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THE STATE OF AGRI-FOOD EXPORT OF THE VISEGRAD COUNTRIES IN EU MARKETS

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The agri-food export of the Visegrad countries has increased significantly since 2004. Since their EU accession the agri-food export of the V4 countries did not only grow – disregarding the setback in 2009 – but the EU has become their dominating market. The objective of this paper is to analyse the market position of the agri-food products of the Visegrad countries in the EU market. On the basis of the Constant Market Share (CMS) model it can be stated that in the case of each and every country the significant positive competitiveness effect, the value of which was between 58% and 70%, triggered the expansion of the agri-food export. The positive market size effect also played an important role in the growth of the export. For the Visegrad countries this meant 30–40%. However, the structural effect was negligible for each country (-1–4%). This means that the export structure of the Visegrad countries could not adjust properly to the changes of the import structure of the EU markets. On the basis of quality competitiveness the agri-food product groups of the V4 countries – with very few exceptions – have increased their market share in EU markets, which was primarily attainable because of the rising export prices. However, some achieved an increased market share with decreasing export prices. .

Keywords: agri-food export, market share, CMS model, quality competitiveness, Visegrad countries

Introduction

The Czech Republic, Hungary, Poland and Slovakia have always been part of the same civilization, based on the same cultural values and common roots. All four countries, on the transition path to a market economy, encountered similar problems and this led to the creation of a common regional cooperation under the name Visegrad Four (Rajčániová, 2012). The food industry is a significant economic sector of the Visegrad 4 countries with great traditions. Due to their favourable natural endowments these countries are capable of producing food products with excellent quality valuable for the market and competitive in foreign markets (Magda, 2008). In general, the accession had a positive impact upon the sector. It resulted in a consolidation of production, higher current prices, higher export and import quantities, and especially higher farmers' incomes (Csáki and Jámbor, 2009).

Since 2004 agri-food trade of Hungary and Poland showed positive balance on the market of European Union. Likewise in Czech Republic, Slovakia agri-food trade had a similar course, the agri-food import exceeded agri-food export between 2004 and 2011 (Vásáry et al., 2013). Since the EU accession the agri-food export of the V4 countries did not only grow – disregarding the setback in 2009 – but also they have increased their presence in European Union markets (EU intra) compared to non-EU markets (EU extra). Table 1 presents the development of the total export of the Visegrad countries as well as their export to the EU.

Bartová and Fides (2012) note that Slovakia's accession to the EU had a positive impact on the total Slovak agri-food export and export of most commodities. Qineti and Smutka (2012) note that the agricultural trade of Visegrad 4 countries responded positively to the accession of the Czech Republic, Slovakia, Hungary and Poland into the European Union. The external trade value and volume have gradually increased to their present value.

In the case of goods exports and imports, agricultural products have approximately a 7% or 6.2 % share respectively in the total value (2010). In this regard, it is important to state that the value of both agricultural exports as well as imports of the Visegrad 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 (Bielik, Smutka and Horská, 2012).

Material and methods

The data came from the European Commission COMEXT database regarding 2004–2011. Trade is aggregated according to the products and according to the partner countries. The Standard international trade classification (SITC) is

Table 1 Agri-food export of Visegrad 4 countries in million euro

Country	Agri-food export	2004	2005	2006	2007	2008	2009	2010	2011
Czech Republic	total	1 782	2 409	2 597	3 116	3 786	3 408	3 683	4 421
	to the EU	1 542	2 081	2 308	2 835	3 487	3 134	3 366	4 058
Hungary	total	2 674	2 805	3 155	4 214	4 763	4 164	4 976	5 799
	to the EU	2 002	2 109	2 353	3 462	3 850	3 476	4 058	4 721
Poland	total	4 959	6 748	8 082	9 450	10 899	10 788	12 708	14 161
	to the EU	3 672	5 139	6 347	7 608	8 847	8 716	10 057	11 046
Slovakia	total	716	1 075	1 360	1 550	1 625	1 583	1 811	2 287
	to the EU	650	983	1 249	1 480	1 540	1 516	1 739	2 189

Source: Eurostat database 2012

Table 2 Marketability matrix

	Market share change	
Relative export price change	Unmarketable export (Decreasing market share)	Marketable export (Increasing market share)
Increasing relative export price	Price unmarketable	Quality marketable
Decreasing relative export price	Quality unmarketable	Price marketable

Source: Oblath and Pénzes 2004

Table 3 The composition of the growth of the Czech agri-food export by means of the CMS model

Components of CMS model	Value in euro	Share in %
Market size effect	607 753 958	39.40
Structural effect	34 959 343	2.27
Competitiveness effect	899 623 335	58.33
Total gain	1 542 336 636	100.00

Source: own calculation on COMEXT database

a product classification of the United Nations used for external trade statistics (export and import values and volumes of goods), allowing for international comparisons of commodities and manufactured goods.

The Constant market shares (CMS) analysis

The basic presumption underlying the Constant Market Share (CMS) model is that the share of a country in a market should remain constant given the same level of competitiveness. Any difference between the actual change in the exports of the focus country and the sum of the market competitors should be caused by a change in export composition or competitiveness. The CMS analysis is a technique for analysing trading patterns and trends for the purpose of policy formulation (Fertő, 2004).

The formal decomposition of export change

The three components of the market share are calculated with the expression:

$$\Delta X_i = \sum_{ij} \Delta x_{ij} = \sum_{ij} x_{ij}(\Delta M/M) + \sum_{ij} x_{ij}[(\Delta M_j/M_j) - (\Delta M/M)] + \sum_{ij} x_{ij}[(\Delta x_{ij}/x_{ij}) - (\Delta M_j/M_j)]$$

where:

- x – represents the export
- i – a country
- j – a commodity
- M – the demand of external market (the import)
- X_{ij} – the export of country's commodity
- M_j – the total import of commodity

The first part of equation shows the market size effect:

$$\sum_{ij} x_{ij}(\Delta M/M)$$

The second part is the structural effect:

$$\sum_{ij} x_{ij}[(\Delta M_j/M_j) - (\Delta M/M)]$$

The third part is the competitiveness effect (residual part):

$$\sum_{ij} x_{ij}[(\Delta x_{ij}/x_{ij}) - (\Delta M_j/M_j)]$$

in the CMS model (Oblath and Pénzes, 2004).

Quality competitiveness

In the literature of economics the so-called quality marketability is defined as the combination of the relative price change and the relative market share changes. The essence of the method is shown in table 2.

The table puts the products and the groups of products into the coordinates of market share and export change. Obviously the so-called quality marketable products are in the upper right quadrant, which could increase the export in spite of increasing export price. The marketable products are in the bottom right quadrant, they could increase their export by relatively decreasing export price

Results and discussion

Together with the continuous expansion of the European Union the agri-food export of the Visegrad countries shifted towards EU member states while the proportion of non-EU countries decreased significantly in this respect. Therefore it is desirable to scrutinise the agri-food export of the V4 countries in order to be able to identify the development of the competitiveness of the product groups.

Results of CMS model

The evaluation of the Czech food export on the basis of Constant Market Share analysis

The value of the Czech food export into EU markets grew by €1.542 million during the second period (2009–2011) compared to the 2004–2006 one. On the basis of the constant market share the export growth by product groups can be divided into its components according to the following. The market size effect was €608 million, which amounted to 39.4% of the total growth. The structural effect was negligible similarly to other Visegrad countries. In value it came to a mere €58 million, which was 2.3% of the export growth. Therefore we can say that the Czech food export concentrated on products for which EU demand grew at an average rate. The most significant component was the competitiveness effect at 58.3% with a value of €900 million. This is presented in Table 3.

As for product groups the market size effect was positive in all cases. In respect of structural effect the product groups presented a varied image with great deviation. The competitiveness effect showed a positive tendency in the examined period with the exception of Sugar, sugar preparation and honey; Coffee, tea, cocoa, and spices (Table 4).

Table 4 Results of the CMS model for the agri-food export of Czech Republic in euro

Product group	Market size effect	Structural effect	Competitiveness effect
Live animals	8 719 413	91 154 067	30 840 202
Meat, and meat preparation	69 510 267	-145 398 527	113 772 161
Dairy products eggs	48 213 769	127 223 285	143 824 184
Fish, crustaceans molluscs preparation	44 333 956	-193 935 290	14 829 713
Cereals and cereal preparation	72 893 093	157 278 178	273 254 050
Vegetables and fruits	91 001 478	-283 798 684	39 688 389
Sugar, sugar preparation and honey	15 583 898	187 693 061	-66 922 912
Coffee, tea, cocoa, spices	94 986 560	27 129 396	-10 586 428
Feeding stuff for animals	49 330 727	-33 132 870	63 531 870
Miscellaneous edible products and preparation	61 622 586	71 141 960	39 223 207
Beverages	31 313 694	35 418 336	60 541 138
Tobacco and tobacco manufactures	15 912 102	2 802 069	197 627 761
Adjustments	4 332 415	-8 615 637	0
Total	607 753 958	34 959 343	899 623 335

Source: own calculation on COMEXT database

Table 5 The composition of the growth of the Hungarian agri-food export by means of CMS model

Components of CMS model	Value in euro	Share in %
Market size effect	665 973 115	34.51
Structural effect	73 408 922	3.80
Competitiveness effect	1 190 675 324	61.69
Total gain	1 930 057 362	100.00

Source: own calculation on COMEXT database

Table 6 Results of CMS model for the agri-food export of Hungary in euro

Product group	Market size effect	Structural effect	Competitiveness effect
Live animals	9 474 054	63 252 573	25 526 966
Meat, and meat preparation	77 793 536	324 012 493	64 783 305
Dairy products eggs	53 013 982	-161 249 710	136 096 782
Fish, crustaceans molluscs preparation	48 522 532	-267 306 587	-3 553 136
Cereals and cereal preparation	79 884 869	310 501 908	496 720 025
Vegetables and fruits	101 099 905	-114 200 522	111 079 835
Sugar, sugar preparation and honey	16 514 882	87 839 243	104 267 201
Coffee, tea, cocoa, spices	103 874 838	-74 258 560	-12 435 903
Feeding stuff for animals	53 564 390	134 997 429	32 818 271
Miscellaneous edible products and preparation	65 976 894	-8 942 258	149 235 065
Beverages	34 997 593	-129 569 054	46 309 618
Tobacco and tobacco manufactures	16 856 617	-90 740 213	5 854 065
Adjustments	4 399 023	-927 820	33 973 230
Total	665 973 115	73 408 922	1 190 675 324

Source: own calculation on COMEXT database

The evaluation of the Hungarian food export on the basis of Constant Market Share analysis

The value of the Hungarian food export in the EU market increased by €1.930 million by the second period of the examined period (2009–2011) compared to the base period (2004–2006). On the basis of the Constant Market Share the surplus can be divided into its component in respect of product groups as follows. The market size effect was €666 million, which represents 34.5%. Similarly to the pre-accession period – albeit to a lesser extent – the market

size effect was significant. On the other hand, the structural effect amounted to only €73 million which contributed to the export growth only 3.8%. Therefore we can state that the Hungarian food export concentrated on products for which EU demand grew at an average rate. The competitiveness effect was significant and presented 61.7% of the total profit with a value of €1190 million (Table 5).

Table 6 presents the composition of the growth of the Hungarian agri-food export by product groups. The market size effect was positive in all cases. The value of the competitiveness effect was negative only in the case of the product groups of Fish, crustaceans molluscs preparation; Coffee, tea, cocoa, and spices.

Investigating the export of the Hungarian agricultural and food products (HS-24) by CMS model for the period 2001–2003 and 2008–2010 Juhász and Hartmut (2012) stated that the value of export change was €1579 million and the market size effect, the structural effect and the competitiveness effect were all positive.

The evaluation of the Polish food export on the basis of Constant Market Share analysis

The value of the Polish food export in the EU market grew by €4.9 billion by 2009–2011 compared to the 2004–2006 period. On the basis of Constant Market Share the components of the Polish export growth developed as follows in respect of the product groups. The market size effect amounted to €1.5 billion, which gave 30.81% of the total growth. The value of the structural effect came to €-44 million, which decreased the export growth by 0.89%. Therefore we can state that the Polish food export concentrated on products for which EU demand grew at an average rate. Of the Visegrad countries Poland had the greatest competitiveness effect. Its value reached €3.4 billion, which represents a rate of 70% (Table 7).

In respect of the Polish agri-food product groups the market size effect was positive in all cases. Regarding the structural effect the product groups illustrate a varied image. The competitiveness effect was negative only in the case of the product group of live animals (Table 8).

The evaluation of the Slovak food export on the basis of Constant Market Share analysis

The value of the Slovak food export in the EU market grew by €853 million by 2009–2011 compared to the 2004–2006 period. On the basis of Constant Market Share the export growth can be divided into its components in respect of the product groups as follows. The market size effect almost reached €296 million, which was 34.64% of the total growth. Similarly to the other three Visegrad countries the structural effect was low. Its value totalled at €37 million, which is 4.31% of the export growth. Therefore we can state that the Slovak food export concentrated on products for which EU demand grew at an average rate. Just like in the other countries the competitiveness effect was the most significant component for Slovakia with a rate of 61.05% and a value of €521 million.

Table 10 presents the composition of the growth of the Slovak agri-food export by product groups. The market size effect was positive in all cases. The value of the competitiveness effect was positive in all cases with the exception

Table 7 The composition of the growth of the Polish agri-food export by means of CMS model

Components of CMS model	Value in euro	Share in %
Market size effect	1 505 794 140	30.81
Structural effect	-43 727 564	-0.89
Competitiveness effect	3 425 193 377	70.08
Total gain	4 887 259 953	100.00

Source: own calculation on COMEXT database

Table 8 Results of CMS model for the agri-food export of Poland in euro

Product group	Market size effect	Structural effect	Competitiveness effect
Live animals	20 197 841	143 666 410	-109 497 824
Meat, and meat preparation	170 368 134	409 708 930	816 171 166
Dairy products eggs	122 289 771	260 183 766	227 184 007
Fish, crustaceans molluscs preparation	105 132 365	-92 033 472	290 623 693
Cereals and cereal preparation	183 941 460	-45 224 873	350 138 533
Vegetables and fruits	226 510 723	160 929 060	56 754 538
Sugar, sugar preparation and honey	36 688 399	15 566 213	55 351 325
Coffee, tea, cocoa, spices	236 435 752	-92 155 428	297 625 151
Feeding stuff for animals	119 509 088	-209 033 395	110 257 955
Miscellaneous edible products and preparation	156 236 548	-109 334 239	347 948 664
Beverages	79 705 711	-366 077 593	105 535 261
Tobacco and tobacco manufactures	37 634 387	-97 761 555	877 100 908
Adjustments	11 143 961	-22 161 388	0
Total	1 505 794 140	-43 727 564	3 425 193 377

Source: own calculation on COMEXT database

Table 9 The composition of the growth of the Slovak agri-food export by means of CMS model

Components of CMS model	Value in euro	Share in %
Market size effect	295 650 638	34.64
Structural effect	37 082 598	4.31
Competitiveness effect	521 161 533	61.05
Total gain	853 894 769	100.00

Source: own calculation on COMEXT database

Table 10 Results of CMS model for the agri-food export of Slovakia in euro

Product group	Market size effect	Structural effect	Competitiveness effect
Live animals	4 270 226	47 751 866	47 220 614
Meat, and meat preparation	34 288 332	-46 751 979	47 411 543
Dairy products eggs	23 500 216	88 097 048	32 591 102
Fish, crustaceans molluscs preparation	21 544 635	-112 673 219	-1 181 589
Cereals and cereal preparation	35 169 689	133 861 683	145 168 316
Vegetables and fruits	44 410 504	-130 347 965	13 955 359
Sugar, sugar preparation and honey	7 233 041	107 107 232	127 283 761
Coffee, tea, cocoa, spices	45 932 535	71 922 273	55 708 965
Feeding stuff for animals	24 089 924	-47 266 875	25 238 445
Miscellaneous edible products and preparation	30 177 119	9 160 962	9 685 437
Beverages	15 071 780	-40 690 995	24 308 294
Tobacco and tobacco manufactures	7 871 181	-38 928 264	-6 228 715
Adjustments	2 091 457	-4 159 166	0
Total	295 650 638	37 082 598	521 161 533

Source: own calculation on COMEXT database

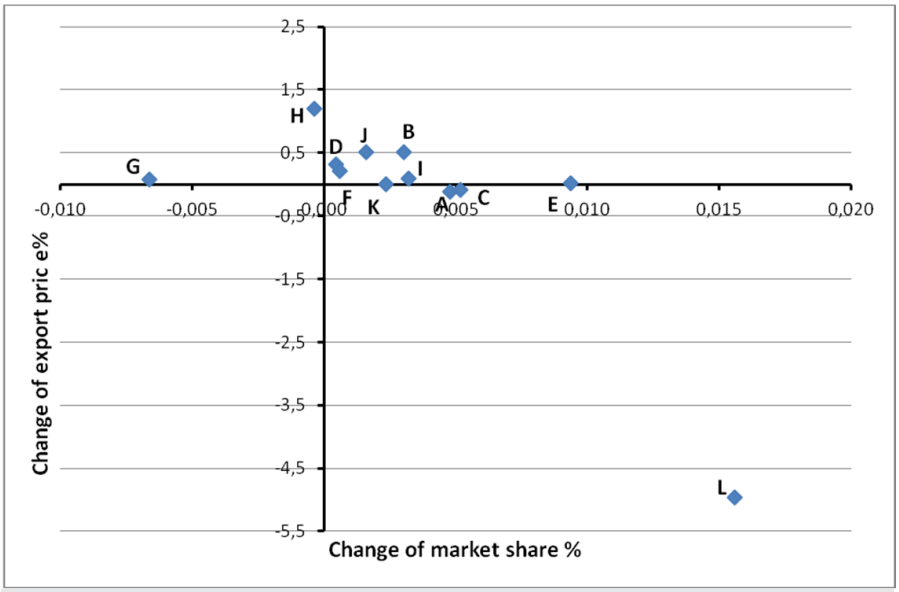

Figure 1 Market positions of Czech agri-food product groups on the market of EU
Source: own calculation and construction based on COMEXT data base
A: Live animals, B: Meat, and meat preparation, C: Dairy products, eggs, D: Fish, crustaceans, molluscs preparation, E: Cereals and cereal preparation, F: Vegetables and fruits, G: Sugar, sugar preparation and honey, H: Coffee, tea, cocoa, spices, I: Feeding stuff for animals, J: Miscellaneous edible products and preparations, K: Beverages, L: Tobacco and tobacco manufactures, M: Adjustments

of the product group of Fish and crustaceans molluscs preparation.

The results of the CMS model show noteworthy similarities in the case of the Visegrad countries. Although the value of the agri-food export of the individual countries showed great differences – because of the volume of food production – the rate of the components of the CMS model indicated striking similarities.

Results of quality competitiveness

In the following sections the position of the agri-food export products of the Visegrad countries will be scrutinised from the point of view of export price change and the changes of market share. As a result the position of the product groups are indicated in the quadrants of a matrix.

Results of quality competitiveness of the Czech agri-food export

The export prices of group of the sugar, sugar preparation and honey and that of the coffee, tea, cocoa, spices increased but the market share of them fell on the market of European Union from the first period to the second one. These products are price unmarketable. In case of all other

product groups the Czech market share grew in the European Union.

The market share of most of them increased meanwhile the average export price went up. These product groups are: meat, and meat preparation; fish, crustaceans, molluscs preparation; cereals and cereal preparation; vegetables and fruits; feeding stuff for animals; miscellaneous edible products and preparations; and the group of beverages. The average export price of groups of live animals; dairy products, eggs and the tobacco, tobacco manufactures diminished during the period meanwhile their market shares increased. These product groups proved to be price marketable (Figure 1).

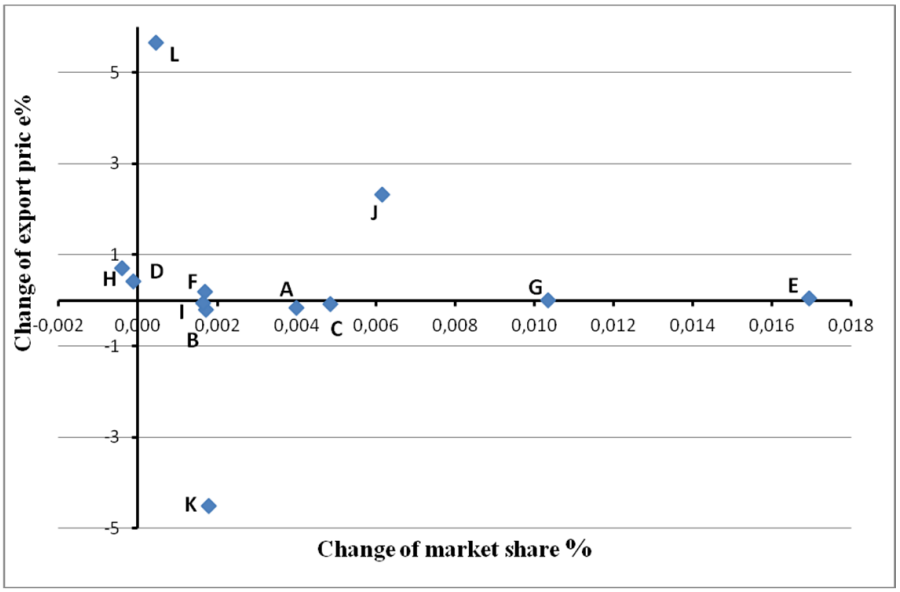

Figure 2 Market positions of Hungarian agri-food product groups on the market of EU
Source: own calculation and construction based on COMEXT data base
A: Live animals, B: Meat, and meat preparation, C: Dairy products. eggs, D: Fish, crustaceans, molluscs preparation, E: Cereals and cereal preparation, F: Vegetables and fruits, G: Sugar, sugar preparation and honey, H: Coffee, tea, cocoa, spices, I: Feeding stuff for animals, J: Miscellaneous edible products and preparations, K: Beverages, L: Tobacco and tobacco manufactures

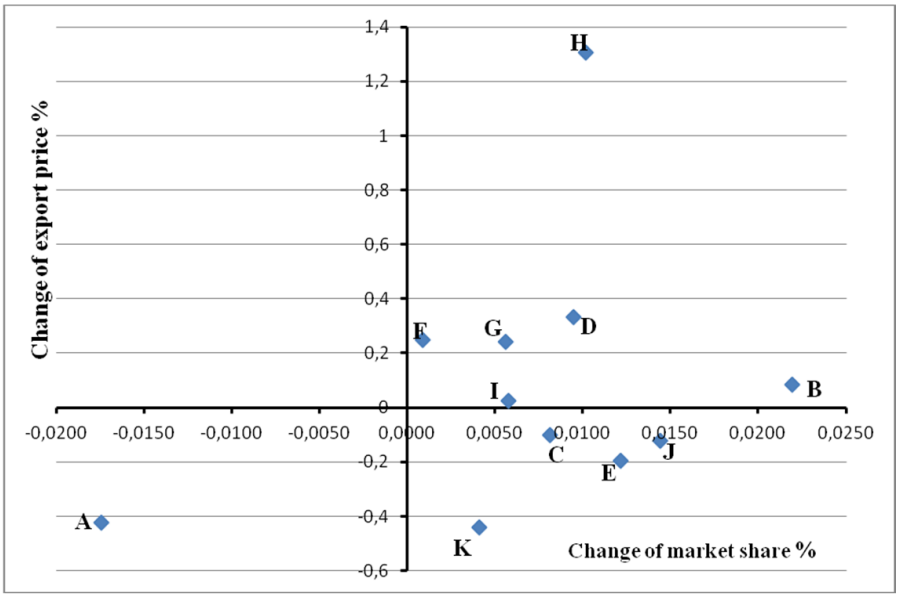

Figure 3 Market positions of Polish agri-food product groups on the market of EU
Source: own calculation and construction based on COMEXT data base
A: Live animals, B: Meat, and meat preparation, C: Dairy products. eggs, D: Fish, crustaceans, molluscs preparation, E: Cereals and cereal preparation, F: Vegetables and fruits, G: Sugar, sugar preparation and honey, H: Coffee, tea, cocoa, spices, I: Feeding stuff for animals, J: Miscellaneous edible products and preparations, K: Beverages, L: Tobacco and tobacco manufactures, M: Adjustments

Results of quality competitiveness of Hungarian agri-food export

On the market of European Union the groups of fish, crustaceans, molluscs preparation and that of the coffee, tea, cocoa, and spices proved to be price unmarketable. In case of all other product groups the Hungarian market share grew in the European Union. The share of a part of these product groups rose meanwhile the average export price dropped. These product groups are: live animals; meat, and meat preparation; dairy products, eggs; feeding stuff for animals and the beverages. However, in case of some product groups the market share grew despite the increasing export price. These quality marketable products are the groups of cereals and cereal preparation; vegetables and fruits; sugar, sugar preparation and honey; miscellaneous edible products and preparations; the tobacco and tobacco manufactures (Figure 2).

Results of quality competitiveness of Polish agri-food export

The group of live animals in Poland proved to be quality unmarketable in the EU. The market share of the group of meat, and meat preparation; vegetables and fruits; sugar, sugar preparation and honey; coffee, tea, cocoa, spices and feeding stuff for animals increased on the market of EU, in the meantime the average export prices also increased (Quality marketable products). The share of group of dairy products, eggs; cereals and cereal preparation; miscellaneous edible products and preparations; beverages went up and their export prices decreased. These agri-food products proved to be price marketable (Figure 3).

Results of quality competitiveness of Slovak agri-food export

The market share of Slovak tobacco and tobacco manufactures diminished and the export price went up since 2004 (Price unmarketable product). In case of some product groups the market share grew despite the increasing export price. The quality marketable agri-food groups are the meat, and meat preparation; dairy products, eggs; cereals and cereal preparation; vegetables and fruits; sugar, sugar preparation and honey; coffee, tea, cocoa, spices; feeding stuff for animals; miscellaneous edible products and preparations. The group of live animals and beverages proved to be price marketable products (Figure 4).

After the accession to the EU trade has become simpler and cheaper because of the elimination of the trade barriers. The EU-membership factor also promoted the increase of the food trade. It refers to the boost that trade receives through movements of factors

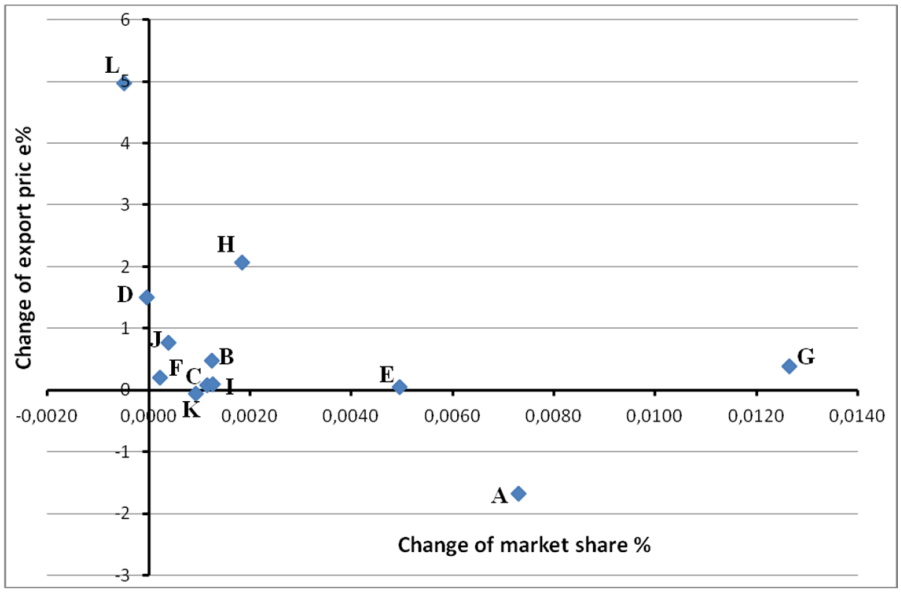

Figure 4 Market positions of Slovak agri-food product groups on the market of EU
Source: own calculation and construction based on COMEXT data base
A: Live animals, B: Meat, and meat preparation, C: Dairy products. eggs, D: Fish, crustaceans, molluscs preparation, E: Cereals and cereal preparation, F: Vegetables and fruits, G: Sugar, sugar preparation and honey, H: Coffee, tea, cocoa, spices, I: Feeding stuff for animals, J: Miscellaneous edible products and preparations, K: Beverages, L: Tobacco and tobacco manufactures

of production, dynamic effects of capital accumulation, technology transfer, increased competition, exploitation of economies of scale.

EU membership, which also implies for the country a commitment to a pegged exchange rate (ERM II) and eventually to a single currency, will likely change the international assessment of risk in the country. These usually include increased trade flows as well as foreign direct and portfolio investment as investors face lower institutional and policy risks. The foreign direct investment indirectly also increased the competitiveness of the food industry (infrastructure developments) (Kürti et al., 2007).

Conclusions

After the accession to the EU trade has become simpler and cheaper. Since 2004 the agri-food export of the Visegrad countries did not only grow – disregarding the setback in 2009 – but also they have increased their presence in European Union markets compared to non-EU markets. On the basis of above findings, it is shown that the results of the CMS model stated noteworthy similarities in the case of the V4 countries. Although the value of the agri-food export of the Visegrad countries showed great differences – because of the volume of food production – the rate of the components of the CMS model indicate striking similarities. The model shows that every country has significant positive competitiveness effect, triggered the expansion of the agri-food export. The positive market size effect also played an important role in the growth of the agri-food export. The agri-food product groups of the Visegrad countries – with very few exceptions – have increased their market share in EU markets during the period. On the basis of quality competitiveness most of them proved to be quality marketable, and some of them price marketable. Only a few agri-food product groups have decreased their market share on the market of EU.

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