

JUHÁSZ Anikó*† and Hartmut WAGNER*

An analysis of Hungarian agri-food export competitiveness

The main purpose of this study is to provide an overview of the export growth trends in the Hungarian agri-food sector over the last decade and to identify the obstacles hindering the sector's development. We used constant market share analysis to break down into components the changes in export growth. Almost without exception, the increasing market size accounted for most of the export growth to 14 countries. The commodity (market composition) and competitiveness effects produced varied results and were not so positive. This shows that the Hungarian export structure was less adaptive to changes in demand in the target export markets. There were positive examples however, such as Italy and Slovakia, where the competitiveness effect explained 82 and 64 per cent respectively of the Hungarian export growth. In Romania almost one third of the total Hungarian agri-food export growth was explained by the improved competitiveness. The negative examples are numerous; the most important is the trade relations with Poland where the competitiveness effect almost halved the measured export growth potential. By analysing the price and quality competitiveness of the cereal and oilseed commodities with unit value calculations we could show that the market position of these relatively lower-priced products could be improved.

Keywords: export competitiveness, food products, foreign trade, market position, unit value calculations

* Agrárgazdasági Kutató Intézet, Zsil utca 3-5, 1093 Budapest, Hungary. Corresponding author: wagner.hartmut@aki.gov.hu

† Current address: Nemzeti Élelmiszerlánc-biztonsági Hivatal, Budapest, Hungary.

Introduction

Much Hungarian and international research has dealt with the measurement of economic competitiveness, but although it has become a widely used term it is difficult to find a precise definition or an overall measurement of it. Begg (1999) remarked that 'Economic competitiveness, as we all know, is the path to economic nirvana' (p.795). While 'national competitiveness' is on the whole quite an elusive concept, even in the 1990s two prominent economists argued that competitiveness cannot be interpreted at a national level (Porter, 1990; Krugman, 1994). However, taking into consideration the contradictions that exist, there are definitions for competitiveness. For example OECD (2008) defined the competitiveness in international trade as 'a measure of a country's advantage or disadvantage in selling its products in international markets' (p.87). Instead of giving simple but less informative definitions Trabold (1995) and Schüller (2000) classified and defined the criteria of international competitiveness after four national 'abilities': (a) ability to sell on foreign markets; (b) ability to increase real income; (c) ability to adjust; and (d) ability to attract mobile factors of production.

For measuring the competitiveness of a country in foreign markets (i.e. *ability to sell*), and identifying the sectors in which a country is strong – based on Balassa's (1965) indicators – multiple specialisation and Revealed Comparative Advantage (RCA) indicators are usually applied. Although the changes of competitiveness occurred do not fully determine the changes of the market shares, they form an acceptable method for the measuring of the regional export competitiveness in the world market (Chen and Duan, 1999). Therefore we use in our study for analysing the competitiveness of external trade these two approaches, the change in the market share and the demonstration of the price competitiveness.

The *ability to earn* concepts use the maximising of the real income as the benchmark of competitiveness. They show the effectiveness by which the individual countries take part in the international division of labour. It is true that the most

developed technology producing industries do not affect the competitiveness of other segments in the economy equally; it is highly influenced by the developed technology industry and the macroeconomic environment (Deason and Ferrantino, 2011). According to Schumacher *et al.* (1995) technological competitiveness, in a wider sense, does not only mean the knowledge accumulated by the companies, but also the knowledge they have at the level of the national economy.

The exponents of the *ability to adjust* (the adaptability of the economy) concept emphasise that for the competitiveness of one country the high real income and the standard of living is a fundamental condition. The faster an economy can adjust to the changing world economic conditions, the more competitive it will be. Such models use more general indicators, specifically the relative income position, the number of newly founded companies and information which is determined by the institutional environment (Levchenko, 2007).

According to the *ability to attract* concept the economic allure of one region (country) and international competitiveness are synonymous (Katzenbach, 1993). For the measurement of the competitiveness of the country for example the balance of the foreign direct capital investment and capital investments of the domestic companies is used, with the reasoning that the negative balance means that the investors do not consider this country to be a good capital investment target country. Because the analysis of the countries were made separately, the results of the different countries cannot be compared, just the advantages and the disadvantages of individual economies according to the quantity and quality indicators can be listed (Leshner and Mioudot, 2008).

Methodology

The constant market share (CMS) analysis of individual target markets was done for the first 24 commodity groups of the Harmonized Commodity Description and Coding System (HS): (a) *animals and animal products* (HS 01-05); (b) *vegetable products* (HS 06-14); (c) *animal or vegetable fats, oils and waxes* (HS 15); and (d) *foodstuffs* (HS 16-24).

In this part of the analyses we have used a lower level of aggregation: through breaking down to the level of product groups (HS-4), we have differentiated between agricultural commodity production and primary and secondary food industrial processing. The COMTRADE, EUROSTAT and the HCSO statistical databases have principally been used.

Before Hungary's accession to the European Union (EU) the export competitiveness of the Hungarian food industry was analysed many times with the help of the CMS model (Fertő, 2001; Fogarasi, 2008). But mainly before the time of EU accession, and with the aggregated products and country groups, and in both analyses the OECD SITC system database was used, which is in some aspects wider and in other aspects tighter than the HS structure used here. We extended the time interval of the previous analyses and with this method we analysed the developments in the period after EU accession. At the constant market share we broke down the products unlike the abovementioned authors in accordance with the HS code system. Because the CMS model is sensitive to the selection of the base period, we compared the averages of the periods 2001-2003 and 2008-2010.

On the basis of this built model we split the export growth into two parts, one in connection with the general growth of the reference market (characterised by two factors, namely the market scale and market composition effects), and the other is the residual, which is the competitiveness factor. This is the one step version of the CMS model where the three export increment determining factors can be described as follows (Fertő, 2001; Poor, 2010):

- The market size (or scale) effect shows the change of the receptivity of the reference market, which can also at constant market share modify the exports to the reference market. It shows, if the market share of the exporting country to a specific target market for a specific product did not change between two time periods, how much their whole exports can change due to the import growth of the target market;
- The market composition (or second order) effect shows the whole result of the competitiveness of the exporting country and the import structure of the reference market. A positive value shows that for such products the exports delivered to the target market has increased in the basis period, in which it realised a bigger share than which was the total branch share in the given commodity market. This effect can be viewed by the combination of changing import demand and export supply;
- The competition (or residual) effect originates from the changing in the exports on the competitiveness of the exporting country. We get the residual sub-total when in the period of review materialised exports we subtract those subtotals which we could get for each commodity class if the export market share has not been changed. A positive value means that on the commodity market the given country has been more competitive than the competitors and has therefore increased its exports.

To calculate the change (ΔM) between the base period value (M^0) and the period of review value (M^1) of the Hun-

garian food industry, this difference can be divided into three components as follows:

$$\Delta M = S^0(C^1 - C^0) + \sum (S_i^0 - S_{avr}^0)C_i^1 + M^1 - \sum (S_i^0 C_i^1) \quad (1)$$

where C^0 and C^1 is the total food industry imports of the target market in the base period and in the period of review, S_i^0 is in Hungary in the base period in the HS code system at the i -th commodity group on the target market reached market share, S_{avr}^0 is in the base period on the target market reached average market share and C_i^1 is all imports in the target market in the period of review at the i -th commodity market in the HS-code system.

Another approach to the measure of exports and external trade competitiveness is indices which use the connection between price and quality (Aiginger, 1997; Fischer, 2007). In a comparison of the external trade competitiveness of countries, Gehlhar and Pick (2002) made a distinction between the one-way (if between two countries at one product group just the exports or imports exist) and two-way external trade. The authors defined four categories of two-way trade between two countries for a product group with the help of external trade balance and export-import equivalent price and quality:

- Category 1 (positive balance, lower export unit value): The external trade balance of the examined country against the reference market is positive for the given product, while the export unit value of the given product delivered from the examined country to the reference market is lower than the import unit value of the same product delivered from the reference market;
- Category 2 (negative balance, higher export unit value): The external trade balance is negative while the export unit value is higher than the import unit value;
- Category 3 (positive balance, higher export unit value): As category 1 except that the export unit value is higher than the import unit value;
- Category 4 (negative balance, lower export unit value): As category 1 except that the external trade balance is negative.

In categories 1 and 3 the commodity groups have a price and quality advantage in competitiveness while categories 2 and 4 show the weakness of the price and quality competitiveness.

Results

Results of the constant market share (CMS) analysis

The study involved 14 target markets and 77.1 per cent of total Hungarian food industry exports (as an average of the period 2008-2010). The selected EU Member States accounted for 69.4 per cent of Hungarian exports ('old' Member States: 40.3 per cent, 'new' Member States: 29.1 per cent), and 7.7 per cent of exports concerned the non-EU target markets. The export growth in the selected target markets

was slightly in excess of the increase in total exports (EUR 2.268 million, or 83.8 per cent of revenue growth occurred between the two periods); this can mainly be attributed to the greater economic driving force of the EU Member States.

According to the CMS analysis, the effect of the market size was everywhere positive, namely we have identified expanding markets and an increase in demand. Almost all of the increase in market size can be contributed to the growth in exports (Table 1).

The competitiveness of the Hungarian agri-food exports in the market of the EU-27 was analysed by the CMS method. Separating out the export growth factors shows that the market size effect was EUR 974 million (41.64 per cent), the market composition effect was EUR 89 million (3.83 per cent) and the competitiveness effect was EUR 1,275 million (54.53 per cent). This means that a large part of the export growth was due to the positive effect of competition on the Community market and only a smaller part was due to the increasing EU imports. The market composition effect – that is the response to the level of the change of the import structure of the EU – hardly changed at product level. Also, Hungary cannot adapt to certain aspects of the increasing demand in the EU.

From this standpoint the effect of the analysed target markets can be separated into three groups. Firstly, those EU Member States where the competitiveness effect of Hungarian exports is positive. These are, in order of priority, Germany, Romania, Italy, Slovakia, the Netherlands and France. The second group includes the EU Member States studied where the competitiveness effect is negative, namely Austria, Poland and the Czech Republic. In the third group of countries, those outside the EU, declining export competitiveness is, without exception, seen in these markets.

EU Member States where the competitiveness effect is positive

Hungary's largest export market is Germany. From the entire EUR 298 million export growth, three quarters is caused by market size expansion (EUR 223 million), the

market composition effect is EUR 6 million (2 per cent) and the competitiveness effect is EUR 69 million (23 per cent). The mostly successful structural adaptation was supported by analysis of the CMS at HS 2 level commodity breakdown. Among the most important products, the increase in exports of *oilseeds, miscellaneous grains, medicinal plants and straw* (HS-12) and *animal or vegetable fats, oils and waxes* (HS-15) of 83 and 91 per cent can be explained with the competitiveness effect, but for *cereals* (HS-10) it is only 18 per cent. The competitiveness effect of *meat and edible meat offal* (HS-02) and *edible preparations of meat, fish, crustaceans etc.* (HS-16) was negative, consequently Hungary's meat product exports to Germany stagnated and meat exports declined.

In 2010 Romania was Hungary's most important target market. Of the EUR 509 million increase in exports, 70 per cent (EUR 355 million) can be explained by the market size increase. The market composition effect was negative (EUR -14 million and -3 per cent) while competitiveness contributed EUR 168 million (33 per cent) to the result. Hungary's competitiveness with regards to its competitors increased in Romania. There were two product groups where the market share increased and the composition effect was positive: *dairy, eggs, honey and edible products* (HS-04) and *cereals* (HS-10), but for *milling industry products* (HS-11) Hungary's market share fell by 11 per cent.

More than one quarter of the export growth in the Italian market (EUR 79 million) was caused by the market size increase. The market composition effect was negative (EUR -23 million), i.e. Hungary could not take advantage of the change in the import structure. The competitiveness effect was EUR 248 million (81.5 per cent), so Hungary was able to hold on well against its competitors in the expanding Italian market. But there were only two product groups where both the market share increased and the market composition effect was positive: *cereals* (HS-10) and *residues from food industries, animal feed* (HS-23). *Meat and edible meat offal* (HS-02) and *edible preparations of meat, fish, crustaceans etc.* (HS-16) exports lost 1 percentage point from the market share. On the other hand, thanks to its vigorously growing

Table 1: Results of the constant market share model calculations for the first 24 commodity groups of the HS codes comparing the time periods 2001-03 and 2008-10.

| Country | Market size effect | Market compound effect | Competitiveness effect | Change in value of imports from Hungary* |
|----------------|--------------------|------------------------|------------------------|--|
| EU-27 | 974 | 89 | 1275 | 2339 |
| Germany | 223 | 6 | 69 | 298 |
| Romania | 355 | -14 | 168 | 509 |
| Italy | 79 | -23 | 248 | 305 |
| Austria | 198 | 17 | -119 | 97 |
| Slovakia | 119 | 10 | 236 | 366 |
| Netherlands | 48 | -7 | 70 | 111 |
| Poland | 202 | 22 | -129 | 94 |
| Czech Republic | 123 | 37 | -41 | 119 |
| France | 32 | 8 | 44 | 84 |
| Russia | 280 | -16 | -116 | 148 |
| Ukraine | 69 | 29 | -2 | 96 |
| Switzerland | 66 | 1 | -46 | 21 |
| Japan | 38 | -20 | -7 | 11 |
| USA | 27 | -1 | -35 | -9 |

* In EUR million for EU Member States and USD million for non-EU countries
Source: AKI calculations from Eurostat, Comtrade and HCSO data

milk exports Hungary's market share in *dairy, eggs, honey and edible products* commodity group (HS-04) increased by 1.5 per cent.

Hungarian exports to Slovakia increased by EUR 365 million, from this 33 per cent (EUR 119 million) was due to the increase in market size, the market composition effect accounted for 3 per cent (EUR 10 million) and the competitiveness effect for 64 per cent (EUR 236 million). Slovakia was one of those few countries where all three factors were positive. For five commodity groups both the market share increased and market composition effect showed a positive result: *live animals* (HS-01), *meat and edible meat offal* (HS-02), *cereals* (HS-10), *animal or vegetable fats, oils and waxes* (HS-15) and *cocoa and cocoa preparations* (HS-18). An almost 4 percentage point fall occurred only for *preparations of vegetables, fruits, nuts etc.* (HS-20).

The Netherlands was Hungary's sixth most important market and the increase of the market size accounted for more than 43 per cent of the total growth in exports of EUR 111 million. The market composition effect was here also negative (EUR -7 million), but the competitiveness effect was EUR 70 million (64 per cent). There were only two commodity groups where the market share increased and the market composition effect also showed a positive result: *cereals* (HS-10) and *oilseeds, miscellaneous grains, medicinal plants and straw* (HS-12).

France was the ninth most important Hungarian agri-food export market with a value of EUR 175 million between 2008 and 2010, it was practically an unchanged market share. All three export increase model factors were positive. The growth of the market accounted for 38 per cent (EUR 32 million) of the total EUR 84 million growth. The market composition effect accounted for 10 per cent (EUR 8 million) and the competitiveness effect 52 per cent (EUR 44 million) respectively. Thus Hungary's competitiveness to France increased – maybe only to a small degree – against the competitors, and this fact was supported by detailed unit value calculations. There were two major commodity groups where both the market share and the market composition gave positive results: *dairy, eggs, honey and edible products* (HS-04) and *residues from food industries, animal feed* (HS-23).

EU Member States where the competitiveness effect is negative

Austria is Hungary's most important agri-food export market among the countries showing a negative competitiveness effect, being in fourth place in the period 2008-2010. Hungary's increase in exports (almost EUR 97 million) came almost solely from the growth of the market, which was EUR 198 million (206 per cent). The market composition effect was only EUR 17 million (18 per cent), while the competitiveness effect was EUR -119 million (-123 per cent). Among the commodity groups only *cereals* (HS-10) increased both the market share and the market composition effect. By contrast the market share of *meat and edible meat offal* (HS-02) exports fell by 11.5 per cent.

In Poland, the seventh most important Hungarian agri-food export market between 2008 and 2010, Hungary's more

than EUR 94 million export growth came almost solely from the increase of the market size, EUR 202 million (214 per cent). The market composition effect was only EUR 21 million (23 per cent), while the competitiveness effect was EUR -129 million (-137 per cent). Both the market share and the market composition effect increased for *cereals* (HS-10).

Finally the increase of the market size in the Czech Republic gave entirely the EUR 119 million (104 per cent) increase, which was EUR 123 million. The market composition effect was EUR 37 million (31 per cent), while the competitiveness effect was negative (EUR -41 million and -35 per cent). For three commodity groups both the market share and the market composition effect showed positive results: *miscellaneous edible preparations* (HS-21), *beverages, spirits and vinegar* (HS-22) and *residues from food industries, animal feed* (HS-23). At the same time Hungary's market share in *meat and edible meat offal* (HS-02) fell by 10 per cent.

Export markets outside the EU

In Switzerland the EUR 20.7 million increase was almost solely due to the USD 66.4 million increase in market size (319 per cent of the whole increase), while the market composition effect was only USD 806 thousand (3.9 per cent) and the competitiveness effect was USD -46.4 million (-223.3 per cent). It means that Hungary's negligible increase in exports is due only to a doubling of the entire Swiss imports. The market composition effect was unchanged; consequently Hungary could not adapt to the changed Swiss demand. We could not find any commodity group where Hungary's market share and the market composition effect gave a positive result. The *meat and edible meat offal* (HS-02) exports – even though something lost from the market share – increased by more than three-quarters, while the export market share of *edible preparations of meat, fish, crustaceans etc.* (HS-16) tripled, even so just more than 2 per cent.

At present Russia with its 3 per cent share is only in tenth place among Hungary's export markets, here the effect of the market size was USD 280 million (18.2 per cent), the market composition effect was USD -16 million (-11 per cent) and the competitiveness effect was USD -116 million (-65.8 per cent). It means that the USD 148 million increase is due only to the increase in the Russian demand. Hungary could successfully increase its export market share in *live animals* (HS-01), from this product the composition effect was only close to a third part. Hungary's *meat and edible meat offal* (HS-02) exports more than tripled, but its market share increased only negligibly. From the tripled Russian vegetable and fruit imports Hungary's market share fell to 7.7 per cent.

Ukraine is in 14th place amongst Hungary's export markets. From the USD 96 million increase in income from exports, USD 68.8 million is from the effect of market size and USD 29 million (30.2 per cent) is from the market composition effect, but the competitiveness effect was negative (USD -1.8 million, or -1.9 per cent). Between the two analysed periods Hungary's market share of *cereals* (HS-10) and *residues from food industries, animal feed* (HS-23) increase significantly and the composition effect was positive.

Agri-food exports to Japan based on market size effect calculation is USD 38.2 million (355 per cent), the market composition effect is USD -20.3 million (-189 per cent) and the competitiveness effect is USD -7.1 million (-65.8 per cent). Apart from *meat and edible meat offal* (HS-02) exports, where Hungary just held its negligible market share, in all important commodity groups Hungary's role declined.

The USA is the most unutilised agri-food target market. The Hungarian agri-food exports continued to decrease from the former low level in the past ten years. The market size effect is USD 26.5 million, but the market compound effect of USD -1 million and the competitiveness effect of USD -35 million brought its decrease. Consequently Hungary could neither take advantage of the increase in demand nor could its export structure or competitiveness respond to the changes in this market.

Results according to the Gehlhar and Pick classification

According to the Gehlhar and Pick classification, the share of category 3 – where products may have qualitative and price benefits – decreased strongly in Hungary's exports to, and in the whole food economy foreign trade with, the EU between 2001-2003 and 2008-2010. Taking categories 1 and 3 together, the proportion of Hungary's competitive products declined in the exports from 88.3 per cent to 73.3 per cent and in the whole food economy foreign trade from 70.3 per cent to 51.2 per cent (Table 2).

Table 2: Hungarian food industry external trade with all EU Member States in 2001-03 and 2008-10 according to the Gehlhar and Pick rating.

| Category | Exports | External Trade* | Exports | External Trade |
|----------|-------------------|-----------------|-------------------|----------------|
| | 2001-2003 average | | 2008-2010 average | |
| 1 | 46.93 | 37.55 | 48.36 | 32.52 |
| 2 | 5.51 | 14.59 | 13.57 | 25.43 |
| 3 | 42.37 | 32.71 | 24.91 | 18.67 |
| 4 | 5.19 | 15.14 | 13.16 | 23.39 |

* Whole food industry external trade = exports + imports
Source: AKI calculations from Eurostat data

However, these results tell us little about the competitiveness of the Hungarian food export products in the individual EU Member States. Thus we made a more detailed competitiveness examination by analysing separately Hungary's five most important export markets (Romania, Germany, Italy, Austria and Slovakia) on the basis of the Gehlhar and Pick classification (Figure 1).

For Germany the comparison of the two periods indicated that the share of category 3 in the exports (for example exports of meat products fell) by more than half. Taking categories 1 (e.g. oil plants and plant oil) and 3 together, then the proportion of Hungary's competitive products in the exports fell from 93.8 per cent to 90.3 per cent between the two periods, so a strong restructuring occurred between categories 1 and 3.

The proportion of category 3 in the exports to Romania increased more than threefold. Taking categories 1 and 3 together, then the share of Hungary's competitive products in

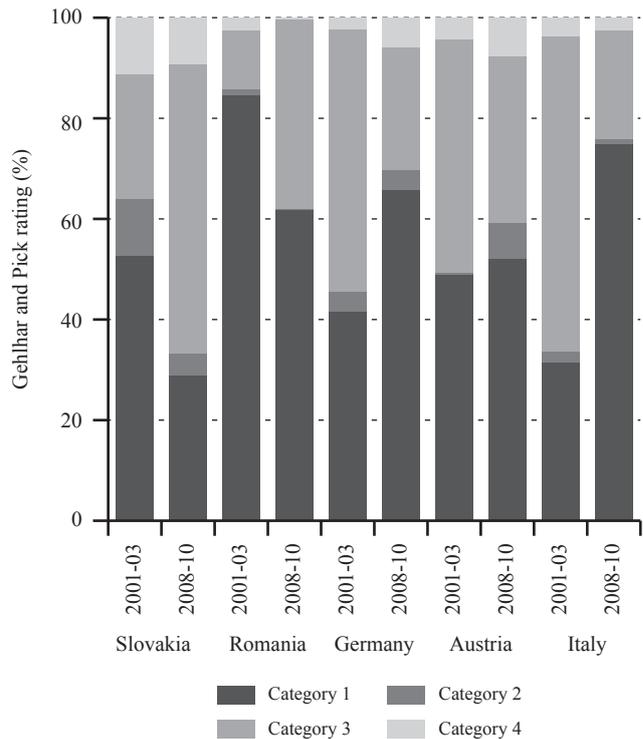


Figure 1: Hungarian food industry external trade with five EU Member States in 2001-03 and 2008-10 according to the Gehlhar and Pick rating.

Source: AKI calculations from Eurostat data

the exports rose from 96.2 per cent to 99.3 per cent between the two periods (that is to say non-competitive Hungarian products hardly existed), so from the viewpoint of categories 1 and 3 (e.g. maize and wheat) a strong improvement occurred.

In Hungary's exports to Italy, the share of category 3 (e.g. poultry meat or pet food) decreased strongly, declining by almost two thirds between the two analysed periods. On the other hand the share of category 1 (as a result of the increase of grain and milk exports) greatly increased. The common share of categories 1 and 3 increased from 93.8 per cent to 96.5 per cent between the two periods.

In the case of Austria the proportion of category 3 (e.g. poultry meat) in exports showed a strong decrease, falling by nearly one third. On the other hand the share of category 1 (e.g. cereals) increased by three percentage points, but the share of category 2 (e.g. pork) rose above 7 per cent. The common share of categories 1 and 3 decreased from 95 per cent to 83 per cent.

In the agri-food exports to Slovakia the proportion of category 3 (e.g. pork and poultry meat) increased more than 2.3-fold. On the other hand the share of category 1 (e.g. maize) decreased by half. The common share of Hungary's competitive products in categories 1 and 3 increased from 81.5 per cent to 86.3 per cent.

Discussion

Our results show that the trend did not change since the analysis of Fertő (2001), Juhász *et al.* (2002) and Fogarasi (2008). The main source of the increase in Hungarian

food industry exports to the analysed markets is the general increase of the imports there. But the commodity structure of Hungary's exports frequently did not fit to the most increasing import segments.

We accounted altogether 38 different subgroups on the 14 selected markets at the unit value calculations, which reflects the change of the general survey of the certain sections in detail. The total price income of these subgroups exceeded the determined euro margin of the markets in the average of 2008-2010. We analysed these in detail based on the unit value and the market share.

The CMS analysis shows that the grain sector is the success sector, it is represented only by maize and wheat. In ten markets maize was the most important product (only in four non-EU markets was this not the case) and wheat appeared in the examination of five countries. Based on the unit price we can say that Hungary's transportation radius defined by the export efficiency is smallish for both grains. The feed grain is delivered preferentially to the neighbouring countries and Hungary is competitive with seed grain only in the more distant markets. Hungary's market share of maize decreased between the two analysed periods only in the non-EU markets (Russia and Ukraine), but for wheat Hungary suffered a bigger market loss in Austria.

The analysis yielded similarly good results in the oil plant sector, although the export market circle is significantly narrower: rapeseed and sunflower seed were found amongst the more important products in only four countries each, including the German and the Dutch market in both cases. Hungary's unit value improved everywhere, apart from sunflower seed to Italy, and its market share increased without exception. Hungary's sunflower seed oil exports broke into totally new markets, in the German and Swiss market Hungary attained a large market share, and in the Romanian market a dominant one.

In the product lines of Hungary's meat sector the poultry meat dominated in 12 cases, namely it is one of Hungary's most important products in every markets Poland and the USA. The fact that in Hungary's exports the products have fairly differing values (goose liver, 65 percentage duck, etc.) makes the examination of its poultry meat exports based on a unit value difficult, but essentially Hungary's unit value improved in most markets. As regards to market share the situation is not so favourable; Hungary's market share decreased in the most important markets and improvements were achieved only in Romania and Slovakia.

Pork figured in only six markets and the lack of the big western European markets was prominent. Towards Romania and Slovakia Hungary's market share increased, and its unit value increased everywhere except in Italy. Beef was exported only to the Netherlands in a bigger quantity, but Hungary's market share is insignificant there too. Rabbit meat in the Swiss market and the cutting by-products on the Russian market are important items. Hungary's processed meat products are represented in only two markets.

Horticultural products figure among the analysed products rather in processed form; other fresh vegetable are exported in a bigger quantity only to Austria. On the other hand tinned vegetables appear five times. Among the other subgroups of the sector Hungary delivers fruit and vegetable

juice to the German and Austrian market, while preserves also find customers in the German market.

Among the other subgroups pet food had the second most incidences, apart from two non-EU countries it was not included in the more important products only in the Dutch and Slovak markets. Hungarian honey, which is a *Hungaricum*, appeared in the more important products in only three markets. The unit value of Hungarian exports increased, but good quality products were present on this market to no avail, as Hungary suffered a loss of market share to the cheaper products of competitors.

The Gehlhar and Pick rating on the EU market showed that the share of competitive export products between the two time periods decreased from 88.3 per cent to 73.3 per cent. From the most important export markets in Germany and in Austria decreased the share of competitive categories, while on the other markets the situation of the Hungarian export products improved. In the individual branches there were significant differences between the two time periods. The biggest improvements in the competitiveness effect were with grain and oilseeds, but significant positive change also occurred with vegetable oils. The biggest negative change in the competitiveness effect was with meat products.

The most important problem and disadvantage of the logistics of the Hungarian agricultural sector is the weaker transport infrastructure compared to the competitors, i.e. the still unsatisfactory quantity, quality and geographical location of the storage and transport capacity and the lack of special transport vehicles. Kartali (2008) summarised the Hungarian food industry market structure as follows: in the current financial situation the logistical problems cannot be solved in the short term neither from EU funds nor from the national budget, and private equity is providing only modest financing for these kind of developments. Thus it is not likely that the weaknesses in the agri-food exports logistics can be solved in the short term.

After the liberalisation of the railway transport from 1 January 2007, the domestic railway network is open for all countries, therefore the competitiveness of the international railway transport companies has become stronger. The railway transport has to cope with severe competitiveness problems in Hungary, because the use charges are very high in European comparison, the turnaround time is long and mostly there is no return transport. Although with the broadening of the sales market the Hungarian crop products come from year to year to newer markets. The main target markets of the bulk dry products transported by rail were by ranking order the sea ports (Koper, Rotterdam, Constanța), the French, German, Italian and Belgian and Dutch headquarters of food industry companies, and the Italian and Romanian mills.

The effect of the direct transaction costs of the external trade infrastructure costs are generally characterised in the gravitation model only by distance. Djankov *et al.* (2004) contrarily appreciate with the help of a much more precise information supplying database. The database had information about 126 countries, the container delivered goods, the delivering time and the costs. At the current developed logistic system the effect of the transport on the trade cannot be eliminated. A one day logistic lag can decrease the trade potential of a given country on average by 1 per cent and has an effect

equivalent to being 70 km further away from the trading partner. It indicates also the disadvantage of Hungary, because their analysis has a particularly big effect on the agricultural and industrial products and on the countries without a coast.

Furthermore, according to Török and Déli (2004) the hidden, not customs like restrictions at national cases therefore were not particularly diverse, because the agriculture built industries are generally open and attached to strong political interests. Furthermore the big international retail chains had to accomplish stronger state quality requirements for their foreign suppliers. Hungarian companies often cannot meet these requirements. In Austria the high authorisation and procedure costs made it harder for the foreign producers to come on the market. This system earlier from the EU very independent way, worked on local nature. In many countries the domestic agricultural and food exporters found that the certifications of accredited Hungarian laboratories were not approved and that the local qualification has significant extra costs.

Juhász and Wagner (2012) also showed that ranking by the national density of law and by the effectiveness of trade logistics (cost, time interval and number of the documents) is almost contradictory. Most of the western European countries are 'good traders', they form an efficient distributional system and they are – from a general economic interest – remarkably open toward the foreign trade. Nevertheless these countries also use vigorously the indirect methods of market protection, and imports are hindered by public health, consumer protection or other reasons.

Despite the abovementioned facts the eastern EU Member States are leaders in terms of trade effectiveness and have characteristically not learned the 'gentle' market defence methods, and the number of such measures is generally low. From the 'old' Member States Italy and Spain are exceptions because both are ranked at the top, so their level of effectiveness of foreign trade logistic is low and they apply the braking effect of their indirect law measures to the maximum.

Acknowledgements

The authors thank their colleagues Egri Edit, Keresztessyné Mohr Katalin and Mándi-Nagy Dániel for the translation of the original Hungarian text into English.

References

Aiginger, K. (1997): The use of unit values to discriminate between price and quality competition. *Cambridge Journal of Economics* **21**, 571-592. <http://dx.doi.org/10.1093/oxfordjournals.cje.a013687>

Balassa, B. (1965): Trade Liberalization and Revealed Comparative Advantages. *The Manchester School* **33** (2), 99–123. <http://dx.doi.org/10.1111/j.1467-9957.1965.tb00050.x>

Begg, I. (1999): Cities and Competitiveness. *Urban Studies* **36** (5-6), 795-809. <http://dx.doi.org/10.1080/0042098993222>

Chen, K. and Duan, Y. (1999): Competitiveness of Canadian agri-food exports against its competitors' in Asia: 1980-1997. Joint series of competitiveness, Number 18. Edmonton: University of Alberta.

Deason, L. and Ferrantino, M.J. (2011): Determinants of diffusion and downstreaming of technology-intensive products in international trade, in *Globalisation, Comparative Advantage and the Changing Dynamics of Trade*. Paris: OECD, 261-294. <http://dx.doi.org/10.1787/9789264113084-10-en>

Djankov, S., Freund, C. and Pham, C.S. (2006): Trading on time. Policy Research Working Paper 3909. Washington DC: World Bank.

Fertő, I. (2001): A magyar mezőgazdasági kereskedelem ex-post versenyképessége az Európai Unióban [Ex-post competitiveness of Hungarian agri-food trade in the European Union]. *Európa Fórum* **1**, 59-74.

Fischer, C. (2007): Food quality and product export performance. An empirical investigation of the EU situation. 105th EAAE Seminar, Bologna, Italy, 8-10 March 2007.

Fogarasi, J. (2008): Hungarian and Romanian Agri-Food Trade in the European Union, *Management* **3** (1), 3-13.

Gehlhar, M. and Pick, D. (2002): Food trade balances and unit values: What can they reveal about price competition? *Agribusiness: An International Journal* **18** (1), 61-79.

Juhász, A., Kartali, J. and Wagner, H. (2002): A magyar agrár-külkereskedelem a rendszerváltás után [Hungarian agricultural trade after the change of systems]. Budapest: AKI.

Juhász, A. and Wagner, H. (2012): Magyarország élelmiszer-gazdasági export-versenyképességének elemzése [An analysis of Hungarian agri-food export competitiveness]. Budapest: AKI.

Kantzenbach, E. (1993): Der Wirtschaftsstandort Deutschland im internationalen Wettbewerb [Germany's position as a business location in international competition]. Hamburg: HWWA Institut für Wirtschaftsforschung.

Kartali, J. (ed.) (2008): A magyar élelmiszer-gazdasági export célpiacai és logisztikai helyzete [Hungarian Food Economy Export - Target Markets and Logistic Situation]. Budapest: AKI.

Krugman, P. (1994): Competitiveness: a dangerous obsession. *Foreign Affairs* **73** (2), 28-45. <http://dx.doi.org/10.2307/20045917>

Leshner, M. and Miroudot, S. (2008): FDI Spillovers and their Interrelationships with Trade. OECD Trade Policy Working Papers No. 80. Paris: OECD. <http://dx.doi.org/10.1787/235843308250>

Levchenko, A.A. (2007): Institutional Quality and International Trade. *Review of Economic Studies* **74**, 791-819. <http://dx.doi.org/10.1111/j.1467-937X.2007.00435.x>

OECD (2008): OECD Glossary of Statistical Terms. Paris: OECD.

Poor, J. (2010): Az agrárkülkereskedelem versenyképességének vizsgálata CMS-modellekkel [Analysis of Agri-food-trade competitiveness with CMS models]. *Gazdálkodás* **2010** (5), 45-547.

Porter, M. (1990): The competitive advantage of nations. New York: The Free Press.

Schumacher, D., Belitz, H., Haid, A., Hornschild, K., Petersen, H.J., Straßberger, F. and Trabold, H. (1995): Technologische Wettbewerbsfähigkeit der Bundesrepublik Deutschland: theoretische und empirische Aspekte einer internationalen vergleichenden Analyse [Technological competitiveness of the Federal Republic of Germany: theoretical and empirical aspects of an international comparative analysis]. DIW Beiträge zur Strukturforchung, Heft 155. Berlin: Duncker & Humblot.

Schüller, A. (2000): Zur Frage der internationalen Wettbewerbsfähigkeit von Volkswirtschaften [On the question of international competitiveness of economies]. Universität Marburg Arbeitspapier. Marburg: Universität Marburg.

Török, Á. and Deli, Zs. (2004): A magyar export nem vám jellegű versenyképességi akadályai. Tanulságok egy vállalati felmérésből [Not competitive tariff barriers of the Hungarian exports. Lessons of a corporate survey]. *Közgazdasági Szemle* **LI** (7-8), 659–678.

Trabold, H. (1995): Die Internationale Wettbewerbsfähigkeit einer Volkswirtschaft [The international competitiveness of an economy]. *Vierteljahrshefte zur Wirtschaftsforschung* **2**, 169-185.