

Structure and Competitiveness of Mutual Agrarian Trade of Visegrad Countries

Miroslav Svatoš, Luboš Smutka

Abstract: *Agricultural trade in the case of all of the analyzed countries (the Visegrad group, or only V4) represents only a minor part of the merchandise trade. The overwhelming majority of agricultural trade – export as well as import – is conducted in relation to EU countries. V4 market is also important for all analyzed countries. The share V4 market in individual V4 countries merchandise trade performance is about one fifth. If we focus on the actual objective of the article, which is to identify the comparative advantages of agricultural trade of the V4 countries in the area of commodity structure and territorial structure in relation to “their own internal market” of the V4 group countries, the following may be stated. Within the scope of mutual trade competition (2010), Poland is of course in the best positions (it controls about one third of total exports realized within V4 market). Taking in consideration the mutual trade balance among individual countries – results are the following (2000 – 2010). Polish and Czech agrarian trade is able to reach positive trade balance in relation to V4 market on the other hand Hungarian and Slovakian agrarian trade is in deficit. If we focus further on the distribution of the comparative advantages within the scope of mutual trade of the V4 countries – then it may be stated that Poland clearly dominates. Hungarian export in relation to the market of the V4 countries is also able to gain comparative advantages in some years. However, Czech and Slovak agricultural trade as a whole profile themselves as uncompetitive within the whole area of the V4 countries. But it should be mentioned that despite of Czech and Slovak total agrarian trade is not competitive, individual its segments are able to reach comparative advantages especially at the bilateral level.*

Key Words: Agricultural Trade · Visegrad Group · Competitiveness · Structure · Commodities · Territories

JEL Classification: F10 · F15 · Q17 · Q18

1 Introduction and literary survey

Agricultural trade itself together with agricultural production represent the key factors stabilizing the development of society anywhere in the world (Aksoy and Benghin, 2004). For such reason, agricultural production and trade in agricultural and food production thus become a part of the strategic planning of all economies in the world (Potter and Tilzey, 2007). The regional cooperation in this case is a very important instrument supporting individual countries' economy strategies.

The article focuses on the development of agricultural trade of four central European countries that are joined by a common history and strong economic and political ties. The individual countries of today's Visegrad group (Czech Republic, Slovakia, Poland and Hungary) – hereinafter referred to as the V4 countries – have, within the past years, undergone stormy development, which has very significantly affected the structure of their economies including the agricultural sector and trade in agricultural products (Lukas and Mládek, 2006).

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Table 1 Territorial structure of agricultural trade of individual V4 countries in relation to selected trade partners (2010)

Import (mil USD)						Export (mil USD)				
Import	Czech R.	Hungary	Poland	Slovakia	V4	Czech R.	Hungary	Poland	Slovakia	V4
Czech R.	0.0	212.1	440.9	928.2	1581.1	0.0	258.3	1070.4	684.4	2013.2
Hungary	265.2	0.0	250.0	330.4	845.6	216.1	0.0	610.7	672.4	1499.2
Poland	1007.5	568.1	0.0	444.2	2019.8	480.6	265.5	0.0	272.5	1018.6
Slovakia	499.9	325.6	245.1	35.8	1106.4	1431.5	624.3	515.9	0.0	2571.8
EU15	3790.8	2434.6	7629.2	1033.2	14887.8	2176.5	2865.9	9871.5	549.8	15463.7
EU12	1847.2	1389.9	1228.9	1784.0	6249.9	2335.4	2381.6	3395.9	1841.5	9954.5
V4	1772.6	1105.8	936.0	1738.5	5552.9	2128.2	1148.1	2197.0	1629.3	7102.7
Share in total agrarian import						Share in total agrarian export				
Czech R.	0.0%	5.2%	3.4%	23.4%	5.7%	0.0%	4.0%	6.4%	27.5%	6.6%
Hungary	4.0%	0.0%	1.9%	8.3%	3.0%	4.4%	0.0%	3.6%	27.0%	4.9%
Poland	15.1%	13.8%	0.0%	11.2%	7.3%	9.7%	4.1%	0.0%	11.0%	3.3%
Slovakia	7.5%	7.9%	1.9%	0.9%	4.0%	29.0%	9.6%	3.1%	0.0%	8.4%
EU15	57.0%	59.1%	58.3%	26.0%	53.5%	44.1%	44.1%	58.8%	22.1%	50.3%
EU12	27.8%	33.8%	9.4%	45.0%	22.5%	47.3%	36.6%	20.2%	74.0%	32.4%
V4	26.6%	26.9%	7.2%	43.8%	20.0%	43.1%	17.7%	13.1%	65.5%	23.1%

Source: UN COMTRADE, 2012 and own processing

Table 2 Comparative advantages of agricultural trade of the V4 countries in relation to selected trade partners (2010)

LFI 2010	CR - in relation To	Hungary – in relation to	Poland – in relation to	Slovakia – in relation to
Czech R.	N/A	1.3	3.5	-2.4
Hungary	-1.3	N/A	2.7	-1,3
Poland	-3.5	-2.7	N/A	-2.9
Slovakia	2.4	1.3	2.9	N/A
EU15	-1.9	-0.2	0.5	-1.6
EU12	-0.4	0.7	3.2	-2.0
V4	-0.4	-1.0	2.5	-2.3

Source: UN COMTRADE, 2012 and own processing

The agricultural sector suffered very significant losses in the period of the transition from a centrally planned economy to a market economy (Bartosova, Bartova and Fidrmuc, 2008). Reforms pertaining to the restructuring of the national economy very significantly affected the scope and position of the agricultural sector within the economies of the individual countries. Such development resulted in a decline in the level of self-sufficiency of the individual countries in regard to supplying their own markets. Agricultural trade was also affected by a number of changes that occurred within such period. The changes pertained to both exports as well as imports. In the course of the period of the transformation of the economy, agricultural trade in the V4 countries changed its form very significantly (Smutka and Belova, 2011). The importance of agricultural trade within the national economy gradually declined. The share of agricultural export in the total export fell, in the case of all of the V4 countries, below 10 % (in the case of the Czech Republic and Slovakia, there was also a much more significant reduction, as the position of the agricultural sector in these two countries is not as significant as it is in the case of Poland and Hungary) (World Bank, 2012). The

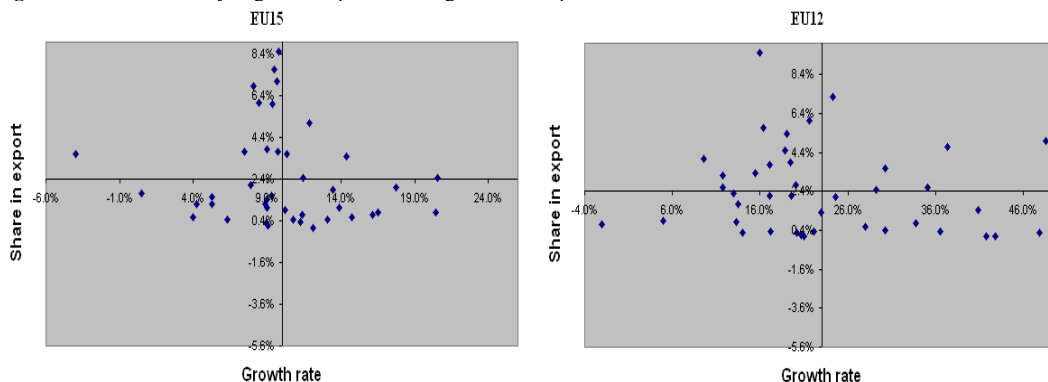
Visegrad group countries are members of the European Union². For details at the territorial structure of agricultural trade see the table 1. The table provides also information about the share of EU15 (old EU members) and EU12 (new EU members) in individual V4 members' total agrarian trade. If we compare provided data, we can see that V4 market plays an important role especially in Czech, Slovak and Hungarian agrarian trade development. Very important problem of V4 countries mutual trade is individual countries competitiveness. Within the last two decades competitiveness of individual countries changed significantly. The Table 2 provides a brief overview about competitiveness of individual V4 members' agrarian foreign trade. The results coming from LFI index (for details – see methodology) analysis provide the following findings. Slovak agrarian trade does not have any competitive advantage in relation to any selected trade partner. Czech agrarian trade is able to reach competitive advantage only in relation to the Slovak Republic. Hungarian agrarian trade is competitive in relation to new EU members and in relation to V4 market – it is able to get comparative advantage in relation to the Czech Republic and Slovakia. While the above mentioned countries are able to reach only limited agrarian trade competitiveness, Poland is able to get competitive advantage in relation to all selected partners and territories.

2 Material and methods

The text in question focuses on the issues of the development of agricultural foreign trade of the Visegrad group countries (Czech Republic, Hungary, Poland and Slovakia). The main emphasis is placed upon the analysis of the mutual trade under way between the V4 group countries themselves in order to reveal the changes in the commodity structure and territorial structure of the mutual trade, as well as to also uncover the changes that occurred in the area of the distribution of the comparative advantages that have a direct impact on the development in the area of export effectiveness of individual countries, and which also have an impact on the development of the actual balance of the effected agricultural trade. The paper is a part of research conducted in cooperation between the

² It should be mentioned that all analyzed countries became new EU members only a few years ago. A specific characteristic that sets the old and new EU member countries apart from each other is the process of the restructuring of the agricultural market. While the old member countries have already gone through the restructuring process long ago, such process is not even close to being finished in the case of the new member countries (including V4 members). The following two groups of figures bring our attention to the differences existing between both groups of country the value of the agricultural trade (in the period of 2004-2010) is, in the case of the individual aggregations (SITC) significantly higher in the case of the EU12 countries (including V4 members) as EU15 countries.

Figure1 BCG matrix analyzing the composition of agricultural export of EU15 and EU12 countries



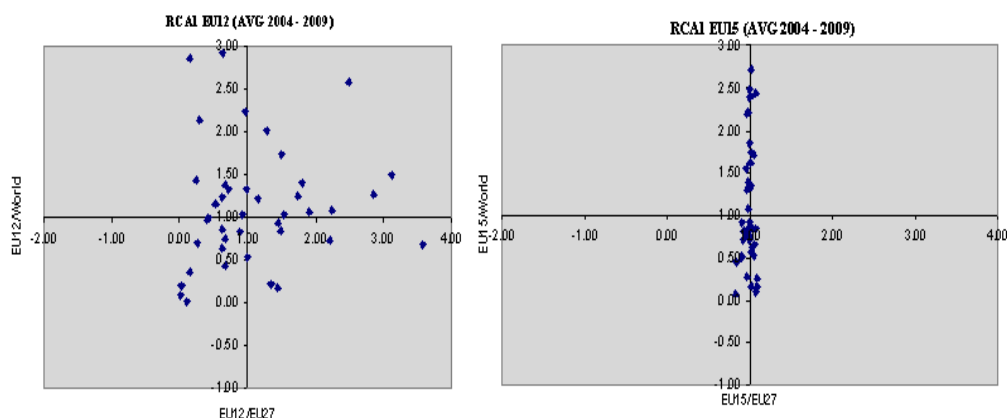
Source: UN Comtrade (2012) and own processing

Czech university of Life Sciences in Prague and Slovak agricultural university in Nitra. The partial results of research were already published in Prague and Nitra.

The entire text is (if the data allowed for it) compiled from the viewpoint of the development of agricultural trade and other variables relating thereto within the scope of time including the period of the years 2000 - 2010.

In terms of the uniformity of the data source, the UN COMTRADE database was selected as the central source of data. The selected database enables the monitoring of the development of merchandise trade (including its agricultural and food sections) according to the Standard International Trade Classification (SITC). The selected nomenclature enables the classification of merchandise trade into ten basic commodity classes (individual classes subsequently contain thousands of individual items representing the final structure of merchandise trade). For the purposes of the conducted analysis, the processed data are on the agricultural trade level (sum of SITC aggregations 0, 1 and 4), trade in fuels and mineral resources (sum of SITC aggregations 2 and 3), and, further, trade in processed industrial products (sum of SITC aggregations 5, 6, 7 and 8). In view of the fact that the main objective of the article in question is primarily the analysis of the competitiveness of agricultural trade of the individual V4 countries, it is divided up into 15 aggregations for the purposes of a more detailed analysis of agricultural trade. The following tables 3, 4 and 5 provides a brief overview of SITC nomenclature used for the analysis.

Figure 2 Analysis of competitiveness of agricultural export of EU12 and EU15 countries on the market of the EU27 countries and on the world market



Source: UN Comtrade (2012) and own calculations

Further, the figure also shows the fact that basic characteristics (the share of individual aggregations in the total agricultural trade and the rate of growth of their value) have, in the case of the EU15 countries, a tendency to concentrate (whereby the individual aggregations do not have the tendency any longer to significantly lose their position in terms of a market that has already been profiled), while in the case of EU12 countries (including V4 members), one can see that the commodity structure of agricultural trade after entry into the EU is still adapting (in this case, significant changes in the area of the position of individual aggregations within agricultural trade demonstrate a significant dispersion of average rates of growth of the value of trade) to the situation within the EU15 countries, where there is already a stabilized situation. Figure 2 then illustrates the fact that while agricultural trade of the EU15 countries is, in relation to the single market, already internally balanced, which is evidenced by the value of the RCA1 index nearing one, in the case of the EU12 countries (including V4 members) the commodity structure is continually profiling itself and is still adapting to the conditions of the internal market. In comparison with the EU15 countries, the value of the RCA1 index characterizing the comparative advantages of agricultural trade of the EU12 countries in relation to the internal market of the EU27 significantly diverges.

Table 3 SITC – Basic classification of merchandise trade

SITC (code)	Aggregation
0	Food and live animals
1	Beverages and tobacco
2	Crude materials, inedible, except fuels
3	Mineral fuels, lubricants and related materials
4	Animal and vegetable oils, fats and waxes
5	Chemicals and related products, n.e.s.
6	Manufactured goods classified chiefly by material
7	Machinery and transport equipment
8	Miscellaneous manufactured articles
9	Commodities and transactions not classified elsewhere in the SITC

Source: UN COMTRADE, (2012)

Table 4 SITC – Basic classification of merchandise trade

SITC (code)	Aggregation
0, 1, 4	Agricultural and foodstuff products
2, 3	Fuels and raw materials
5, 6, 7, 8, 9	Manufactures

Source: UN COMTRADE, 2012

Table 5 List of aggregations representing commodity structure of agricultural trade

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.preprtns, honey	S3-43	Animal veg. fats oil. nes
S3-07	Coffee, tea, cocoa, spices		

Source: UN COMTRADE, 2012

The actual data obtained from the above-mentioned database are processed in terms of the development of the actual value of the effected exchange (in current prices in American dollars USD). The prices and values of effected exports are generally expressed in prices F.O.B., while the value and prices of imports, if they are used, are generally expressed in prices C.I.F.

The analysis itself focuses on the issues of agricultural trade of individual V4 countries in relation to agricultural trade in V4 market area. It is conducted by way of the utilization of basic statistical characteristics, such as the basic index, chain index and geometric mean. A great portion of the analysis is also conducted by way of indices, the objective of which is the characterization of the comparative advantages of individual V4 members agricultural export (the work utilizes modified Ballas indices RCA, and the Lafaye index is also used). The Ballasa index provides a simple overview of the comparative advantage distribution (e.g., Proudman and Redding, 2000; Hinloopen and Marrewijk, 2001).

Revealed comparative advantage index (RCA1 – global/regional level)

$$RCA1 = \frac{\frac{x_{ij}}{x_{nj}}}{\frac{x_{it}}{x_{nt}}} \quad (1)$$

where:

- X represents exports;
 i represents the analyzed country;

- j represents the analyzed sector of the economy (sector of industry or commodity);
 n represents the group of countries or world;
 t represents the sum of all sectors of the economy or the sum of all commodities or the sum of all branches

The RCA1 index analyzes the exporting of commodity “ j ” in the case of country “ i ” in proportion to the total exports of the given country and the corresponding total exports of the analyzed group of countries or of the whole world (Hinloopen and Marrewijk, 2001; Utkulu and Seymen, 2004). A comparative advantage is then proven if the *RCAI* index value is greater than 1. If, however, the result of the calculated index is less than 1, it may be asserted that the given country has a competitive disadvantage in the case of the given commodity or group of commodities (Qineti, Rajcaniova and Matejkova, 2009). The bilateral comparative advantage of total agrarian trade also individual items of the Czech, Hungarian, Polish and Slovakian agrarian export with respect to selected countries is analysed by means of the Lafay index. Apart from export flows, the Lafay index (hereinafter only the *LFI* index) also takes into account import flows. As opposed to the standard *RCA* index, its advantage is its ability to take into account the intersectoral trade and also re-export. In this respect, its information value is stronger as compared to the traditional index of the obvious comparative advantage (Balassa, 1965). It is suitable to utilize this index in the cases when a relationship between two business partners is analysed. The advantage of the *LFI* index as compared to the *RCA* index is also its ability to include any distortions caused by macroeconomic fluctuations (Fidrmuc, Grozea-Helmenstein and Wörgötter, 1999). The *LFI* index enables to analyse the position of every specific product within the foreign trade structure of every specific analysed country or a group of countries (Zaghini, 2003). The *LFI* index for the given “ i ” country and for every “ j ” analysed product or group of products is defined in the following formula.

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

$x^i j$ and $m^i j$ represent exports and imports of “ j ” product realized by “ i ” country or a group of countries with respect to the rest of the world or with respect to a selected business partner (partner country). “ N ” is the number of analysed items (Lafay, 1992). The positive value of the *LFI* index indicates existence of a comparative advantage within the analysed traded aggregation or a group of aggregations in question. The higher is the resulting value of the index, the higher is the level of specialization of the country in question as regards trade with the given item or a group of items representing agrarian and food trade in this case. And vice versa, the negative value of the *LFI* index signals that specialization and hence comparative advantages are lacking (Zaghini, 2005).

3 Results and discussion

Mutual trade of the V4 countries – commodity structure and territorial structure (with emphasis on agricultural trade)

Individual V4 members are linked through intensive merchandise trade flows. The value and volume of trade products are constantly increasing. During the last decade we became witnesses of dynamic growth of their mutual trade. Table 6 provides a detailed overview of realized merchandise trade flows between the individual V4 members. The mentioned data illustrates that in terms of the market of the V4 countries, the dominant aggregation being traded is processed industrial products. The share of agricultural trade in the total trade flows realized within the market of the V4 countries only ranges around the 10% level.

The most active trader in agricultural and foodstuff products within V4 members is undoubtedly the Czech Republic, which participates in the total agricultural trade realized within the V4 mem-

bers with a share of over 30 % (30 % is the share in the value of exports and approximately 32 % in the value of imports effected within the V4 market). The second place is then held by Slovakia – which, by way of intensive exchange effected between it and the Czech Republic, participates in the trade turnover of the territory of the V4 with a share of approximately 26 % (the share of exports being approximately 3 %, and the share of imports approximately 31 %). Poland participates in the turnover of agricultural trade within the territory of the V4 countries with a share of approximately 25 % (export 31 % and import approximately 17 %) and Hungary participates with a share of approximately 17 % (export 16.2% and import 20 %).

Table 6 Commodity structure of foreign trade of the V4 countries in relation to the market of the V4 countries

Export		bil. USD	2000	2004	2008	2010	Inter Annual growth rate (GEOMEAN)
Czech R.	V4	Agriculture	0.45	0.90	2.45	2.13	1.167
Czech R.	V4	Fuels and Raw mat.	0.39	1.02	2.82	2.78	1.215
Czech R.	V4	Processed products	3.50	8.82	20.74	16.76	1.169
Czech R.	V4	Total trade	4.35	10.74	26.01	21.66	1.174
Slovakia	V4	Agriculture	0.23	0.58	1.47	1.63	1.217
Slovakia	V4	Fuels and Raw mat.	0.72	1.40	3.03	2.58	1.136
Slovakia	V4	Processed products	2.39	4.74	13.63	13.49	1.189
Slovakia	V4	Total trade	3.34	6.72	18.12	17.70	1.181
Hungary	V4	Agriculture	0.21	0.37	1.10	1.15	1.184
Hungary	V4	Fuels and Raw mat.	0.10	0.24	0.56	0.50	1.181
Hungary	V4	Processed products	1.01	3.36	10.94	9.30	1.248
Hungary	V4	Total trade	1.32	3.97	12.60	10.96	1.236
Poland	V4	Agriculture	0.23	0.66	2.22	2.20	1.253
Poland	V4	Fuels and Raw mat.	0.31	1.17	2.08	1.93	1.199
Poland	V4	Processed products	1.67	4.56	14.04	13.70	1.234
Poland	V4	Total trade	2.21	6.40	18.34	17.83	1.232
Import		bil. USD	2000	2004	2008	2010	Inter Annual growth rate GEOMEAN)
Czech R.	V4	Agriculture	0.35	0.76	1.86	1.77	1.178
Czech R.	V4	Fuels and Raw mat.	0.63	1.59	2.84	2.22	1.135
Czech R.	V4	Processed products	2.63	5.84	15.07	12.53	1.169
Czech R.	V4	Total trade	3.60	8.19	19.76	16.52	1.165
Slovakia	V4	Agriculture	0.32	0.61	1.83	1.74	1.186
Slovakia	V4	Fuels and Raw mat.	0.27	0.96	1.81	1.85	1.210
Slovakia	V4	Processed products	1.95	4.58	11.01	8.80	1.163
Slovakia	V4	Total trade	2.54	6.15	14.66	12.39	1.172
Hungary	V4	Agriculture	0.11	0.49	1.10	1.11	1.256
Hungary	V4	Fuels and Raw mat.	0.29	0.57	1.23	0.76	1.103
Hungary	V4	Processed products	1.40	3.79	8.85	6.93	1.173
Hungary	V4	Total trade	1.80	4.84	11.18	8.80	1.172
Poland	V4	Agriculture	0.30	0.39	1.10	0.94	1.122
Poland	V4	Fuels and Raw mat.	0.28	0.61	1.95	1.49	1.182
Poland	V4	Processed products	2.41	5.30	11.89	10.67	1.160
Poland	V4	Total trade	2.99	6.31	14.93	13.10	1.159

Source: UN COMTRADE, 2012 and own processing

In terms of the distribution of comparative advantages within the market of the V4 countries, it achieves long-term comparative advantages in the case of industrial products, and Slovakia achieves comparative advantages in the field of trade in fuels and mineral resources, Hungary has comparative advantages in relation to trade in processed industrial products and agricultural products, and Poland has a comparative advantage primarily in the case of trade in agricultural production. How-

ever, it may be stated generally that the results of the analysis of the distribution of *RCAI* index values within the territory of the V4 countries point to the fact that all of the countries have a tendency to specialize in the area of trade in processed industrial production, where the value of the *RCAI* 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 *RCAI* index value, which shows that the comparative advantages of Hungarian agricultural trade are gradually fading away. More detailed data pertaining to the development of *RCAI* index values can be found in the following table 7. The table shows, among other things, a high dynamic in the rate of growth of the value of internal trade of the V4 countries. The dynamic of growth of mutual trade exceeds the average dynamic of growth of agricultural trade on the market of the EU countries, as well as on the world market. The above shows that barriers to mutual trade between the V4 countries are disappearing much faster than in the case of barriers to trade in relation to other territories.

Table 7 Distribution of comparative advantages of individual goods segments carried out by the V4 countries amongst themselves mutually

Export		RCAI	2000	2002	2004	2006	2008	2010
Czech R.	V4	Agriculture	1.03	0.96	0.93	0.94	0.98	0.94
Czech R.	V4	Fuels and Raw mat.	0.66	0.83	0.69	0.83	0.96	1.12
Czech R.	V4	Processed products	1.05	1.03	1.06	1.03	1.01	1.01
Slovakia	V4	Agriculture	0.68	0.88	0.96	1.02	0.84	0.88
Slovakia	V4	Fuels and Raw mat.	1.58	1.52	1.51	1.52	1.48	1.27
Slovakia	V4	Processed products	0.94	0.92	0.91	0.92	0.95	0.98
Hungary	V4	Agriculture	1.58	1.31	1.03	0.67	0.91	1.01
Hungary	V4	Fuels and Raw mat.	0.56	0.40	0.44	0.29	0.39	0.40
Hungary	V4	Processed products	1.00	1.07	1.10	1.14	1.10	1.09
Poland	V4	Agriculture	1.03	1.02	1.14	1.30	1.26	1.18
Poland	V4	Fuels and Raw mat.	1.03	1.09	1.32	1.25	1.00	0.95
Poland	V4	Processed products	0.99	0.98	0.92	0.93	0.97	0.98

Source: UN COMTRADE, 2012 and own processing

Mutual agricultural trade of the countries of the Visegrad group

As was already stated above, agricultural trade of the V4 countries represents only a marginal share of the total mutual merchandise trade. The above also shows the participation of the individual countries in the mutual agricultural trade and the distribution of comparative advantages in terms of the market of the V4 countries. The following text focuses on a detailed analysis of the commodity structure and territorial structure of agricultural trade of the V4 countries. The data set out in Table 8 shows that the value of mutual trade among the V4 countries is growing dynamically. Only in the years 2000 – 2010, the value of mutual agricultural trade rose from approximately USD 1.1 billion to more than USD 7 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 (14.5 %), vegetables and fruit (12.5 %), milk and dairy products (11.4 %), meat and meat products (10.8 %), stimulants (10.9 %) and beverages (7.3 %). Further, in terms of the dynamics of growth in value, the most distinctly growing aggregations include the following: meat and meat products (35 % / year), sugar and candy products (29 % / year), live animals (28 % / year), milk and dairy products (24 % / year) and vegetable and animal fats and oils (22-23 % / year).

Table 8 Commodity structure of agricultural trade of V4 countries

mil. USD	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Exports	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4
S3-00	18.7	20.7	26.4	27.5	64.0	89.0	143.3	165.6	162.2	149.7	216.5
S3-01	51.3	52.3	76.7	87.2	166.0	376.1	441.4	589.4	821.4	855.6	1050.1
S3-02	94.2	108.9	120.9	155.8	268.9	416.9	542.5	695.1	887.5	718.2	830.9
S3-03	22.3	25.9	28.6	33.5	48.9	60.2	71.3	88.0	107.5	110.1	114.8
S3-04	224.6	212.4	211.3	280.2	354.2	418.2	583.8	877.8	1189.9	873.5	931.2
S3-05	155.4	188.6	203.4	256.3	373.1	493.3	558.6	735.2	856.5	706.9	765.9
S3-06	47.6	57.2	73.0	79.9	172.7	211.8	315.5	411.3	412.5	435.4	624.4
S3-07	150.2	172.8	195.6	266.8	336.7	409.5	491.4	581.4	683.1	666.3	659.3
S3-08	50.8	58.4	64.6	78.3	104.2	141.1	175.1	258.5	372.9	276.8	321.8
S3-09	138.6	135.6	165.7	178.6	242.7	341.6	377.7	485.5	638.6	522.9	512.2
S3-11	68.4	79.2	101.9	120.5	187.4	267.0	312.9	438.0	532.7	487.8	477.7
S3-12	61.2	68.2	150.0	106.4	110.1	188.6	201.7	312.4	282.0	293.1	271.9
S3-41	4.0	5.4	7.1	11.3	15.6	12.7	14.9	16.3	19.9	23.8	28.9
S3-42	31.4	36.1	25.2	34.8	52.9	60.0	64.7	80.1	225.9	219.6	258.9
S3-43	8.5	6.1	6.1	8.7	16.4	19.8	20.1	25.6	40.3	86.7	38.3
Total	1127.2	1227.8	1456.6	1726.0	2513.9	3506.0	4315.0	5760.3	7233.0	6426.3	7102.7
	Inter - annual growth rate – chain index										
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2001-2010
S3-00	1.103	1.279	1.042	2.324	1.391	1.610	1.155	0.980	0.923	1.446	1.277
S3-01	1.018	1.468	1.137	1.902	2.266	1.173	1.335	1.394	1.042	1.227	1.352
S3-02	1.156	1.111	1.289	1.725	1.551	1.301	1.281	1.277	0.809	1.157	1.243
S3-03	1.163	1.102	1.173	1.459	1.231	1.185	1.234	1.221	1.025	1.043	1.178
S3-04	0.946	0.995	1.326	1.264	1.181	1.396	1.503	1.356	0.734	1.066	1.153
S3-05	1.214	1.078	1.260	1.456	1.322	1.132	1.316	1.165	0.825	1.083	1.173
S3-06	1.201	1.275	1.095	2.163	1.226	1.490	1.303	1.003	1.056	1.434	1.293
S3-07	1.151	1.132	1.364	1.262	1.216	1.200	1.183	1.175	0.975	0.989	1.159
S3-08	1.150	1.106	1.212	1.330	1.354	1.241	1.476	1.443	0.742	1.163	1.203
S3-09	0.978	1.222	1.078	1.359	1.407	1.106	1.285	1.315	0.819	0.979	1.140
S3-11	1.158	1.287	1.182	1.555	1.424	1.172	1.400	1.216	0.916	0.979	1.215
S3-12	1.114	2.199	0.709	1.035	1.713	1.069	1.549	0.903	1.039	0.928	1.161
S3-41	1.375	1.307	1.594	1.373	0.815	1.177	1.093	1.221	1.194	1.214	1.220
S3-42	1.149	0.698	1.382	1.519	1.134	1.078	1.238	2.820	0.972	1.179	1.235
S3-43	0.717	1.007	1.414	1.895	1.207	1.013	1.273	1.575	2.153	0.442	1.163
Total	1.089	1.186	1.185	1.456	1.395	1.231	1.335	1.256	0.888	1.105	1.202

Source: UN COMTRADE, 2012 and own processing

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 10 provides a detailed overview of the commodity structure of mutual trade of the V4 countries. In general, the table shows that the V4 countries have a very similar commodity structure in mutual trade, both in relation to effected exports, as well as imports. Thus, the above shows that there is very significant competition between the individual countries in terms of agricultural trade.

Such competition is also further strengthened by a very similar profile of the individual economies and similar production focus, both on the level of agricultural production, as well as on the level of food production.

Table 9 Position of individual member countries within agricultural trade carried out among the V4 member countries themselves

Mil. USD		2000	2002	2004	2006	2008	2010	2000-10
V4	Trade	1127.2	1456.6	2513.9	4315.0	7233.0	7102.7	42394.7
Czech R.	Export	454.9	603.2	900.8	1379.3	2446.5	2128.2	14222.8
Czech R.	Import	355.2	465.9	830.5	1384.3	2127.8	2013.2	12975.0
Czech R.	Balance	99.7	137.3	70.3	-5.0	318.7	115.1	1247.7
Hungary	Export	212.7	231.2	369.1	517.5	1097.1	1148.1	6104.1
Hungary	Import	316.3	306.2	443.5	703.2	1217.4	1018.6	7091.9
Hungary	balance	-103.6	-75.1	-74.4	-185.7	-120.4	129.5	-987.9
Poland	Export	230.2	300.6	662.3	1382.9	2220.0	2197.0	12414.0
Poland	Import	120.9	182.5	496.6	909.7	1418.6	1499.2	8329.8
Poland	balance	109.3	118.1	165.7	473.2	801.4	697.8	4084.2
Slovakia	Export	229.4	321.7	581.7	1035.4	1469.3	1629.3	9653.9
Slovakia	Import	334.8	502.0	743.2	1317.9	2469.1	2571.8	13997.9
Slovakia	balance	-105.4	-180.3	-161.5	-282.5	-999.8	-942.4	-4344.1

Source: UN COMTRADE, 2012 and own processing

Table 10 Mutual V4 agricultural trade flows in the period of 2000 – 2010 (Mil. USD)

	Part.	S3-00	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S3-08	S3-09	S3-11	S3-12	S3-13	S3-14	S3-15
CZ	H	14.7	25.2	38.1	4.8	19.3	15.1	15.3	24.7	4.1	27.0	17.7	2.3	0.1	5.8	1.8
CZ	PL	22.4	15.3	37.3	6.8	147.6	30.9	16.4	33.2	52.2	48.2	36.9	7.5	0.0	23.5	2.5
CZ	SK	31.5	222.0	142.4	36.9	119.9	246.1	44.8	98.8	63.7	112.5	157.2	71.3	2.9	77.8	3.9
SK	CZ	16.9	78.8	83.8	5.5	102.6	87.6	55.2	92.2	13.6	40.9	58.0	0.2	1.4	35.8	11.8
SK	H	56.4	89.7	90.3	2.9	94.3	44.1	171.1	48.2	12.9	20.7	8.3	1.4	8.6	11.4	12.1
SK	PL	19.8	16.5	7.1	0.4	97.8	11.6	40.5	35.9	13.8	15.0	5.7	0.0	0.7	7.5	0.3
H	CZ	2.4	47.2	5.7	0.1	18.9	29.7	36.0	24.3	27.6	22.8	31.2	0.8	0.2	11.4	0.0
H	PL	1.9	20.4	14.0	0.9	39.9	68.4	16.8	17.9	47.7	13.5	13.1	3.2	0.7	7.0	0.0
H	SK	14.1	92.5	31.2	0.4	105.1	41.1	145.5	74.9	14.0	14.4	48.4	0.5	3.1	36.4	2.9
PL	CZ	2.1	236.0	180.8	32.0	94.9	111.5	31.8	115.5	25.5	106.7	41.9	62.9	2.0	24.5	2.2
PL	H	33.8	93.5	98.8	12.9	49.3	35.9	22.2	57.9	16.1	55.3	35.4	86.4	6.5	6.1	0.6
PL	SK	0.5	112.9	101.3	11.3	41.7	43.9	28.9	35.7	30.4	35.1	23.9	35.7	2.6	11.8	0.3

Source: UN COMTRADE, 2012 and own processing

The last of the prepared tables (table 11) provides an overview of the distribution of comparative advantages on a bilateral level between 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 16.7 % annually on average, and by nearly 22 % in the case of Slovakia. The above thus clearly shows that there must exist comparative advantages – 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 effected 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 goods aggregations effected between the given economy and its three partners ($3 \times 15 = 45$). The results show (for the year 2010) that the Czech Republic has, in relation to Hungary, comparative advantages in the case of 8 monitored aggregations, in the case of 7 aggregations in relation to Poland, and the Czech Republic has comparative advantages in relation to Slovakia in the case of trade in 8 aggregations (i.e. the Czech Republic has comparative advantages in the case of 23 out of 45 monitored flows). Slovakia has, in relation to Hungary, comparative advantages in the case of 8 aggregations, in the case of 5 aggregations in regard to Poland, and Slovakia achieves comparative advantages in the case of 7 aggregations in relation to the Czech Republic (i.e. 20 out of 45 monitored flows). Hungary achieves comparative advantages in relation to the Czech Republic for 7 aggregations, for 7 aggregations in relation to Slovakia, and there was a comparative advantage for 5 aggregations in relation to Poland (i.e. 19 out of 45 monitored flows). Polish agricultural trade in relation to the V4 countries achieves comparative advantages in the case of the Czech Republic for 8 aggregations, for 10 aggregations in the case of Slovakia, and for approximately 10 aggregations in the case of Hungary 10 (i.e. 28 out of 45 monitored flows).

Table 11 LFI Index – Comparative advantages of agricultural trade among individual V4 countries at the level of individual aggregations representing agricultural trade

	Part.	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
CZ	H	2.9	-3.3	7.7	1.1	0.8	-2.2	-3.4	1	-4.4	1.8	-1.9	0.4	0	-0.8	0.4
CZ	PL	1.9	-8.1	-3.9	-0.7	9.3	-1.7	0.2	-1.7	3.6	0	1.6	-1.8	-0.1	1.1	0.1
CZ	SK	-0.1	1.7	-1	0.8	-2.9	1.9	-2.2	-2.9	1.1	0.8	1.1	2.2	0	0.1	-0.6
SK	H	3.1	-0.7	4.2	0.2	-1.4	0	1.1	-2.4	-0.2	0.4	-3.3	0.1	0.4	-2.1	0.7
SK	PL	3.2	-7.2	-7.7	-0.9	12.6	-1.9	4.2	2.8	-0.4	-0.6	-1.1	-3.1	-0.1	0.2	0
H	PL	-2	-3.2	-4.6	-0.8	2.9	8.4	1.1	-1.2	6.5	-1.7	-0.4	-5.5	-0.3	0.7	0

Source: UN COMTRADE, 2012 and own processing

4 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 minor part of the total 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 in relation to the “own internal market” of the V4 group countries – the following may be stated. The comparative advantages within the mutual trade of the V4 countries are dominated by Poland. 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 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 effected exports, as well as in relation to effected 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 (this also applies to Polish and Hungarian agricultural trade – where of course not all aggregations have comparative advantages, but where, compared to the Czech Republic and Slovakia, a majority of the monitored aggregations do have comparative advantages).

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