MUTUAL TRADE IN AGRICULTURAL PRODUCTS AMONG VISEGRAD COUNTRIES – BASIC DEVELOPMENT TRENDS

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ABSTRACT. The conducted paper is analyzing 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 area of agricultural sector and trade development in the case of analyzed countries. Another aim of the paper is related to their trade relations. In this case the paper is identifying basic trends in the area of individual analyzed countries' trade development and mutual agrarian trade competitiveness is also analyzed. The paper is analyzing agricultural sector and trade development in 2000 – 2012. The basic statistical methods are applied to analyze individual time series. The individual countries agrarian trade competitiveness analysis is realized through the Balassa and Lafay index. On the basis of the findings coming from the paper, it can be said that individual V4 countries' agricultural production and trade changed significantly during the analyzed time period. Agricultural production and trade represent only a marginal part of the economy and the total merchandise trade. Further, in regard to the agricultural trade of the individual analyzed 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 in regard to EU countries. In this case it is necessary to emphasize that individual V4 countries are important trade partners for each other. On the base of Visegrad countries' mutual trade analysis - it is possible to say that the main traders active on V4 market are the Czech Republic and Slovakia. The most competitive actors operating in V4 market are Poland and Hungary. If we are analyzing individual countries export

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performance we can see that V4 market is dominated by Poland and the Czech Republic.

Key words: Visegrad group, agriculture, sector, trade, development, mutual, external, EU, value, competitiveness, relations

JEL classification: F14, F15, Q13, Q17

1. Introduction

Visegrad countries (Czech Republic, Hungary, Poland and Slovak Republic) represents a specific group of countries. They are located in the centre of Europe and they have very intensive historical, economic and political relations. The countries of the Visegrad Group – also referred to as the V4 countries - have in recent years undergone a dramatic development, which has very significantly influenced the structure of their economy, including the agricultural sector and trade with agricultural products. Immediately after the collapse of the "Eastern bloc", COMECON and the USSR, all V4 countries faced a significant economic downturn that coincided with the collapse of the former socialist system and its market linkages. The agrarian sector suffered very significant losses in the process of the transition from a centrally planned economy to a market economy. In particular, livestock production and the number of workers employed in the agricultural sector has reduced noticeably – as it was already highlighted by Pokrivcak, Ciaian, (2004); Ciaian, Swinnen (2006); Ciaian, Pokrivcak (2007); Bojnec, Ferto (2009); Basek, Kraus, (2009) etc. This has resulted in a decrease in the level of self-sufficiency of V4 countries.

2. Literature review

Visegrad countries economy and trade are objects of many analyses and research papers published in the past. On the base of researches conducted by the author and other experts focused on V4 area, it is possible to say that individual countries' agricultural sector and agrarian trade recorded the significant changes in the last two decades and especially the position of agricultural sector within individual V4 members' economy

also changed. The share of agricultural exports in total exports in the case of the V4 countries fell below 10%. In the Czech Republic and Slovakia the reduction has been much more significant, since the position of the agrarian sector is not as significant in these two countries as in the case in Poland and Hungary. During the first years of transition (in the last decade of the 20th century) while the share of agrarian exports in OECD countries and in the EU countries was increasing, in the Countries of Central and Eastern Europe, and especially in regions throughout the Commonwealth of Independent States (CIS), the total value of agricultural trade stagnated or even gradually decreased (Pokrivcak Drabik, 2008). Here, a gradual economic transformation took place, leading to the correction of trade relationship deformations caused during the period before 1990 (Drabik, Bartova, 2008). In the early years of the nineties (especially 1990 – 1995), the share of EU countries in agrarian trade with the V4 countries was abnormally low, but over time (thanks to structural changes, and functioning market mechanisms) it has increased to its current level - typical for an EU member country (Bussiere, Fidrmuc and Schnatz, 2005).
The financial crisis affected also trade of V4 countries (The impact of the crisis was significant especially in 2009 and 2010.). It has resulted in the collapse of large financial institutions around the world. It was considered by many economists to be the worst financial crisis since the Great Depression of the 1930s. It contributed to the failure of key businesses, declines in consumer wealth estimated in the trillions of U.S. dollars, substantial financial commitments incurred by governments and a significant decline in economic activity. Many causes have been proposed, with varying weight assigned by experts. Both market-based and regulatory solutions have been implemented or are under consideration, while significant risks remain for the world economy over the 2014. Although this economic period has at times been referred to as "the Great Recession," this same phrase has been used to refer to every recession of the several preceding decades (Hambalková, Rovný, 2010).

The EU share in total agrarian trade of the V4 countries increased mainly due to a process of liberalization, occurring not simply as a consequence of the GATT / WTO negotiation rounds, but mainly because of the partnership established between the V4 and EU countries in the process of integration of the former Eastern European countries into the European structures (Pohlova, Tucek, Kraus, 2007). In this regard, it should be stressed that the process of liberalization, which affected

trade between the V4 countries and the EU in the period prior to their EU accession, was asymmetric in character (Volosin, Smutka, 2011). It should be emphasized however that in this period the V4 countries had also invested considerable resources to support their own agrarian sector and agrarian trade, though their ability to support the agrarian sector was significantly lagging behind that of the EU countries (Tucek, Volosin, 2006). The process of liberalization affected not only the V4 trade with the EU countries; but also during this period it initiated the emergence of the Central European Free Trade Area (CEFTA). The pace of liberalization of agrarian trade within CEFTA was not as dynamic, as it was in the case of the V4 trade with the EU15. In May 2004 the V4 countries became EU members. The EU accession brought about very significant changes in agri-trade for individual countries. The Czech Republic, Slovakia, Hungary and Poland became part of the EU single market, and all the obstacles limiting the movement of goods between them and the EU countries up to that time, ceased to exist (Svatos, 2008). Individual countries had to accept common EU tariffs and also agreements signed and accepted by the EU in the period before the V4 accession (Svatos, 2009). As a result of their positions with non-EU trade partners, from the aspect of the territorial structure of the V4 group, agrarian trade has been weakening. This development did, however, strengthen the positions of the older EU Member States as the most important partners of Czech Republic Slovakia, Poland and Hungary.

The above mentioned period had a significant impact on individual V4 countries agricultural production and trade. Individual countries faced to changes in their economy and their own economy environment together. Individual countries developed strong links in the case of mutual cooperation both in the area of economy and in the area of policy. They founded CEFTA as an instrument supporting their mutual trade and they also founded Visegrad group as an instrument supporting their mutual political, cultural and social cooperation. Individual countries are important trade and economy partners and they are supporting (more or less) each other. The mutual links among Visegrad countries represent an important part individual countries' economy. Regardless their EU membership, individual Visegrad countries are an important partners for each other in all areas of their economy – including their agricultural sector.

The main contribution of the paper are identificantion of basic development trends related to individual V4 countries agrarian export, import and trade balance value and structure development and the identification of the most competitive items of individual Visegrad countries mutual agrarian trade.

3. Methodology and objectives

The conducted paper is analyzing 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 area of agricultural sector and trade development in the case of analyzed countries. Another aim of the paper is related to their mutual trade relations. In this case the paper is identifying basic trends in the area of individual analyzed countries' trade development and mutual agrarian trade competitiveness is also analyzed. The main idea of this part of analysis is to identify the impact of past years development on mutual agricultural trade development and relations.

The paper is divided into three basic parts. The first part of the paper is analyzing agricultural sector development in individual Visegrad countries (agricultural production value and volume development, employment in agriculture development, agricultural land size development, the share of agriculture in individual countries' GDP). The second part of the paper is analyzing individual Visegrad countries agricultural trade development both in relation to the EU and the rest of the World. The last part of the paper is analyzing mutual agricultural trade development existing among individual Visegrad countries. Individual Visegrad countries' agricultural trade performance is analyzed both in relation to the total Visegrad market and in relation to individual members of Visegrad group. Paper is also analyzing individual Visegrad countries' agricultural foreign trade commodity structure. The commodity structure is analyzed according to the SITC (Standard International Trade Classification), 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.

Table 1: SITC rev. 3

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

Source: UN Comtrade, 2014

The paper is analyzing individual Visegrad countries agricultural production and trade performance and competitiveness in the period 2000 – 2012. 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 individual countries export and import performance, the paper is also analyzing the Visegrad countries mutual trade performance and their mutual trade relations. The paper is analyzing especially mutual Visegrad countries agricultural trade competitiveness.

The competitiveness analysis of individual Visegrad countries foreign trade is realized through the 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 export flows competitiveness 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 follow.

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

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 Lafay index. Lafay index is 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:

$$LFI_j^i = 100 \left(\frac{x_j^i - m_j^i}{x_j^i + m_j^i} - \frac{\sum_{j=1}^{N}(x_j^i - m_j^i)}{\sum_{j=1}^{N} x_j^i + m_j^i} \right) \frac{x_j^i + m_j^i}{\sum_{l=1}^{N} x_j^i + m_j^i} \qquad (2)$$

where x_j^i and m_j^i 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 contrary, negative values points to de-specialization. (Zaghini, 2005)

4. Visegrad countries agricultural production

The following part of the paper provides a brief overview of the last two decades development on agriculture and especially agricultural trade of Visegrad countries. If we are analysing the structure of individual Visegrad countries' economy, we can see that agriculture only plays a minor role. The share of agriculture in individual countries' economy is

steadily decreasing. The current share is less than 4% (in the Czech Republic the share of agriculture in GDP is the lowest (1.7%), and contrary in Slovakia the share of agriculture in total GDP is the highest – almost 4%.

Agricultural land represents a large proportion of total land in analyzed countries. The share of agricultural land is the highest in Hungary (63%), and the lowest in Slovakia 40%. The share of agricultural land in total land is quite stable in the Czech Republic and in Hungary, however in Poland and Slovakia it has been declining over the last two decades.

Employment in agriculture is low in the analyzed countries. The share of people working in agricultural sector has been steadily decreasing in each of the analyzed countries. The lowest share of people working in agriculture is in the Czech Republic (3.1%) and Slovakia (3.2%) and on the other hand the highest share is in Poland (12%).

Agriculture in the individual Visegrad countries is becoming more and more tive. The value added generated by the agricultural sector has been constantly growing – the only exception is the Czech Republic. The average value of inter annual growth rate of agricultural value added is positive in the case of Hungary, Poland and Slovakia (for details about agricultural added value development please see the Tables 2 and 3).

Table 2: Agriculture, value added (constant 2000 US$)

Country Name	1993	1997	2001	2005	2009	2010	Inter annual growth rate – GEOMEAN
Czech Republic	2 601 256 550	1 718 645 956	1 943 983 107	2 496 690 029	2 220 258 838	2 100 452 125	0.9875
Hungary	2 069 593 467	2 196 051 563	2 541 385 349	3 387 836 924	3 243 573 970	2 744 022 562	1.016731
Poland	7 994 303 202	7 643 310 115	8 051 872 151	8 833 573 449	8 999 771 492	8 863 696 021	1.006091
Slovak Republic	1 100 419 889	1 250 230 330	1 307 352 128	1 549 659 112	2 328 173 945	1 955 039 617	1.034385

Source: WDI, 2014

The productivity of agriculture per worker is increasing in each of the Visegrad countries studied. The average growth rate of real agricultural added value in individual Visegrad countries is: Slovakia (5.6% a year), Hungary (5.4% a year), Poland (3.1% a year) and the Czech Republic (1.55% a year). (See table 3)

Table 3: Agriculture value added per worker (constant 2000 US$)

Country Name	1993	1995	1997	1999	2001	2003	2005	2007	2008	2009	2010	Inter annual growth rate – GEOMEAN
Czech Republic	4 945	4 078	3 634	4 298	4 662	5 324	6 712	5 262	5 674	6 608	6 423	1.015501
Hungary	3 449	3 935	4 482	4 848	5 856	5 595	8 822	6 882	11 029	9 711	8 522	1.054644
Poland	1 759	1 767	1 896	2 072	2 182	2 397	2 626	2 616	2 643	2 964	2 994	1.031807
Slovak Republic	3 916	4 343	4 942	4 607	5 493	7 209	7 141	9 779	11 279	11 526	9 924	1.056222

Source: WDI, 2014

The volume of agricultural and foodstuff production in individual Visegrad countries decreased during the period 1993–2010, the only exception is Poland. Table 4 provides detailed information about the volume of agricultural and foodstuff production in individual Visegrad countries. In the case of the Czech Republic the volume of production decreased by more than 36%. In Hungary the current volume of food production is at the same level as in 1993, but if we take into consideration the peak level of food production in 2001, we can see that the current production volume is lower by 21-22%. Slovakian volume of food production declined during the analyzed time period by more than 30%, and only one Visegrad country (Poland) was able to keep the level of food production stable during the last twenty years. If we examine the individual countries food and agricultural production more in detail, we can see that both segments – animal and crops production - of agricultural production were heavily affected during the last nearly twenty years development.

Table 4: Agricultural production index (2004-2006 = 100)

Country Name	1993	1997	2001	2003	2005	2007	2008	2009	2010
Czech Republic	126.15	100.22	101.14	88.32	98.30	95.67	101.84	98.20	91.86
Hungary	86.60	94.83	103.84	83.26	95.15	79.30	103.79	94.81	82.83
Poland	99.80	92.64	95.59	96.03	98.17	100.33	102.13	106.25	100.16
Slovak Republic	115.80	113.36	93.89	91.95	102.87	89.29	104.04	93.03	83.99

Source: WDI, 2014

While the level of production in individual analyzed countries was reduced significantly (the only exception being Poland), the level of domestic consumption changed only a little during the whole monitored time period in each country studied.

A significant decrease of production volume in comparison with domestic consumption volume development affected the level of agricultural market self-sufficiency level in the individual analyzed countries. The changes in agricultural production volume, apparent in the monitored time period, had a direct impact on agricultural trade value and volume development. The following subchapter analyzes the value and volume of individual Visegrad members' agricultural trade development. Trade development is analyzed in relation to the EU market, third countries (countries outside of EU) and also in relation to the Visegrad countries mutual trade.

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

The countries of the Visegrad group are representatives 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, but nevertheless, 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 Czech Republic, Slovakia and Hungary. If we analyze the commodity structure of merchandise trade of the V4 countries, we find that it is dominated by trade in processed industrial products. Further, it is also important to state that the actual territorial structure of goods trade of the V4 countries is distinctly oriented toward EU countries. Another interesting finding that pertains to the development of goods trade of the Visegrad group countries is also the fact that the average year-on-year rate of growth of merchandise trade of the V4 countries significantly exceeds both the average year-on-year rate of growth of the world merchandise trade, as well as the average year-on-year rate of growth of goods trade of EU countries.

Table 5: Development of value and structure of foreign trade (export) of Visegrad group countries in the years 2000 – 2012

Export		bil. USD	2000	2002	2004	2005	2006	2007	2008	2010	2012
CR	World	Agriculture	1.11	1.4	2.18	2.99	3.25	4.37	5.53	4.94	7,04
SR	World	Agriculture	0.37	0.49	0.98	1.41	1.69	2.15	2.37	2.49	3,84
Hungary	World	Agriculture	1.96	2.35	3.41	3.63	4.2	5.72	7.12	6.5	8,28
Poland	World	Agriculture	2.43	3.3	6.11	8.36	10.12	12.95	16.13	16.79	21,37

Source: Comtrade, own processing, 2014

Table 6: Development of value and structure of foreign trade (import) of Visegrad group countries in the years 2000 – 2012

Import		bil. USD	2000	2002	2004	2005	2006	2007	2008	2010	2012
CR	World	Agriculture	1.56	2.2	3.27	3.99	4.65	5.99	7.1	6.65	8.23
SR	World	Agriculture	0.71	0.89	1.47	2.5	2.24	3.13	3.97	3.97	4.80
Hungary	World	Agriculture	0.92	1.17	2.29	2.67	2.97	3.79	4.7	4.12	4.52
Poland	World	Agriculture	2.86	3.21	4.95	6.13	7.27	10.7	13.6	13.8	15.45

Source: Comtrade, own processing, 2014

In relation to the position of agricultural trade of the Visegrad group countries within the overall goods trade, it may be stated that likewise as in the case of the global and European market, agricultural trade represents only a supplement to goods trade (less than 10% of total trade). 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 2000-2012, the value of agricultural export of the V4 countries increased from USD 6 billion to more than USD 40 billion, and in the case of agricultural import, there was an increase in the traded value from USD 6 billion to 33 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 further significant characteristic of agricultural trade of the V4 countries is its distinct orientation toward the market of EU countries.

A specific characteristic of merchandise trade of the V4 countries is the competitiveness of trade transactions, both in relation to the market of the EU countries, as well as 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 realized 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.

As regards agricultural trade, there we can state that Czech, Slovak and Hungarian agricultural trade 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 is capable of achieving comparative advantages, and, importantly – it is also capable of amplifying them.

Table 7: Competitiveness of commodity structure of goods trade of V4 countries in relation to the EU market and to the global market

Export		RCA1	2000	2002	2003	2004	2006	2008	2010	2012
CR	EU27	Agriculture	0.41	0.35	0.35	0.38	0.43	0.45	0.42	0.47
SR	EU27	Agriculture	0.36	0.37	0.33	0.42	0.52	0.41	0.44	0.51
Hungary	EU27	Agriculture	0.68	0.62	0.63	0.63	0.61	0.79	0.77	0.86
Poland	EU27	Agriculture	0.75	0.69	0.72	0.88	1.12	1.8	1.6	1.12
CR	Others	Agriculture	1.4	0.50	0.70	0.57	0.46	0.31	0.28	0.31
SR	Others	Agriculture	0.69	0.61	0.46	0.42	0.44	0.21	0.16	0.21
Hungary	Others	Agriculture	2.20	2.8	1.83	1.62	1.28	0.80	0.76	0.79
Poland	Others	Agriculture	2.49	2.10	2.26	1.87	1.68	1.29	1.72	1.75

Source: Comtrade, own processing, 2014

6. 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 agricultural trade of the V4 countries. The leader of the agricultural market of the V4 countries is undoubtedly

the Czech Republic, which (in period 2000 – 2012) participated in the total agricultural trade realized within the V4 countries with a share of over 30%. The second place is then held by Slovakia – which, by way of intensive exchange realized between it and the Czech Republic, participates in the trade turnover of the territory of the V4 with a share of approximately 28%. Poland participates in the turnover of agricultural trade within the territory of the V4 countries with a share of approximately 24% and Hungary participates with a share of approximately 16%.

The data set out in Table 8 shows that the value of mutual trade among the V4 countries is growing dynamically.

Table 8: Commodity structure of agricultural trade of V4 countries

	2000	2001	2002	2 003	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

Source: Comtrade, own processing, 2012

Only in the years 2000 – 2012, the value of mutual agricultural trade rose from approximately USD 1.1 billion to almost USD 10 billion – which shows an exceptional growth rate of mutual trade, which ranged around a level of approximately 20% within the monitored period. 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 the following: meat and meat products, sugar and candy products, live animals, milk and dairy products and vegetable and animal fats and oils.

The following Tables 9 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 the individual monitored countries. The tables show the especially bad situation of Slovakia, which has a long-term negative balance in the case of agricultural trade in relation to the territory of the V4 countries. In the case of 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. In the case of the Czech Republic, the positive balance within the territory of the V4 countries is caused by a distinctly positive balance in relation to Slovakia.

Table 9: 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

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

Source: Comtrade. own processing. 2012

The last part of this sub-chapter provides an overview of the distribution of comparative advantages on a bilateral level among individual countries of the Visegrad group, specifically in terms of the individual traded aggregations. 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 regard to the global and European market, or even in relation to 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 in the case of imports, but also in the case of exports. Those are, in the case of the Czech Republic, growing 17% annually on average, and by nearly 22% in the case of Slovakia. The above thus clearly proves the existence of comparative advantage - if not on the level of overall agricultural trade, then at least on the level of individual aggregations, which represent the motor for the actual growth of realized agricultural trade.

Table 11 provides an overview of the distribution of comparative advantages in the case of 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.

Table 11: 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	Tot. 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

The results show (for the year 2012) that the Czech Republic has, in relation to Hungary, comparative advantages in the case of 7 monitored aggregations, in the case of 6 aggregations in relation to Poland, and in relation to Slovakia there are 10 competitive aggregations. Slovakia has, in relation to Hungary, comparative advantages in the case of 8 aggregations, in the case of 7 aggregations in regard to Poland, and Slovakia achieves comparative advantages in the case of 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 there was a comparative advantage 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 in the case of Hungary.

7. 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 analyzed 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 in regard to EU countries. Such countries participate in the agricultural trade of the individual countries of the V4 group at a rate of over 80%. Third countries represent only a marginal market in regard to the sale of agricultural products from the V4 countries, and their position is slightly more significant in relation to agricultural imports primarily of tropical and subtropical products going onto the markets of the V4 countries. In regard to the territorial structure of the agricultural trade of the V4 countries, it may generally be stated that it is relatively stable in time.

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

growth in terms of realized trade; however – only in the case of Poland was the growth in the dynamicity of exports so substantial that the resulting balance of Polish agricultural trade moved from negative values to positive values. A specific country in terms of the development of the commodity structure and the value of agricultural trade is Hungary. At the beginning of the monitored period, it was the only country of the V4 group with a positive balance in agricultural trade. Nevertheless, structural problems of the Hungarian economy also led to significant problems in the area of the development of the agricultural sector and agricultural trade. The result is the gradual reduction in the field of the development of a positive balance of the Hungarian agro-trade and a decline in the importance of the agricultural sector – or agricultural trade – as a significant source of the positive trade balance of Hungarian merchandise trade.

If we focus on the actual objective of the article, which was to identify the comparative advantages of agricultural trade of the V4 countries in the area of commodity structure and territorial structure, both in relation to the global market, as well as in relation to the EU countries, and also in relation to the "own internal market" of the V4 group countries – all of which is for the purpose of ascertaining the most significant changes that occurred in the field of agricultural trade of the individual countries within the years of 2000 – 2012, the following may 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. However, Poland as the only representative of the V4 countries does have 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 (to the market of third countries). If we focus further on the distribution of comparative advantages within the mutual trade of the V4 countries (The most competitive aggregations of individual analysed countries within V4 market are the following: Czech Republic (S3-00, S3-03, S3-04, S3-08, S3-09), Slovakia (S3-00, S3-02, S3-04, S3-06, S3-07), Hungary (S3-05, S3-08, S3-11, S3-12, S3-42) and Poland (S3-01, S3-02, S3-03, S3-05, S3-07, S3-09, S3-12).) – we can state that Poland clearly dominates. Hungarian export is also capable of gaining comparative advantages in some years in relation to the market of the V4 countries. However, Czech and Slovak agricultural trade as a whole is profiled as uncompetitive within the whole of the space of the V4 countries. Nevertheless, it is appropriate to emphasize

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that although Czech and Slovak agricultural trade, in comparison with Hungarian and primarily Polish agricultural trade, appears to be uncompetitive, the value of both agricultural trade of the Czech Republic as well as the agricultural trade of Slovakia is constantly increasing, both in relation to realized exports, as well as in relation to realized imports. Primarily in relation to the growth of agricultural exports, it may be stated that the Czech Republic and Slovakia, although they do not have comparative advantages at the level of overall agricultural trade, are capable of gaining at least partial comparative advantages at the level of individual aggregations representing agricultural trade.

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