57	-1.95
Poland	Czech R.	-1.45	7.76	4.04	0.29	-8.20	1.18	0.27	1.76
Poland	Hungary	0.65	5.14	4.57	0.83	-5.95	-4.41	-4.16	2.40
Poland	Slovakia	-4.09	11.02	4.82	0.67	-13.90	1.68	-2.35	-1.58
2012	LFI	S3-08	S3-09	S3-11	S3-12	S3-41	S3-42	S3-43	Total agr. trade
Slovakia	Czech R.	-0.91	-1.05	-0.11	-1.61	-0.01	1.78	0.17	-2.35
Slovakia	Hungary	-0.94	0.90	-5.71	-2.06	-8.74	-1.24	-1.09	3.96
Slovakia	Poland	1.47	-1.88	0.12	-2.91	0.11	-0.52	-0.12	-4.37
Czech R.	Hungary	-4.10	1.14	-1.31	-1.46	-0.03	-3.73	0.49	0.15
Czech R.	Poland	1.71	-1.80	1.60	-2.34	-0.15	6.37	0.26	-1.76
Czech R.	Slovakia	0.91	1.05	0.11	1.61	0.01	-1.78	-0.17	2.35
Hungary	Czech R.	4.10	-1.14	1.31	1.46	0.03	3.73	-0.49	-0.15
Hungary	Poland	6.34	-3.01	0.13	-6.73	-0.54	2.90	-0.04	-1.69
Hungary	Slovakia	0.94	-0.90	5.71	2.06	8.74	1.24	1.09	-3.96
Poland	Czech R.	-1.71	1.80	-1.60	2.34	0.15	-6.37	-0.26	1.76
Poland	Hungary	-6.34	3.01	-0.13	6.73	0.54	-2.90	0.04	1.69
Poland	Slovakia	-1.47	1.88	-0.12	2.91	-0.11	0.52	0.12	4.37

Source: Comtrade, own processing, 2012

Table 10. Mutual agricultural trade flows – territorial structure - in 2012 (Mil. USD)

2012	Export	S3-00	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S3-08	S3-09	S3-11	S3-12	S3-41	S3-42	S3-43
Slovakia	Czech R.	18.7	126.7	92.6	5.5	117.7	88.8	213.1	57.8	20.4	41.2	83.1	0.1	1.7	124.8	9.4
Slovakia	Hungary	107.2	110.4	82.6	2.9	130.0	45.1	273.1	177.1	35.3	24.8	44.1	0.0	11.8	167.9	18.9
Slovakia	Poland	36.1	7.9	12.7	0.5	144.3	10.6	64.4	38.0	32.8	14.4	15.6	0.1	2.7	12.7	0.6
Czech R.	Hungary	37.1	26.6	35.3	8.9	39.0	24.6	57.0	23.4	5.3	31.3	16.7	5.9	0.2	6.5	3.6
Czech R.	Poland	28.1	20.8	45.4	12.0	224.3	37.1	43.9	45.0	61.1	42.9	54.9	18.2	0.1	169.3	5.7
Czech R.	Slovakia	55.9	353.6	165.7	40.1	194.1	241.4	137.8	135.8	78.9	125.2	166.1	70.1	3.9	165.2	11.1
Hungary	Czech R.	7.3	46.4	9.0	0.2	34.2	26.8	44.8	26.1	31.8	24.0	25.2	15.3	0.4	30.6	0.4
Hungary	Poland	4.0	27.2	13.0	1.3	82.8	65.4	46.3	20.9	62.2	20.7	18.6	6.5	0.2	24.3	0.0
Hungary	Slovakia	15.4	44.3	0.5	3.7	76.7	0.4	45.4	76.5	36.3	0.8	117.5	32.8	146.0	121.6	28.7
Poland	Czech R.	5.1	256.1	190.6	28.2	137.6	95.3	80.4	124.9	52.4	122.4	45.2	96.9	4.5	98.5	2.0
Poland	Hungary	14.0	104.0	75.7	12.1	51.1	43.9	18.3	60.9	15.3	68.0	26.3	92.5	6.9	0.9	0.5
Poland	Slovakia	2.3	176.8	93.4	10.7	45.9	43.4	77.4	42.9	35.3	52.7	25.3	43.2	3.1	29.8	2.9

2012 Export	Slovakia Czech R.	Slovakia Hungary	Slovakia Poland	Czech R. Hungary	Czech R. Poland	Czech R. Slovakia	Hungary Czech R.	Hungary Poland	Hungary Slovakia	Poland Czech R.	Poland Hungary	Poland Slovakia
S3-00	18.7	107.2	36.1	37.1	28.1	55.9	7.3	4.0	15.4	5.1	14.0	2.3
S3-01	126.7	110.4	7.9	26.6	20.8	353.6	46.4	27.2	44.3	256.1	104.0	176.8
S3-02	92.6	82.6	12.7	35.3	45.4	165.7	9.0	13.0	0.5	190.6	75.7	93.4
S3-03	5.5	2.9	0.5	8.9	12.0	40.1	0.2	1.3	3.7	28.2	12.1	10.7
S3-04	117.7	130.0	144.3	39.0	224.3	194.1	34.2	82.8	76.7	137.6	51.1	45.9
S3-05	88.8	45.1	10.6	24.6	37.1	241.4	26.8	65.4	0.4	95.3	43.9	43.4
S3-06	213.1	273.1	64.4	57.0	43.9	137.8	44.8	46.3	45.4	80.4	18.3	77.4
S3-07	57.8	177.1	38.0	23.4	45.0	135.8	26.1	20.9	76.5	124.9	60.9	42.9
S3-08	20.4	35.3	32.8	5.3	61.1	78.9	31.8	62.2	36.3	52.4	15.3	35.3
S3-09	41.2	24.8	14.4	31.3	42.9	125.2	24.0	20.7	0.8	122.4	68.0	52.7
S3-11	83.1	44.1	15.6	16.7	54.9	166.1	25.2	18.6	117.5	45.2	26.3	25.3
S3-12	0.1	0.0	0.1	5.9	18.2	70.1	15.3	6.5	32.8	96.9	92.5	43.2
S3-41	1.7	11.8	2.7	0.2	0.1	3.9	0.4	0.2	146.0	4.5	6.9	3.1
S3-42	124.8	167.9	12.7	6.5	169.3	165.2	30.6	24.3	121.6	98.5	0.9	29.8
S3-43	9.4	18.9	0.6	3.6	5.7	11.1	0.4	0.0	28.7	2.0	0.5	2.9

Source: Comtrade. own processing. 2012.

Conclusions

On the basis of the above findings, it is shown that agricultural trade in the case of all of the countries of the Visegrad group represents only a marginal part of the total merchandise trade. Further, in regard to the agricultural trade of the individual analysed countries, it may be stated that the commodity structure as well as the territorial structure is very significantly concentrated. The predominant majority of agricultural trade – export as well as import – is carried out with EU countries. Third countries represent only a marginal market in regard to the sale of merchandise and agricultural products from the V4 countries.

In relation to the development of the commodity structure of merchandise and especially agricultural trade, it may be stated that the value of trade realized within the majority of traded aggregations is growing on a long-term basis in the case of all of the V4 group countries. In terms of agricultural trade, it is appropriate to state that the most dynamic growth was seen in the case of Poland. However, Czech and Slovak agricultural trade also showed considerable growth in terms of realized trade.

The objective of the article was to identify the comparative advantages of agricultural trade of the V4 countries in the area of commodity structure and territorial structure in relation to the global market, to EU countries, and to the "internal market" of the V4 group countries – all for the purpose of ascertaining the most significant changes that occurred in the field of agricultural trade within the analysed time period. As such, the following must be stated: Agricultural trade of the Czech Republic, Slovakia and Hungary as a whole does not have comparative advantages either on the global market or on the internal market of the EU countries. Poland, however, does have it. It is the only representative of the V4 countries that has comparative advantages in the field of agricultural trade, both in relation to the internal market of the EU countries, as well as in relation to the global market. If we focus further on the distribution of comparative advantages within the mutual trade of the V4 countries – we can state that Poland clearly dominates. Hungarian export is capable of gaining comparative advantages in some years in relation to the market of the V4 countries. Czech and Slovak agricultural trade as a whole is profiled as uncompetitive within the whole of the space of the V4 countries, However, it should be mentioned that both countries have several aggregations existing within their agricultural trade which could be able to get comparative advantages if not at general level, then at least on a bilateral level.

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