

## **The competitiveness of fruit spirits of New Member States in terms of protected denomination of origin**

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## **Introduction<sup>1</sup>**

In 2004 and 2007, twelve Central and Eastern European Countries joined the European Union, bringing about several changes in the field of European agriculture. One of the major changes was the transformation of national agricultural trade, as indicated by several authors (Bojnec et al. 2008, Fertő 2006). EU membership has made the New Member States part of a large market, thereby changing the competitiveness of their agricultural products, realised through agricultural trade. In such an enlarged competitive environment, the role of high-quality, region-specific products have measurably increased. These products, in many cases possessing protected denomination of origin (PDO), have special characteristics that European consumers appreciate.

The importance of geographical indicators is increasing and PDO products currently play an important role in the first pillar of the EU quality policy. However, the link between PDO products and their competitiveness remains unclear and very little research has been conducted on analysing the competitiveness of products with geographical indication. Therefore, the aim of this paper is to analyse whether products with protected denomination of origin have any competitive and/or comparative advantage in European markets. In order to meet this aim, this paper analyses the competitiveness of traditional spirits produced by the NMS in the EU15 markets. Established Member States have long traditions of producing highly matured spirits including such famous products as whisky, brandy and cognac, while the NMS have their own specialty – spirits distilled from fruits – and many of them are considered as PDO. (Appendix I)

The paper is structured as follows. First, a brief literature review is provided on empirical research, analysing the competitiveness of NMS agricultural products in international trade as well as the economic effects of geographical indications. The methods used in the research are demonstrated in the next section, followed by an analysis of the competitiveness of spirits distilled from fruits of the NMS in the EU15 markets. Finally, a discussion on results is given, followed by conclusions.

### **Research on the competitiveness of NMS agricultural products**

The competitiveness of NMS agriculture was analysed in the main sectors by Banse et al. (1999), who concluded that the competitiveness of the cereal market exceeds that of animal husbandry. A competitiveness analysis based on international trade data for the Hungarian agriculture was conducted by Eiteljörge-Hartmann (1999), who found that wheat, wheat flour, sugar beet, live cows, meat preparations from pigs, chicken meat and cows' milk did have competitiveness between 1995 and 1997. Decreasing levels of competitiveness were observed in the following product categories: pasta, chocolate, rapeseed, barley, potato, beef, pork, live chickens, butter and cheese. Eiteljörge-Hartmann concluded that in several cases, raw materials were more competitive than processed products.

Fertő (2004) and Fertő and Hubbard (2003) have also analysed the competitiveness of Hungarian agricultural products traded with the EU and calculations were made for 255 product groups

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during the period of 1992-1998. The results showed that Hungary had comparative advantages in live animals and processed meats, while it has revealed comparative disadvantages in cereals.

Bojnec and Fertó (2007) have investigated the determinants of price and quality competition in agro-food trade between the CEC-5 and the EU-15 in the pre-enlargement period. They found that the Czech Republic and Slovakia have caught up in terms of successful quality competition, but not in successful price competition. However, Hungary and Poland have also caught up in terms of successful quality competition and to a lesser extent in successful price competition. Slovenia was the only country that has not made any significant catching up in successful quality competition.

### **Research on economic effects of geographical indications**

There has recently been expanding research carried out to analyse the economic impacts of geographical indicators. Malorgio et al. (2007) focused on the influence of the European wines with protected denomination of origin (PDO) on the world market and revealed that there is a growing consumer attention and interest towards these products although these wines are usually sold at a higher price. Trevisan (2008) has carried out research on the grappa industry in Trentino, Italy and concluded that local producers considered geographical indication as one of the most important characteristics of the region. Trecho-Pech et al. (2010) examined the case of the mezcal, a Mexican spirit distilled from agave and suggested that success of this ancient local product was due to its PDO denomination in 1995, according to which the producers could use the legal protection as a tool of product differentiation.

Analysing the importance of non-alcoholic food and agricultural products also plays a great role in the literature. The main topic of the Bologna EAAE seminar in 2007 was the marketing and trade of the traditional products. Teuber (2007) emphasised that geographical indications (GI) are useful tools for product differentiation and therefore developing countries make attempts to secure such protection for their products. Scaramuzzi et al. (2007) pointed out that the Toscan companies in Italy use the GIs for numerous reasons in order to succeed in the world markets as these help to protect the products from cheaper imitations as well as benefitting from the advantages of the reputation due to the region of origin. Borch and Roaldsen (2007) found that the protection of the denomination of origin in Norway is a factor of competitiveness, especially for the high quality traditional food products in the premium sector.

### **Methodology**

The various methods elaborated around the theory of revealed comparative advantages provide the basis for this analysis. The original index of revealed comparative advantages was first published by Balassa in 1965 who defined the following (Balassa, 1965):

$$B_{ij} = \left( \frac{X_{ij}}{X_{it}} \right) / \left( \frac{X_{nj}}{X_{nt}} \right), \quad (1)$$

where  $x$  means export,  $i$  indicates a given country,  $j$  is for a given product,  $t$  stands for a group of products and  $n$  for a group of countries. It follows that revealed comparative advantage or

disadvantage index of exports to reference countries can be calculated by comparing a given country's export share in its total export - in correlation with the focus country's export share in their total export. If  $B > 1$ , a given country has a comparative advantage compared to focus countries - or, in contrast, a revealed comparative disadvantage.

The Balassa-index is especially criticized because it is seen as neglecting the different effects of agricultural policies and asymmetric values. Trade structure is distorted by different state interventions and trade limitations, while the asymmetric value of the B-index reveals that it extends from one to infinity if a country enjoys comparative advantage from a product, but in the case of comparative disadvantage, it varies between zero and one, which overestimates a sector's relative weight. This latter problem was partly solved by Hinloopen-van Marrewijk [2001] with their classification of the B-index: Category A:  $0 < B \leq 1$ , Category B:  $1 < B \leq 2$ , Category C:  $2 < B \leq 4$ , Category D:  $4 < B$ . Product groups pertaining to Category A show a lack of comparative advantage, while those in Category B show a weak comparative advantage, to Category C average and to Category D a strong comparative advantage.

Vollrath suggested three different specifications of revealed comparative advantages in order to eliminate the above disadvantages (Vollrath, 1991): relative trade advantage index, logarithm of relative export advantage and relative competitiveness. Relative trade advantage index (RTA) takes both exports and imports into account and is the difference between relative export advantage index (RXA) and the relative import advantage index (RMA).

Expressed pro forma:

$$RTA_{ij} = RXA_{ij} - RMA_{ij} \quad (2)$$

where  $RXA_{ij} = B_{ij}$  and  $RMA_{ij} = (m_{ij} / m_{it}) / (m_{nj} / m_{nt})$  (m means the import), that is,

$$RTA_{ij} = [ (x_{ij} / x_{it}) / (x_{nj} / x_{nt}) ] - [ (m_{ij} / m_{it}) / (m_{nj} / m_{nt}) ] \quad (3)$$

If  $RTA > 0$ , this reveals that a given country has a comparative advantage compared to focus countries - or, in contrast, a revealed comparative disadvantage. This index takes into consideration effects of demand as well as those of supply therefore it is closer to the comparative advantages approach than indices based on exports. The higher the value, the more competitive the country is. Vollrath named this second index the logarithm of relative export advantages (lnRXA) and named the third revealed competitiveness (RC), which is the difference between the logarithm of relative export advantages and that of relative import advantages:

$$RC_{ij} = \ln RXA_{ij} - \ln RMA_{ij} \quad (4)$$

Positive lnRXA and RC indices indicate a competitive advantage, while negative values indicate competitive disadvantage. A benefit from their use - compared to the first two indices - is that these are symmetric to the pole. Furthermore, these account for export- and import side trade distortions and are also able to manage intra-industry trade. This latter advantage is at the same

time the disadvantage of the RC-index: if there is no intra-industry trade, the index cannot be interpreted.

International and national literature interlinks the model of revealed comparative advantages with new streams of trade theories, allowing the execution of even deeper competitiveness analyses (Gehlhar-Pick, 2002, Fertő, 2004). This approach stresses that price and quality competition in two-way trade is worth separating. To achieve this goal, the literature introduced a new concept: unit value difference (UVD), which is the difference between export and import unit values, defined as follows:

$$UV^x_{ij} = X_{ij}/Q^x_{ij} \text{ and } UV^m_{ij} = M_{ij}/Q^m_{ij}, \text{ so } UVD_{ij} = UV^x_{ij} - UV^m_{ij} \quad (5)$$

where X means export, M means import, Q stands for quantity, i indicates products, and j indicates the partner-country. The formula above means that the difference of a product group's unit value can be defined (UVD) if import unit value ( $UV^m_{ij}$ ) is deducted from export unit value ( $UV^x_{ij}$ ); that is, export value achieved from a country's given product group ( $X_{ij}$ ) is divided by export quantity ( $Q^x_{ij}$ ), then divide import value ( $M_{ij}$ ) by import quantity ( $Q^m_{ij}$ ) and deduct the two values from each other. Trade balance (TB) can also be easily calculated from the formula above: ( $TB_{ij} = X_{ij} - M_{ij}$ ), and is the difference between export and import values of a given product group running to/coming from the focus country.

By using the two new concepts (UVD and TB), the literature creates the following categories in order to separate price-quality competition (GP-index on the basis of Gehlhar-Pick, 2002):

- Category A (successful price competition):  $TB_{ij} > 0$  and  $UVD_{ij} < 0$ ,
- Category B (unsuccessful price competition):  $TB_{ij} < 0$  and  $UVD_{ij} > 0$ ,
- Category C (successful quality competition):  $TB_{ij} > 0$  and  $UVD_{ij} > 0$ ,
- Category D (unsuccessful quality competition):  $TB_{ij} < 0$  and  $UVD_{ij} < 0$

The four categories above are well able to separate what competitive position a country's product groups has from a price and quality point of view. It should not be forgotten that these categories implicitly refer to two-way and not one-way trade (the latter of which means just export or import from a product group).

In order to calculate the various indices mentioned above, the paper has used the EUROSTAT trade database (CN8) using eight digit breakdown, resulting in 5 categories for spirits distilled from fruits (Appendix II), and aggregated to two digit breakdown in order to identify the positions of traditional spirits inside the "beverages, spirits and vinegar" sector. The paper works with trade data from 2001-2009, providing a clearly basis for analysing the effects of EU accession. In this context, the EU is defined as the member states of the EU15. Due to the lack of trade data for many NMS countries in the spirit category, a selection of NMS countries (consisting of Bulgaria, Czech Republic, Hungary, Poland, Romania, and Slovenia) is analysed.

## The competitiveness of NMS fruit spirits on the EU15 beverages market

By analysing competitiveness and comparative advantages of NMS fruit spirit trade with the EU15, it is clear that all four Balassa-indices show similar results for each country analysed, for the exception of Poland, the only examined country without PDO fruit spirit. On the whole, all countries except Poland had a revealed comparative advantage and all were competitive on the EU15 beverages market in the average of the period 2001-2009 (Table 1). Values of variation are normal (except for Romania and Slovenia in some cases), indicating small deviations between years. However, in addition to the overall picture, it can be clearly seen that values for Hungary and Poland are fundamentally lower than those for other countries analysed here, indicating that individual country performances differ significantly.

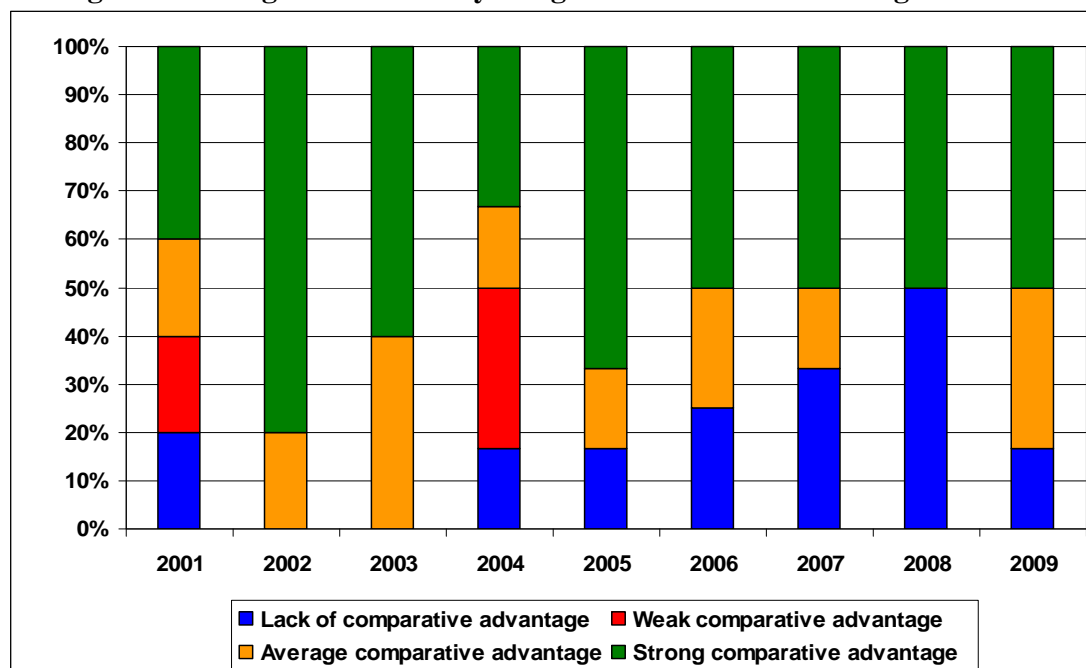
**Table 1: Revealed comparative advantages or disadvantages of NMS fruit spirit trade on the EU15 beverages market, based on the average of the period 2001-2009**

Denomination	Average, 2001-2009				Variation, 2001-2009 (%)			
	B	RTA	lnRXA	RC	B	RTA	lnRXA	RC
<b>Revealed comparative advantage, if:</b>	>1	>0	>0	>0				
<b>Bulgaria</b>	11.73	11.62	1.78	4.61	20.23	20.27	1.35	2.25
<b>Czech Republic</b>	26.19	25.90	2.73	4.28	30.24	30.16	1.12	1.24
<b>Hungary</b>	4.65	4.55	0.69	2.77	8.80	8.84	1.20	1.26
<b>Poland</b>	0.36	0.32	-1.82	1.55	0.42	0.42	1.52	1.59
<b>Romania</b>	48.25	47.75	2.33	3.44	103.29	103.34	2.14	2.07
<b>Slovenia</b>	31.47	31.10	2.07	3.17	62.79	62.84	2.05	2.32

Source: Authors' own calculations based on EUROSTAT (2011)

In addition to the overall picture, it is worth analysing the ways EU accession has affected the comparative advantages of the NMS fruit spirit sector by using the classification of Hinloopen-van Marrewijk (2001). As indicated in Figure 1, revealed comparative advantages of fruit spirits on the EU15 beverages market has been deteriorating since EU accession. While 17% of fruit spirits was in short of comparative advantages in 2004, this indicator has reached 50% by 2008, indicating signs of losing market positions. The share of fruit spirits with strong comparative advantages has remained stable after accession, while that of average comparative advantages remained stable on the regional level (Figure 1).

**Figure 1: Changes of B-index by categories in the EU15 beverages markets**



Source: Authors' own composition based on EUROSTAT (2011)

Analysis of price and quality competition in time shows similar results. Two-way fruit spirit trade with the EU15 – which was decisive in the period analysed – was ultimately unsuccessful in quality and in terms of price (Table 2). It is apparent that a growing number of fruit spirits became unsuccessful in price and quality competition after EU accession, while the share of successful competition has been diminishing over time. The only one-way trades in some year were caused by the lack of export in some of the selected NMS.

**Table 2: Fruit spirit trade between NMS and the EU15 by price and quality competition**

Percentage (%)	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>One-way trade</b>	0	20	20	0	0	33	0	0	0
<b>Two-way trade</b>	100	80	80	100	100	67	100	100	100
<b>Category A: successful price competition</b>	40	0	20	33	33	0	0	17	0
<b>Category B: unsuccessful price competition</b>	0	20	40	17	50	33	83	33	33
<b>Category C: successful quality competition</b>	20	40	0	0	0	0	17	17	0
<b>Category D: unsuccessful quality competition</b>	40	20	20	50	17	33	0	33	67

Source: Authors' own calculations based on EUROSTAT (2011)

Behind the overall picture, country performances have differed significantly (Table 3). Bulgaria and the Czech Republic show signs of successful price and quality competition, in many cases, while other countries analysed can be characterized by unsuccessful price and quality competition in the majority of the cases.

**Table 3: GP-indices in the NMS fruit spirit two-way trade by countries and categories\***

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Bulgaria</b>	D	D	A	A	A	-	B	A	D
<b>Czech Republic</b>	A	C	D	D	B	B	C	C	B
<b>Hungary</b>	C	-	-	A	B	B	B	B	D
<b>Poland</b>	-	-	-	B	B	D	B	D	D
<b>Romania</b>	D	C	B	D	A	-	B	B	B
<b>Slovenia</b>	A	B	B	D	D	D	B	D	D

\* A= successful price competition, B = unsuccessful price competition, C = successful quality competition, D = unsuccessful quality competition

Source: Authors' own calculations based on EUROSTAT (2011)

Compared to 2001 when three of the six countries were competitive in two-way fruit spirit trade in the EU15 beverages markets, all countries have become uncompetitive by 2009.

Until now, different indices have been analyzed separately. The aim of the next exploration is, nevertheless, to analyse RTA and GP-indexes together in order to demonstrate the relationship between comparative advantage and price/quality competition. It is hypothesized that the higher comparative advantage a product group has, the higher price/quality competitive position it possesses.

**Table 4: Combined RTA and GP-index in NMS fruit spirit trade with EU15**

Denomination		RTA			
		2003		2009	
		a	b	a	b
<b>GP</b>	<b>0</b>	0.00	<b>0.20</b>	0.00	0.00
	<b>A</b>	0.00	<b>0.20</b>	0.00	0.00
	<b>B</b>	0.00	<b>0.40</b>	0.00	<b>0.33</b>
	<b>C</b>	0.00	0.00	0.00	0.00
	<b>D</b>	0.00	<b>0.20</b>	0.00	<b>0.67</b>

**RTA-index types:** a (revealed comparative disadvantage), b (revealed comparative advantage),

**GP-index types:** 0 (one-way trade), A (successful price competition), B (unsuccessful price competition), C (successful quality competition), D (unsuccessful quality competition)

Source: Authors' own calculations based on EUROSTAT (2011)

It is clearly observable in the example of NMS fruit spirit trade with the EU15 that in 2003 20% of those products with a comparative advantage obtained successful price competition (Table 4). This rate changed to zero in 2009, which means that in the EU15 markets, products with a



comparative advantage became uncompetitive on both price and quality basis. Products with comparative advantage but unsuccessful quality competition have significantly increased from 2003 to 2009, although the comparative advantages and unsuccessful price competition of these products have slightly decreased.

Moreover, no product existed without a comparative advantage but with a competitive position, although there were many products with a comparative advantage but unsuccessful in competition. It can therefore be concluded that the joint analyses of RTA and GP indices revealed that comparative advantages and competitiveness are not moving together in NMS fruit spirits trade in the EU15 beverages market.

### **The policy response**

Results presented above indicate that the NMS are losing market positions in their traditional fruits spirit sector on the EU15 beverages market despite the fact that the majority of these products have a geographical indication. GP-indices are showing unsuccessful price and quality competition after accession in the vast majority of cases, meaning that NMS import more fruit spirits than they export (causing a negative trade balance), while this process is accompanied by different unit values. On the one hand, unsuccessful price competition means that a negative trade balance is associated with positive unit values, indicating that the NMS export the same product category at a higher price than they import it, so they are working with uncompetitive prices. On the other hand, unsuccessful quality competition suggests that the NMS export the same product category at a lower price than they import it, while their trade balance is negative; thereby they trade with low quality products, assuming that a price of a product is a good indicator of its quality.

The declining competitive positions of fruit spirits after accession are in line with the changes experienced in other traditional agricultural sectors of the NMS. EU membership has made these countries part of a large, rather competitive market. On the one hand, this market offers tremendous opportunities for their agricultural sectors; on the other hand, they are faced with significantly increased competition in their domestic markets. This situation is due to the rapid emergence of vertically coordinated food chains including hypermarkets, supermarkets and multinational agro-processing companies with regional procurement systems, thus creating new and much more competitive conditions both for producers and consumers; the market share of foreign-origin products has increased significantly. Due to very strong price competition, generally the consumers are the beneficiaries of these changes. However, some of the cheap products on shelves can sometimes be of dubious quality due to the use of low-cost raw materials and occasionally of inappropriate ingredients. At the same time, producers are not always able to adjust or cope with business practices employed by the large chains which are occasionally not entirely fair. The concentrated and Europe-wide procurement systems of the major chains create high requirements for suppliers and impose strong price pressures as well.

Meeting future challenges requires that this situation be acknowledged within agricultural policy-making, respecting the production of unique national/regional products. Targeted policies for PDO producers are needed such as the protection of the name of the produce, the enhancement of proper marketing strategies and the enhancement of competitiveness of PDO producers.

As to the protection of name, it is of utmost importance to retain the original name of PDO products. In the case of the *feta* cheese, for instance, it took a long legal process until Greek secured the exclusive right to produce this well known product; while Germany, France and Denmark were able to manufacture only with other denominations. The issue regarding the *Tokaj* PDO wine is still on the agenda between Hungary and Slovakia, so far there is no agreement on the usage of this denomination. Therefore it is clearly visible that PDO products have a relevant business value.

As for the enhancement of proper marketing strategies, the current lack of collective trademark and logo – as in case of the PDO agricultural and food products – hinders the marketing of the traditional NMS spirits. An introduction of a common European logo for these products would ensure that consumers recognise the special characteristics of these high quality products which would be realised in higher prices, beneficial for the whole sector. Common marketing campaigns – financed by the Community or from the budgets of Member States– could also improve the contribution of the PDO system to the economic importance of these products.

In addition to providing legal protection, improving the competitive positions of PDO products, is also of great importance. This requires the improvement of the functioning of food supply chains by reversing the steadily decreasing trend in farmers' share of the value added generated by the food supply chain. If farmers were given a higher share of the value generated by the supply chain, this would encourage them to invest in agriculture, especially in traditionally competitive sectors.

On the whole, successfully targeted PDO policies would also have many secondary effects. Market success in the PDO segment would allow for labour-intensive small-scale farmers to continue production, thereby contributing to the improvement of the overall rural economy.

## **Conclusions**

This paper has analysed the competitiveness of products with protected denomination of origin as realised through the NMS fruit spirit trade with the EU15 beverages markets and has reached a number of conclusions. First, it has been revealed that the majority of NMS fruit spirits were both competitive and had a comparative advantage on the EU15 beverages market in the given period, though competitive positions have continuously deteriorated after EU accession. Second, the analysis suggests that two-way fruit spirit trade with the EU15 was ultimately unsuccessful in quality and in terms of price and a growing number of fruit spirits became unsuccessful in price and quality competition after EU accession, although there are significant differences in individual country performances. Third, it also became clear that comparative advantages and competitiveness do not move together in NMS fruit spirits trade on the EU15 beverages market. Fourth, results indicate that the NMS is losing market positions in their traditional fruits spirit sector on the EU15 beverages market despite the fact that the majority of these products have a geographical indication. Meeting future challenges requires that this situation be acknowledged within agricultural policy-making and targeted policies for PDO producers be implemented such as the protection of the name of the produce, the enhancement of proper marketing strategies, and the enhancement of competitiveness of PDO producers.

## References

- ADDOR, F. - GRAZIOLI, A. [2002]: Geographical Indications beyond Wines and Spirits. *The Journal of World Intellectual Property*. Vol. 5. No. 6.
- BALASSA, B. [1965]: Trade Liberalization and „Revealed” Comparative Advantage. *The Manchester School*, Vol. 33. pp. 99–123.
- BANSE, M.–GORTON, M.–HARTEL, J.–HUGHES, G.–KÖCKLER, J.–MÖLLMAN, T.–MÜNCH, W. [1999]: The Evolution of Competitiveness in Hungarian Agriculture: From Transition to Accession. *MOCT–MOST*, Vol. 9. pp. 307–318.
- BOJNEC, S. – FERTŐ, I. [2007]: Determinants of competition in agro-food trade between Central European Countries and the European Union. IAAE-104<sup>th</sup> EAAE Seminar, Budapest
- BORCH, O. J. – ROALDSEN, I. H. E. [2007]: Competitive positioning and value chain configuration in international markets for traditional food specialties. Paper presented at 105<sup>th</sup> EAAE Seminar, Bologna, Italy, March 8-10, 2007
- EITELJÖRGE, U. – M. HARTMANN [1999]: Central-Eastern Europe Food Chains Competitiveness in The European Agro-Food System and the Challenge of Global Competition, ISMEA, Rome
- FERTŐ, I. - HUBBARD, L.J. [2003]: Revealed comparative advantage and competitiveness in Hungarian agri–food sectors, *The World Economy*, 26, pp. 247–259.
- FERTŐ, I. [2004]: *Agri-Food Trade Between Hungary and the EU*, Századvég Publishing, Budapest, Hungary
- GEHLHAR, M. J. – PICK, D. H. [2002]: Food Trade Balances and Unit Values: What can They Reveal about Price Competition? *Agribusiness*, vol. 18, pp. 61–79.
- HINLOOPEN, J. – VAN MARREWIJK, C. [2001]: On the Empirical Distribution of the Balassa Index. *Weltwirtschaftliches Archiv*, vol. 137 pp. 1-35.
- MALORGIO, G. – CAMANZI, L. – GRAZIA C. [2007]: Effectiveness of European Appellations of Origin on the International wine market. Contributed Paper presented at the 105<sup>th</sup> EAAE Seminar, Bologna, Italy, March 8-10, 2007
- SCARAMUIZZI, S. – BELLETTI, G. – BURGASSI, T. – MANCO E. – MARESCOTTI A. – PACCIANI A. [2007]: The roles of geographical indications (PDO and PGI) on the internationalization process of agro-food products. Paper presented at the 105<sup>th</sup> EAAE Seminar, Bologna, Italy, March 8-10, 2007
- TEUBER, R. [2007]: Geographical Indications of Origin as a Tool of Product Differentiation: The Case of Coffee. Paper presented at the 105<sup>th</sup> EAAE Seminar, Bologna, March 8-10, 2007.
- TREJO-PECH, C. O. – LÓPEZ-REYNA, C. – HOUSE, L. A. – MESSINA, W. [2010]: Appellation of Origin Status and Economic Development: A Case Study of the Mezcal Industry. IAMA 20<sup>th</sup> Annual World Forum and Symposium, Boston.
- TREVISAN, I. [2008]: The appellative “Denominazione geografica” in the marketing of grappa from Trentino. 4<sup>th</sup> International Conference of the Academy of Wine Business Research, Siena.
- VOLLRATH, T. L. [1991]: A Theoretical Evaluation of Alternative Trade Intensity Measures of Revealed Comparative Advantage. *Weltwirtschaftliches Archiv*, Vol. 130 (2) pp. 265–279.

**Appendix I: Spirits distilled from fruits with PDO in the NMS (year in became PDO)**

Spirit	Country of origin	Spirit	Country of origin
Szatmári szilvapálinka (2003)	Hungary	Țuică Zetea de Medieșu Aurit (2005)	Romania
Kecskeméti barackpálinka (2003)	Hungary	Țuică de Valea Milcovului (2005)	Romania
Békési szilvapálinka (2003)	Hungary	Țuică de Buzău (2005)	Romania
Szabolcsi almapálinka (2003)	Hungary	Țuică de Argeș (2005)	Romania
Gönci barackpálinka (2008)	Hungary	Țuică de Zalău (2005)	Romania
Pálinka (2008)	Hungary	Țuică Ardelenească de Bistrița (2005)	Romania
Bošacka slivovica (2003)	Slovakia	Horincă de Maramureș (2005)	Romania
Brinjevec (2008)	Slovenia	Horincă de Cămârzana (2005)	Romania
Doljenski Sadjavec (2008)	Slovenia	Horincă de Seini (2005)	Romania
Slivova rakya from Troyan (2005)	Bulgaria	Horincă de Chioar (2005)	Romania
Kaysieva rakya from Silistra (2005)	Bulgaria	Horincă de Lăpuș (2005)	Romania
Kaysieva rakya from Tervel (2005)	Bulgaria	Turț de Oaș (2005)	Romania
Slivova rakya from Lovech (2005)	Bulgaria	Turț de Maramureș (2005)	Romania
Pălincă (2008)	Romania		

Source: 110/2008 EC regulation

**Appendix II: Spirits distilled from fruits**

22089033	Plum, pear or cherry spirit, in containers holding $\leq 2$ l
22089038	Plum, pear or cherry spirit, in containers holding $> 2$ l
22089048	Spirits distilled from fruit, in containers holding $\leq 2$ l (excl. plum, pear or cherry spirit and calvados)
22089051	Spirits distilled from fruit, in containers holding $\leq 2$ l (excl. plum, pear or cherry)
22089071	Spirits distilled from fruit, in containers holding $> 2$ l (excl. spirits distilled from grape wine or marc, plum, pear or cherry)

Source: EUROSTAT, CN8 database