SCIENTIFIC INFORMATION

The competitiveness of Czech agrarian trade within the context of the global crisis

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Abstract: World trade underwent a significant shock within the recent years, which caused a decline in the world economy primarily in the year 2009. Within the following years (2010 and 2011), the high rate of growth from the years preceding the crisis could not be restored. The crisis had an impact on all segments of the merchandise trade, whereby the trade in agricultural and food products was affected the least by the crisis. In the case of the Czech Republic, the crisis of the global and national economy was reflected in the case of agricultural trade primarily by the way of a decline in the rate of the growth of export, which was very high in the period prior to the crisis. As far as the territorial structure and commodity structure of agricultural trade is concerned, their development in the years 2008–2011 was not affected in any largely significant manner. In relation to the main objective of this article, which was to identify the effects of the crisis on the competitiveness of Czech agricultural trade, it may be stated that the crisis itself did not worsen the competitiveness of agricultural trade in any significant manner.

Key words: trade, agricultural products, competitiveness, crisis, impact, development

The global economy and primarily the trade within recent years have been undergoing a period of crisis. The stagnation in the growth of the GDP in the world has affected the development of the economy of a number of countries and regions very significantly. The global economic crisis, which showed up at the turn of the years 2008 and 2009, and whose consequences have still not subsided, is affecting the development within a whole range of sectors of the world economy very significantly (WTO 2010). The global production and trade at the beginning of the crisis decreased very significantly. For a number of economies, the development at the turn of the years 2008 and 2009 was literally a shock, when, after a period of a relatively very high growth of the global economy, which was also reflected in the growth of the standard of living throughout the entire world, there was suddenly a sharp decline in the economic growth and thereby also a stagnation – or a decline – in the area of the standard of living (Horská et al. 2010). The individual segments of the world economy coped with the crisis in various manners. At the very beginning, the crisis had the greatest impact on sectors relating to industrial production, and a further, growth in the area of services was also significantly paralyzed (Smutka and Belová 2011). The sector that got through the crisis of the world economy relatively very well proved to be agriculture (Horská et al. 2010). The agricultural sector, unlike the majority of other sectors of the world economy, was able to withstand the crisis better. The level of its own elasticity with regard to the change in the global GDP as well as the global trade was very low. If we focus primarily on the trade with agricultural as well as food production, it may be stated that its rate of elasticity with regard to the changes in the global environment is significantly lesser as compared to the other segments of the world trade (Svatoš et al. 2009). The fact that the agricultural sector, including agricultural trade, is better able to withstand a crisis, is given by the generally low elasticity of demand for agricultural and food products, which is a result of their non-substitutability in the area of human consumption, where we classify food among indispensable products (Svatoš 2008). The

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demand for food in the world, despite the crisis and the global decline in demand associated with it, is continuously growing. The growth is given primarily by the fact that the demand for food in a whole number of countries of the world is still not satisfied (Jeníček 2010). As the purchasing power of the population in the individual regions grows, their demand for agricultural products also grows (Beneš et al. 2004). In the crisis of the global economy, when the volume of supply as well as of demand in the area of industrial production decreased, there was even a temporary increase in the share of agriculture in the world GDP and the value of the goods trade (WTO 2010). The crisis also had, among other things, an effect on the actual competitiveness of the individual items of merchandise trade throughout the individual entities of the world economy (European countries not being an exception – (Bojnec and Ferto 2009) – agricultural and food products were able to fare well in the market and their competitiveness in the relation to the other segments of the world goods trade slightly strengthened (WB 2012).

MATERIALS AND METHODS

The text deals with the issues of development of the Czech agrarian foreign trade with the aim to analyse its development and to identify its comparative advantages in the area of the commodity and territorial structure with respect to both the global market (the market of third countries outside the EU) and the EU27 countries. The main idea is to identify the impact of the global economic crisis on the Czech agrarian foreign trade territorial and commodity structure and also on the Czech foreign trade competitiveness in relation to both above mentioned markets.

It is important to mention that from the analytical point of view, the whole text (wherever the data enabled this) was drawn up with respect to the agrarian trade development and other variables related thereto in the time framework including the period of 2008–2011. The reason why the analysis is focused on such a limited time period is the following: The global economic crisis appeared by the end of the year 2008. It is the reason why the year 2008 is chosen as the first year of the analysis. The other years afterwards were directly affected by the crisis. Especially the year 2009 was critical (one of the most amazing economy slowdowns in the history). The years 2010 and 2011 can be taken as the period of global economy recovery.

For the reasons of the homogeneity of the data source, the UN COMTRADE database of the United Nations Organisation was selected as the central data source for the calculation of the RCA index. As a source of data for the LFI index calculation, there was selected the trade database processed by the Czech Statistical Office. The selected databases enable to follow the development of the commodity trade (including its agrarian and food part) according to the Harmonized System (HS – Table 1).

The trade and competitiveness analyses deal with the issues of the agrarian trade of the Czech Republic against the background of the agrarian trade in the world (third countries) and in the EU countries. They have been drawn up using the basic statistical

Table 1. The list of aggregations representing the structure of agrarian trade (HS)

01	Live animals	13	Lac, gums, resins and other vegetable saps and extracts
02	Meat and edible meat offal	14	Vegetable plaiting materials
03	Fish and crustaceans, molluscs and other aquatic invertebrates	15	Animal or vegetable fats and oils
04	Dairy produce	16	Preparations of meat, of fish or of crustaceans
05	Products of animal origin, not elsewhere specified	17	Sugars and sugar confectionery
06	Live trees and other plants	18	Cocoa and cocoa preparations
07	Edible vegetables and certain roots and tubers	19	Preparations of cereals, flour, starch or milk bakers' wares
08	Edible fruit and nuts	20	Preparations of vegetables, fruit or nuts
09	Coffee, tea, maté and spices	21	Miscellaneous edible preparations
10	Cereals	22	Beverages, spirits and vinegar
11	Products of the milling industry, malt, starches, inulin	23	Residues and waste from the food industries
12	Oil seeds and oleaginous fruits	24	Tobacco and manufactured tobacco substitutes

Source: Czech Statistical Office (2012)

characteristics such as the basic index, the chain index and the geometric mean. A significant part of the analysis has also been drawn up by the means of indexes the goal of which is the characteristics of comparative advantages of the Czech agrarian export in relation to the selected trade partners or territories. The comparative advantage (in relation to the selected groups of countries i.e. the EU27 and the "third countries") is analysed by the means of the RCA index. The concept of the RCA1 index is based on the Balassa index dating back to 1965 (Balassa 1965). The Ballasa index provides a simple overview of the comparative advantage distribution (e.g., Proudman and Redding 2000; Hinloopen and Marrewijk 2001).

$$\mathrm{RCA1} = (X_{ij}/X_{nj})/(X_{it}/X_{nt})$$

where: x = exports, i = analyzed country, j = analyzed sector of the economy (sector of industry or commodity), n = group of countries or world, t = sum of all sectors of the economy or the sum of all commodities or the sum of all branches.

The advantage of the above mentioned index is its simplicity and a quite good interpretation. Another very important characteristic of this index is its ability to take into consideration not only the trade performance realized between the individual trade partners, but it is also taking into consideration the total trade performance realized within the whole territory – it does not matter if the trade operation is realized between the analyzed subjects (Hinloopen and Marrewijk 2001). A comparative advantage is proven if the RCA1 index value is greater than 1. If, however, the result of the index is less than 1, it may be asserted that the given country exhibits a competitive disadvantage in the case of the given commodity or group of commodities (Qineti et al. 2009).

The above specified analysis of the competitive ability of the total Czech agrarian export is supplemented with an analysis of the individual aggregations' competitive ability in relation to the selected trade partners and territories (the bilateral comparative advantage). The bilateral comparative advantage of individual items of the Czech agrarian export with respect to the selected countries and territories is analysed by the means of the Lafay index. Apart from the export flows, the Lafay index (hereinafter only the LFI index) (Lafay 1992) also takes into account the import flows. The advantage of the LFI index as compared to the RCA index is also its ability to include any distortions caused by macroeconomic fluctuations (Burianová and Belová 2012). 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 is defined by the following formula:

$$\mathrm{LFA}_j^i = 100 \times \left[((x_j^i - m_j^i)/(x_j^i + m_j^i)) - \right.$$
$$\left. - \left(\sum\nolimits_{j=1}^{N} (x_j^i - m_j^i)\right) \Big/ \left(\sum\nolimits_{j=1}^{N} (x_j^i + m_j^i)\right)\right] \times$$
$$\times\, ((x_j^i + m_j^i) \Big/ \sum\nolimits_{j=1}^{N} (x_j^i + m_j^i))$$

where: x^i_j and m^i_j = 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 = number of analysed items.

The positive value of the LFI index indicates existence of a comparative advantage. And vice versa, the negative value signals that the specialization and hence comparative advantages are lacking (Zaghini 2005).

RESULTS AND DISCUSSION

Agricultural trade of the Czech Republic represents only a minority portion of the total value of the Czech foreign merchandise trade. The share of its own value has been ranging, in the case of exports as well as imports, at around five percent on the long-term basis. Despite the low share of agricultural trade in the overall goods trade of the Czech Republic, it may be stated that the value of agricultural trade (Table 2) is continually increasing. In this regard, it is important to mention that the actual rate of growth of agricultural export (the geometric mean value of 9.7%/year) within the analyzed period exceeded in average the rate of growth of the value of imports (the geometric mean value of 8.2%/year). This development subsequently led to the stabilization of the share of the negative trade balance in the case of agricultural trade – when, despite the growing value of the negative balance, the share of the negative balance in the overall import, or the turnover of the agricultural foreign trade decreased from approximately 34% to approximately 23%, and from approximately 21% to approximately 13%, respectively. Further, it is also important to mention the fact that the territorial structure of Czech agricultural trade is very significantly concentrated. The EU countries have the share in the agricultural trade of the Czech Republic of approximately 85% in the case of imports and 92% in the case of exports.

The above data further shows that not only the territorial structure is highly concentrated – the commodity structure is also concentrated – whereby the shares of the individual aggregations in the overall implemented agricultural trade are, with a few exceptions, more or less stable. The key aggregations in terms of agricultural export of the Czech Republic are primarily CN 04, CN 10, CN 21, CN 22, CN 24, CN 19, CN 17 and CN 23 (about 60% of export). In the case of agricultural import, a significant portion of trade is concentrated into the following aggregations: CN 02, CN 04, CN 08, CN 07, CN 21, CN 22, CN 19 and CN 23 (about 60% of the total imports within the analyzed period).

In relation to the crisis of the global economy, it may be stated that the crisis itself did not affect the development in the area of the value of agricultural trade of the Czech Republic in any significant manner (Junková and Matušková 2011). In the years 2008–2011, the value of agricultural export of the Czech Republic increased from approximately CZK 107 billion to CZK 121 billion, and, in the case of agricultural import, from CZK 131 billion to more than CZK 156 billion. The crisis as such was reflected more or less only in the year 2009, when in the year-on-year comparison there was a more significant decline in the value of exports by approximately CZK 5 billion – but, nevertheless, in the subsequent years, there was once again a growth in the value of implemented exports. In the case of imports, the crisis itself in the year 2009 was reflected only by way of a slowdown in the rate of growth of the value of imports – when the value of imports increased only by approximately CZK 2.7 billion – in the subsequent years, the value of imports then once again increased dynamically. The only more significant effect of the crisis of the years 2008–2011 can be seen primarily in the slowdown of the rate of growth of the actual value of agricultural foreign trade of the Czech Republic (export 4.2%/year,

Table 2. Development of Czech agrarian export and import value in 2000–2011

Aggregations	Import (in mill. CZK)							Export (in mill. CZK)							
	2000	2004	2006	2008	2009	2010	2011	2000	2002	2004	2006	2008	2009	2010	2011
01	477	624	994	1 495	1 893	1 809	1 849	1 177	1 545	3 268	3 890	4 914	4 497	4 751	5 854
02	2 363	7 192	10 864	14 070	15 958	17 009	19 512	1 239	2 025	2 526	2 712	4 086	3 847	4 336	5 147
03	1 458	1 490	1 957	2 314	2 284	2 412	2 767	956	1 131	1 240	1 369	1 473	1 312	1 539	1 821
04	2 480	5 451	8 456	10 093	10 290	11 366	12 309	6 774	5 535	8 239	12 476	14 620	12 559	13 357	16 044
05	907	1 025	1 052	1 168	1 182	1 315	1 538	261	484	618	531	531	624	627	809
06	1 772	2 673	2 584	3 138	3 205	3 234	3 564	148	206	269	328	292	314	380	377
07	4 458	6 337	8 890	8 928	9 286	10 946	10 556	551	445	789	1 951	2 000	2 016	2 431	2 653
08	6 950	10 698	10 782	11 741	11 215	11 655	12 122	1 070	754	1 753	2 101	2 335	2 371	2 476	2 636
09	2 342	1 838	2 748	3 317	3 444	3 709	4 751	579	498	495	1 135	1 325	1 437	1 818	2 016
10	1 522	1 307	2 362	2 437	1 895	2 022	2 390	4 310	804	1 671	5 657	7 562	8 965	7 492	12 195
11	352	552	671	1 109	1 105	1 130	1 398	2 311	1 880	2 539	2 089	3 224	3 111	2 631	3 118
12	1 739	2 729	2 688	2 828	2 246	3 256	4 085	5 315	4 263	3 619	3 361	8 377	6 794	5 557	5 230
13	395	455	466	1028	672	761	786	310	501	737	585	764	973	996	983
14	110	48	28	32	41	49	74	9	5	5	5	5	4	7	25
15	2 671	4 008	4 271	5 425	6 290	5 398	7 309	1 580	1 177	1 226	2 612	4 065	3822	4 943	5 031
16	1 660	2 217	3 150	4 255	4 376	4 256	4 603	902	565	991	1 769	2 717	3081	3 082	3 705
17	2 366	3 140	3 818	3 799	4 403	4 127	4 731	2 098	3 278	7 125	6 727	5 726	5 281	5 720	6 336
18	3 217	4 849	5 660	6 093	6 110	6 540	7 189	1 622	2 089	2 722	3 256	4 052	3 553	3 689	4 264
19	3 754	6 072	6 897	8 776	8 963	9 181	10 399	1 933	2 214	2 877	3 737	5 601	5 230	5 976	6 906
20	3 273	4 453	5 379	6 555	6 241	6 380	6 449	1 299	1 259	1 720	2 197	2 241	2 003	2 028	2 482
21	7 047	7 932	8 734	10 538	10 054	10 234	11 428	3 037	4 116	5 911	6 064	9 116	9 116	8 400	9 423
22	3 462	6 524	7 930	9 736	9 752	9 726	11 373	5 245	5 810	6 518	8 312	10 185	10 194	9 710	9 072
23	6 296	7 988	7 110	8 768	8 432	8 430	8 957	1 736	1 731	2 135	3 115	4 668	3 716	5 445	6 266
24	3 940	4 221	5 245	3 406	4 399	5 062	5 972	3 268	2 860	2 533	2 563	7 054	6 886	7 971	8 607
Total	65 012	93 822	112 737	131 048	133 735	140 008	156 111	47 729	45 174	61 526	78 542	106 931	101 708	105 364	121 002

Source: Czech Statistical Office (2012) and own calculations

import 6%/year) as compared to the period of 2000 to 2008 (export 11.6%/year, import 9%/year). The crisis itself did not affect in any manner the volume of trade implemented, either in relation to third countries, or in relation to the EU27 countries. In terms of the commodity structure of agricultural trade, the stagnation was reflected primarily in the case of the following export or import aggregations: CN 23, CN 12, CN 14, CN 4, CN 18, CN 03, CN 20 (in the case of the said aggregations, there was a decline in the value of export within the range of ten and more percent) – in the following year, a more significant decline was only seen in the case of the aggregations CN 10, CN 11 and CN 12 – nevertheless, in 2011 the situation was already fully stabilized and almost all aggregations showed a significant growth in the implemented value. In the case of agricultural import, the crisis in the year 2009 affected primarily the following aggregations: CN 13, CN 10 and CN 12 (a certain decline can also be seen in the case of CN 20, CN 21, CN 8, CN 23, CN 03 and CN 11 – nevertheless, such decline was not significant in terms of the usual fluctuation of the value of the implemented imports in terms of the period of the past ten years). Then, in the years 2010 and 2011, the value of the implemented imports, with a few exceptions, grew dynamically regardless of the low rate of the growth of the economy.

Competitiveness of the commodity structure of Czech agricultural trade in relation to the EU27 countries and in relation to third countries

If we focus on the competitiveness of the individual aggregations of Czech agricultural trade, both in the relation to the EU27 countries, as well as outside

Table 3. Development of the RCA index (Czech agrarian export) in the years 2007–2011 in relation to the market of the EU27 countries and in relation to third countries

Aggregations	Partner – EU 27					Aggregations	Partner – "third countries"				
	2007	2008	2009	2010	2011		2007	2008	2009	2010	2011
01	1.935	1.947	1.683	1.664	2.010	01	1.446	3.723	4.460	6.175	7.694
02	0.344	0.365	0.359	0.393	0.440	02	0.128	0.158	0.156	0.414	0.246
03	0.329	0.329	0.352	0.333	0.488	03	0.036	0.043	0.042	0.036	0.039
04	1.411	1.325	1.295	1.226	1.120	04	5.981	4.704	3.700	4.147	5.421
05	1.177	1.003	1.199	1.111	1.220	05	0.123	0.493	0.491	0.541	0.386
06	0.086	0.089	0.108	0.121	0.301	06	0.233	0.084	0.085	0.075	0.059
07	0.384	0.366	0.375	0.438	0.683	07	0.106	0.111	0.080	0.070	0.136
08	0.414	0.373	0.399	0.501	0.523	08	0.024	0.010	0.039	0.035	0.042
09	1.010	0.826	0.903	1.081	0.693	09	0.418	0.278	0.198	0.159	0.140
10	2.065	1.685	2.365	1.921	1.823	10	0.221	0.118	0.197	0.204	0.187
11	2.455	2.703	2.671	2.335	1.869	11	2.735	2.376	3.838	4.183	3.925
12	3.561	2.958	2.735	1.834	1.260	12	1.979	1.814	1.678	1.493	1.155
13	1.788	2.035	2.163	2.236	1.624	13	4.053	4.914	10.290	9.332	10.783
14	0.110	0.167	0.175	0.321	0.992	14	0.000	0.005	0.001	0.001	0.212
15	0.885	0.720	0.831	1.067	1.010	15	0.130	0.328	0.045	0.013	0.018
16	0.725	0.780	0.903	0.947	0.946	16	0.121	0.223	0.146	0.130	0.317
17	2.105	2.298	1.920	2.165	1.681	17	1.669	1.971	2.590	2.097	1.806
18	1.054	1.081	0.954	0.939	0.871	18	0.780	0.792	0.261	0.232	0.501
19	0.815	0.891	0.885	0.998	0.841	19	0.990	1.088	0.872	1.151	1.213
20	0.473	0.390	0.374	0.377	0.418	20	0.528	0.347	0.314	0.339	0.307
21	1.732	1.811	1.763	1.550	1.509	21	2.797	3.014	3.565	3.191	2.625
22	1.014	0.951	1.020	0.957	0.669	22	2.025	2.310	1.993	1.974	1.708
23	1.072	1.050	0.856	1.172	1.280	23	0.579	0.558	0.619	0.942	1.100
24	1.466	2.086	1.908	2.270	2.107	24	0.234	0.738	0.947	0.359	0.692

Source: Czech Statistical Office, 2012 and own calculations of such market, it may be stated that only a limited segment of the aggregations exhibits comparative advantages. The competitiveness of the commodity structure of Czech export is summarized in Table 3.

Table 3 shows that the comparative advantages of Czech export are limited and in the majority of cases their existence is given by the fact that the Czech Republic carries out the majority of its own exports within the market of the EU27 countries. In relation to the EU27 countries, the Czech Republic exhibits comparative advantages in the case of approximately 12–14 commodity aggregations out of the total analyzed number of 24 aggregations. Nevertheless, in relation to the market of third countries, only nine aggregations exhibit comparative advantages. The above findings pertaining to the value and competitiveness of Czech agricultural export thus show that the agricultural trade of the Czech Republic shows comparative advantages primarily in relation to the EU27 countries, which also comprise the main driving force for the growth of its value. If, to the above analysis of competitiveness (by way of the RCA index) of Czech agricultural export in relation to the overall agricultural trade of the EU27 countries and in relation to the world trade, we add the analysis of competitiveness on a bilateral level (LFI index – Table 4), we obtain the following findings about the distribution of the comparative advantages of Czech trade in relation to the selected territories.

The analysis of the LFI index shows the fact that, on a long-term basis, Czech agricultural export exhibits comparative advantages in relation to the EU27 in the case of eleven commodity aggregations. Further, in relation to the countries outside of the EU, Czech agricultural trade on a bilateral level exhibits comparative advantages in the case of ten commodity

Table 4. Development of the LFI index in the case of agricultural trade of the Czech Republic implemented in relation to the EU27 and in relation to third countries

LFI – Czech export in relation to the EU27						LFI – Czech export in relation to "third countries"					
Aggregations	2007	2008	2009	2010	2011	Aggregations	2007	2008	2009	2010	2011
01	1.7556	1.7714	1.6198	1.6518	1.5357	01	1.608	2.036	2.595	2.857	3.456
02	−3.051	−3.351	−4.129	−3.972	−4.361	02	−3.040	−0.132	−0.203	−1.775	−2.666
03	−0.126	−0.147	−0.077	−0.080	0.4575	03	0.649	−3.275	−3.689	−2.916	−3.042
04	3.886	2.914	2.169	2.2746	1.6385	04	4.526	10.383	7.017	7.389	9.173
05	−0.182	−0.196	−0.147	−0.154	−0.068	05	−0.145	−1.036	−0.994	−0.454	−0.656
06	−0.988	−1.060	−1.055	−0.963	−1.049	06	−0.903	−0.347	−0.345	−0.495	−0.517
07	−2.648	−2.443	−2.487	−2.712	−2.299	07	−2.283	−1.581	−2.014	−3.123	−2.128
08	−3.112	−3.265	−2.957	−2.955	−1.419	08	−3.826	−5.735	−5.467	−9.719	−8.794
09	−0.565	−0.638	−0.596	−0.454	−0.202	09	−0.593	−3.413	−4.405	−2.505	−3.140
10	2.692	2.611	3.720	2.7505	4.4796	10	1.346	−0.349	0.070	0.250	0.292
11	0.814	1.076	1.086	0.8165	0.6536	11	0.746	1.743	2.897	2.229	2.075
12	2.771	2.783	2.575	1.4634	0.6556	12	3.419	4.957	5.100	3.675	2.980
13	0.0353	−0.038	0.1302	0.1924	0.1051	13	−0.047	−1.309	−0.234	1.182	1.149
14	−0.009	−0.010	−0.012	−0.013	−0.005	14	−0.005	−0.060	−0.084	−0.055	−0.050
15	0.229	−0.257	−0.610	0.2211	−0.391	15	0.729	0.888	−0.768	−0.616	−0.581
16	−0.419	−0.338	−0.181	−0.042	0.1989	16	−0.510	−1.535	−1.910	−1.474	−1.141
17	0.6327	1.204	1.0354	1.1938	0.8041	17	0.744	1.764	4.078	3.246	2.825
18	−0.512	−0.452	−0.586	−0.584	−0.766	18	0.017	0.257	−0.573	−0.109	0.274
19	−0.718	−0.710	−0.701	−0.413	−0.823	19	−0.539	0.372	0.074	0.829	0.946
20	−1.186	−1.439	−1.223	−1.213	−0.875	20	−1.305	−3.183	−2.855	−1.938	−1.778
21	0.0609	0.1138	0.7592	0.4058	0.3071	21	0.314	−0.456	1.518	2.027	0.059
22	1.6782	1.0666	1.248	1.1346	−0.175	22	1.053	4.095	2.351	3.047	2.257
23	−0.942	−1.148	−1.282	−0.444	−0.325	23	−0.765	−1.057	−0.716	−0.083	0.154
24	−0.09	1.9583	1.7047	1.8977	1.9255	24	−1.193	−3.028	−1.441	−1.469	−1.148

Source: Czech Statistical Office (2012) and own calculations

aggregations – which once again correspond to the results of the analysis of the RCA.

If we further focus on the fact of how the crisis affected the development of the competitiveness of Czech agricultural export, it may be stated that the actual effects of the crisis on Czech agricultural trade were only minimal. If we take into consideration the values of the LFI index, which, unlike the RCA index, should also reflect the dynamics of development, and its increasing or decreasing value should thus testify to the fact of whether the comparative advantage of Czech export is increasing or decreasing, we find that in the year 2009, when the crisis struck in full, the fluctuations in the value of the LFI index of Czech agricultural export were not very significant. While, for example, in the years 2007–2008, there was a year-on-year decrease in the value of the LFI index in relation to the EU27 for 14 aggregations, and for 12 aggregations in relation to the countries outside of the EU27, there was, in the year-on-year comparison of the years 2008 and 2009, a decline in the value of the LFI index only for 11 and 12 items, respectively. Then, in the subsequent years, i.e. 2010 and 2011, the negative fluctuations in the value of the LFI index impacted nine and eleven aggregations, respectively, in relation to the EU27 market, and eight and eleven aggregations, respectively, in relation to third countries. It is important to realize that the actual fluctuations of the LFI index for the majority of the analyzed aggregations did not deviate from the long-term averages (Smutka and Belová 2011). For a number of items, a typical attribute in the case of the LFI index is a high fluctuation. Table 5 provides a brief overview of changes in the value of the LFI index in the case of the individual aggregations of Czech agricultural trade. The data shows

Table 5. Year-on-year absolute changes in the LFI index in relation to the EU27 countries and in relation to third countries

Czech agrarian export in relation to the EU27					Czech agrarian export in relation to “third countries”				
Aggregations	2007/08	2008/09	2009/10	2010/11	Aggregations	2007/08	2008/09	2009/10	2010/11
01	0.0158	−0.1516	0.032	−0.1161	01	0.428	0.559	0.262	0.599
02	−0.3	−0.778	0.157	−0.389	02	2.908	−0.071	−1.572	−0.891
03	−0.021	0.07	−0.003	0.5375	03	−3.924	−0.414	0.773	−0.126
04	−0.972	−0.745	0.1056	−0.6361	04	5.857	−3.366	0.372	1.784
05	−0.014	0.049	−0.007	0.086	05	−0.891	0.042	0.54	−0.202
06	−0.072	0.005	0.092	−0.086	06	0.556	0.002	−0.15	−0.022
07	0.205	−0.044	−0.225	0.413	07	0.702	−0.433	−1.109	0.995
08	−0.153	0.308	0.002	1.536	08	−1.909	0.268	−4.252	0.925
09	−0.073	0.042	0.142	0.252	09	−2.82	−0.992	1.9	−0.635
10	−0.081	1.109	−0.9695	1.7291	10	−1.695	0.419	0.18	0.042
11	0.262	0.01	−0.2695	−0.1629	11	0.997	1.154	−0.668	−0.154
12	0.012	−0.208	−1.1116	−0.8078	12	1.538	0.143	−1.425	−0.695
13	−0.0733	0.1682	0.0622	−0.0873	13	−1.262	1.075	1.416	−0.033
14	−0.001	−0.002	−0.001	0.008	14	−0.055	−0.024	0.029	0.005
15	−0.486	−0.353	0.8311	−0.6121	15	0.159	−1.656	0.152	0.035
16	0.081	0.157	0.139	0.2409	16	−1.025	−0.375	0.436	0.333
17	0.5713	−0.1686	0.1584	−0.3897	17	1.02	2.314	−0.832	−0.421
18	0.06	−0.134	0.002	−0.182	18	0.24	−0.83	0.464	0.383
19	0.008	0.009	0.288	−0.41	19	0.911	−0.298	0.755	0.117
20	−0.253	0.216	0.01	0.338	20	−1.878	0.328	0.917	0.16
21	0.0529	0.6454	−0.3534	−0.0987	21	−0.77	1.974	0.509	−1.968
22	−0.6116	0.1814	−0.1134	−1.3096	22	3.042	−1.744	0.696	−0.79
23	−0.206	−0.134	0.838	0.119	23	−0.292	0.341	0.633	0.237
24	2.0483	−0.2536	0.193	0.0278	24	−1.835	1.587	−0.028	0.321

Source: Czech Statistical Office (2012) and own calculations

that the worsening in the value of the LFI index in the year 2009 was not any more dramatic than was, for example, the worsening of its values in the year 2008 as compared to the year 2007. Further, the data also show that the value of the LFI index generally improved in the case of a majority of the aggregations in the course of the following years, i.e. 2010 and 2011. In general, the analysis of the values contained in Tables 3 and 4 shows that in the years 2008–2011, in relation to the EU27, the value of the comparative advantages of Czech agricultural export decreased slightly for approximately 11 items, and, conversely, there was a strengthening of the value of the LFI index for thirteen items, which can be interpreted as a strengthening of the comparative advantages of Czech agricultural trade. In relation to the aggregations that weakened more significantly in relation to the market of the EU countries, it may be said that there is a significant decline only in the case of six of the total of eleven aggregations that weakened in the course of the analyzed period – in the case of the other aggregations, these are only standard fluctuations that do not deviate from the ten-year average. Aggregations whose competitiveness was significantly affected within the crisis period are as follows: CN 02, CN 04, CN 12 and CN 22. Therefore, in general, these are the items where the market of the EU27 countries is highly turbulent and where there is a high level of the mutual competition among the individual EU27 countries. In this regard, the Czech Republic loses out primarily in the case of trade in meat and meat products, and we are also under a strong pressure in the area of trade in dairy products; the Czech Republic faces a significant competition in the area of the export of oleiferous plants and plant and animal fats and oils, and, last but not least, the Czech Republic also experiences a pressure in the case of trade in alcoholic and non-alcoholic beverages. Nevertheless, it is appropriate to mention that out of the aggregations set out above, primarily a decline in competitiveness in the area of the aggregation CN 02 presents a threat for the Czech Republic – further, a decline in the value of the LFI index in the case of the aggregations CN 04, CN 12 and CN 22 can also present certain problems in terms of the future development.

Further, in relation to third countries, it may be stated that the period of the years 2008–2011, in terms of the competitiveness of Czech agricultural trade as a whole, did not bring about any significant changes. If we compare the fluctuations in the value of the LFI index in relation to third countries, we see that the actual year of the economic crisis – i.e. the year 2009 – did not bring about any very significant fluctuations within the competitiveness of agricultural trade as a whole as compared to the previous year. While in 2008 as compared to 2007, there was a decline in the value of the LFI index for 12 items, in 2009 as compared to 2008, there was a decline in the value of the LFI index for 11 items. Then, subsequently in the years 2010 and 2011, there was a decline in the values of the LFI indexes in the year-on-year comparisons in the case of eight and eleven aggregations, respectively. If we look at the fluctuations in the values of the LFI index in relation to third countries and if we compare them to the fluctuations of the LFI index calculated in relation to the market of the EU27 countries, we find that the competitiveness with regard to the countries outside the EU27 underwent a significantly more dynamic development within the past years. The accumulated value of the values of absolute changes in the value of the LFI index ranged, in the case of third countries, at a much higher level (22.3) as compared to the market of the EU27 countries (7.31). A paradoxical phenomenon in the case of changes in values of the LFI index, as well as of the RCA index, is the fact that the most significant changes in relation to the competitiveness of Czech agricultural goods in the markets of third countries occurred primarily in the period immediately preceding the economic crisis – when the sum of the year-on-year changes reached the highest values (36.7); then, in the subsequent years (2009, 2010 and 2011), the sum of changes only reached the following values: 20.4; 20.07 and 11.87.

If we focus on changes in the competitiveness in the course of the period of the years of economic stagnation, it may be said in relation to third countries that, in general, there was a worsening in the competitiveness of Czech export in the case of the following aggregations: CN 02, CN 03, CN 05, CN 08, CN 09, CN 10, CN 12, CN 15, CN 16, CN 21 and CN 20. Conversely, there was a strengthening of advantages in the case of the aggregations CN 04, CN 11, CN 13, CN 17, CN 19, CN 01 and CN 23. As we can see, in relation to third countries, the actual dynamics in the area of the competitiveness of Czech trade changed much more as compared to the EU27 market, which is isolated from the world market through the effects of the Common Policies, and further also by the existence of the EU single market.

Selected characteristics of the balance of Czech agricultural foreign trade

The findings show that the crisis of the global and domestic economy affected the development in the area of the negative balance in the case of third countries only minimally. The negative balance increased in the years 2008–2011 in average by only approximately 2.5%/year. The reason for the low rate of growth of the value of negative trade in relation to third countries was the higher, in average, rate of growth of the value of agricultural export (6%/year) as compared to the average rate of growth of the value of agricultural import (4.1%/year). In relation to third countries, there was similarly no worsening of the already low percentage of the coverage of import by export in the course of the crisis, which can also be evaluated positively. The results presented in Table 6 also indicate the fact that within the relevant period, 12 aggregations were characterized by a higher rate of growth of agricultural export as compared to agricultural import. The most dynamic growth in the value or the rate of growth of the positive balance was seen within the analyzed period within the aggregations CN 01, CN 04, CN 17, CN 11, CN 13, CN 19 and CN 23. Conversely, the greatest dynamics of growth in the value of the negative balance in relation to third countries were seen in the following aggregations: CN 09, CN 21, CN 15, CN 02, CN 03, CN 05 and CN 8.

If we focus our attention on the market of the EU27 countries – as the most significant partners of Czech agro-trade, it may be stated here that the crisis had a much more significant impact when compared to the market of third countries. Generally, there was a decline in the level of the coverage of import by export

Table 6. Selected characteristics of the Czech agricultural foreign trade balance and the import/export ratio

Aggregations	Czech agrarian trade balance in relation to "third countries" in mil. CZK				Import/export ratio (%)				Czech agrarian trade balance in relation to the EU27 in mil. CZK				Import/export ratio (%)			
	2008	2009	2010	2011	2008	2009	2010	2011	2008	2009	2010	2011	2008	2009	2010	2011
1	328	399	592	809	798	1 479	2 684	3 664	3 092	2 205	2 350	3 196	313	218	232	275
2	–1 229	–1 172	–1 212	–1 746	8	7	18	10	–8 756	–10 939	–11 461	–12 619	31	26	26	28
3	–1 343	–1 316	–1 460	–1 760	2	2	2	1	503	344	587	815	153	136	163	183
4	1 701	1 108	1 515	2 130	2 332	1 582	1 792	2 309	2 826	1 162	476	1 605	128	111	104	113
5	–329	–260	–262	–398	8	9	10	6	–308	–299	–426	–331	62	67	58	70
6	–251	–254	–251	–306	3	3	3	1	–2 595	–2 637	–2 604	–2 882	10	10	13	11
7	–1 280	–1 333	–1 565	–1 330	3	2	2	4	–5 648	–5 937	–6 950	–6 573	26	25	26	28
8	–5 165	–4 610	–4 783	–5245	0	0	0	1	–4 242	–4234	–4 396	–4 241	35	36	36	38
9	–983	–1 011	–1 295	–1825	7	5	4	3	–1 010	–996	–595	–910	55	58	75	68
10	–188	–96	–90	–100	39	63	64	66	5 314	7 166	5 560	9 905	350	537	414	572
11	280	449	453	473	964	2 467	1 400	1 391	1 836	1 558	1 049	1 247	271	243	196	192
12	571	633	517	431	196	240	212	189	4 978	3 914	1 784	714	323	318	164	120
13	–194	46	–1	19	50	112	100	104	–70	255	236	177	89	193	174	151
14	–18	–24	–27	–29	0	0	0	5	–10	–13	–15	–19	32	23	32	55
15	23	–179	–328	–374	112	15	6	8	–1 382	–2 289	–127	–1 903	74	62	97	72
16	–844	–938	–769	–781	7	4	5	12	–694	–357	–405	–116	79	90	88	97
17	67	521	526	509	115	308	285	278	1 860	357	1 066	1 097	155	109	128	125
18	–57	–203	–151	–62	73	23	33	72	–1 984	–2 354	–2 700	–2 862	66	60	57	59
19	–197	–211	–51	3	60	54	87	101	–2 978	–3 521	–3 153	–3 496	64	59	64	65
20	–1 355	–1 057	–1 096	–1158	8	9	9	9	–2 959	–3 181	–3 256	–2 809	42	37	37	46
21	–642	–232	–413	–1284	59	83	72	43	–780	–706	–1421	–721	91	92	84	92
22	–249	–432	–106	–348	85	73	92	77	698	874	90	–1 953	109	111	101	80
23	–778	–444	–605	–659	23	38	42	45	–3 323	–4272	–2 380	–2 031	57	45	68	74
24	–678	–367	–835	–869	20	40	10	16	4 326	2854	3 744	3 505	269	175	190	171
Total	–12 811	–10 981	–11 698	–13 901	39	42	43	42	–11 306	–21 046	–22 946	–21 207	90	82	81	84

Source: Czech Statistical Office (2012) and own calculations

and the negative balance surpassed CZK 20 billion. In the case of eleven aggregations of Czech agro-trade, there was a worsening of the trade balance – but, nevertheless, the level of the coverage of import by export decreased only in the case of six aggregations. If we focus on the dynamics of growth of the negative balance or the decrease in the value of the positive balance of agricultural trade within the individual aggregations, it may be stated that the crisis had the most significant impact on the following aggregations: CN 02, CN 04, CN 07, CN 11, CN 12, CN 15, CN 17, CN 18, CN 19, CN 22 and CN 24. Conversely, the aggregations, where the period of the crisis brought an increase in the positive trade balance, are the following: CN 10, CN 03, CN 09, CN 13 and CN 20.

CONCLUSION

The results of the conducted analysis show that the crisis in the years 2008 to 2011 did not affect the structure of Czech agricultural foreign trade in any significant manner, either in terms of the territorial structure, or in terms of the commodity structure. Neither did the crisis have a more significant impact on the value of Czech agricultural export and import. Similarly so, the balance of agricultural trade did not worsen significantly. In this regard, it is appropriate to also state that the crisis did not have any significant effect on the level of the coverage of Czech agricultural import by export. In relation to third countries, it may be said that the analyzed period did not significantly affect either the development of the value, or of the structure. A positive phenomenon in this regard was also the higher rate of growth of Czech agricultural export as compared to the rate of growth of agricultural import. In relation to the EU27 countries, a similar development can be seen, whereby there was a slowdown in the dynamics of growth of Czech agricultural trade in the course of the analyzed years, and the dominance of the rate of growth of the value of exports over the rate of growth of the value of imports from the years immediately after the entry of the Czech Republic into the EU was suppressed. The result of this development was then the gradual increase in the negative balance of Czech agro-trade. If we focus on the effects of the crisis on the commodity structure of Czech agricultural trade, it may be said that in the case of the market of the EU27 countries, there was a strengthening of the position of the following aggregations: CN 10, CN 03, CN 09, CN 13 and CN 20. Conversely, in the case of the aggregations CN 02, CN 04, CN 12, CN 15, CN 22 and some others, their export positions weakened. In the case of approximately one half of the other aggregations, the crisis did not have any significant impact on their development of the value of the share within the export structure. As far as the market of third countries is concerned, there was a strengthening of the position of the following aggregations: CN 01, CN 04, CN 17, CN 11, CN 13 and CN 19. Conversely, a weakening of the position within the commodity structure of Czech agricultural export and, at the same time, an increase in the negative balance, occurred in the case of the aggregations CN 09, CN 21, CN 15, CN 02, CN 03, CN 05 and CN 08. If we focus on the main objective of the article, which was to identify the effects of the crisis period on the competitiveness of the individual segments of agricultural trade of the Czech Republic, the following can be said: The competitiveness of the majority of the analyzed aggregations did not change significantly, either in relation to the market of the EU27 countries, or in relation to third countries. The results of the analysis show that the Czech Republic has a well-profiled segment of aggregations having long-term comparative advantages. In relation to third countries, it may be stated that in general, there was a worsening in the competitiveness of Czech agricultural export in the case of the following aggregations: CN 02, CN 03, CN 05, CN 08, CN 09, CN 10, CN 12, CN 15, CN 16, CN 21 and CN 20. Conversely, there was a strengthening of the comparative advantages in the case of the aggregations CN 04, CN 11, CN 13, CN 17, CN 19, CN 01 and CN 23. In relation to the market of the EU27 countries, it may be stated that the aggregations whose competitiveness was significantly afflicted during the crisis period are: CN 02, CN 04, CN 12 and CN 22. On the other hand, the aggregations that strengthened their comparative advantages despite the crisis are the following: CN 10, CN 08, CN 23, CN 03, CN 20, CN 09 and CN 21.

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