THE EFFECTS OF GIS ON COMPETITIVENESS

TÖRÖK ÁRON

Corvinus University of Budapest, Department of Agricultural Economics and Rural Development
1093 Budapest, Fővám tér 8.
aron.torok@uni-corvinus.hu

ABSTRACT
The importance of geographical indicators is continuously increasing and PGI products are currently playing an important role in the first pillar of the EU quality policy. However, the link between PGI 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 geographical indication have competitive and/or comparative advantage in European markets. In order to meet this aim, the paper analyses the competitiveness of traditional fruit spirits produced by NMS in the EU15 markets. The results suggest that the majority of NMS fruit spirits were both competitive and had a comparative advantage in the EU15 beverages market between 2001 and 2009, although competitive positions have continuously deteriorated after EU accession. The results also suggest that two-way fruit spirit trade with the EU15 was ultimately unsuccessful in quality and in terms of price after EU accession, although country performances differ significantly. From the above results, it appears that NMS are continuously losing market positions in their traditional fruit spirit sector in 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 PGI 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 PGI producers.

Keywords: PGI, fruit spirit, New Member States

INTRODUCTION

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-FERTŐ 2007, FERTŐ 2004). 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 geographical indication (PGI), have special characteristics that European consumers appreciate.
The importance of geographical indicators is increasing and PGI products currently play an important role in the first pillar of the EU quality policy. However, the link between PGI 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 geographical indication 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 PGI.

MATERIAL AND METHOD

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):

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

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.

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.

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:

$$UV^{x}_{ij} = X_{ij}/Q^{x}_{ij} \text{ and } UV^{m}_{ij} = M_{ij}/Q^{m}_{ij,} \text{ so } UVDij = UV^{x}_{ij} - UV^{m}_{ij} \quad (4)$$

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 (UVmij) is deducted from export unit value (UVxij); that is, export value achieved from a country's given product group (Xij) is

divided by export quantity (Qxij), then divide import value (Mij) by import quantity (Qmij) and deduct the two values from each other. Trade balance (TB) can also be easily calculated from the formula above: (TBij = Xij - Mij), 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): TBij > 0 and UVDi j< 0,
Category B (unsuccessful price competition): TBij <0 and UVDij > 0,
Category C (successful quality competition): TBij > 0 and UVDij > 0,
Category D (unsuccessful quality competition): TBij < 0 and UVDij < 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).

RESULTS

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 PGI 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
Revealed comparative advantage, if:	**>1**	**>0**	**>0**	**>0**				
Bulgaria	11.73	11.62	1.78	4.61	20.23	20.27	1.35	2.25
Czech Republic	26.19	25.90	2.73	4.28	30.24	30.16	1.12	1.24
Hungary	4.65	4.55	0.69	2.77	8.80	8.84	1.20	1.26
Poland	0.36	0.32	-1.82	1.55	0.42	0.42	1.52	1.59
Romania	48.25	47.75	2.33	3.44	103.29	103.34	2.14	2.07
Slovenia	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*).

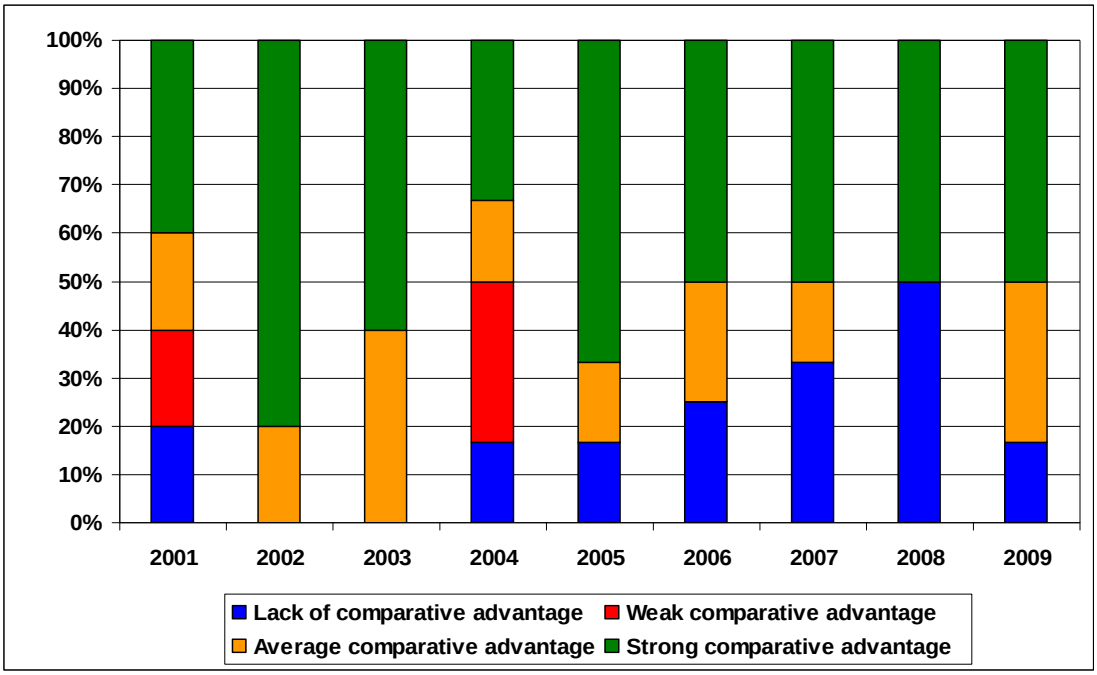

Figure 1: Changes of B-index by categories in the EU15 beverages markets
Source: Author's own composition based on EUROSTAT (2011)

Table 2: GP-indices in the NMS fruit spirit two-way trade by countries and categories*

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

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. 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.
Behind the overall picture, country performances have differed significantly (*Table 2*). 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.

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 3: Combined RTA and GP-index in NMS fruit spirit trade with EU15

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

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 3*). 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.

CONCLUSIONS

This paper has analysed the competitiveness of products with protected geographical indications 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 was 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 PGI 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 PGI producers.

REFERENCES

- BALASSA, B. [1965]: Trade Liberalization and „Revealed" Comparative Advantage. The Manchester School, Vol. 33. pp. 99–123.
- BOJNEC, S. – FERTŐ, I. [2007]: Determinants of competition in agro-food trade between Central European Countries and the European Union. IAAE-104th EAAE Seminar, Budapest
- 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.
- VOLLRATH, T. L. [1991]: A Theoretical Evaluation of Alternative Trade Intensity Measures of Revealed Comparative Advantage. Weltwirtschaftliches Archiv, Vol. 130 (2) pp. 265–279