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RECENT DEVELOPMENTS IN THE AGRI-FOOD TRADE: THE CASE OF SLOVENE-CROATIAN EXCHANGE

ABSTRACT

This paper examines the structure of agri-food trade with the emphasis on commerce of Slovenia and Croatia and provides some comparisons with the exchange with selected European trading partners. The focus is mainly on the period immediately before and after the EU enlargement and thus captures the so far existing effect of changing trading regime. The decline in price and quality competitiveness of Slovene agri-food products in Croatian market is observed, which is reflected also in the worsening of trade balance in year 2005 compared to 2003. As for the prevailing trade types, for Croatia the prevalence of intra-industry trade is observed, while the trade with European trading partners is determined by inter-industry trade.

Key words*: trade with agricultural and food products, Slovenia, Croatia, intra-industry trade, inter-industry trade*

1. INTRODUCTION

Trade flows play a crucial role in the determination of the level and composition of activities in economy, and influence economic stability and economic growth. In the paper, the recent trade developments in the agri-food sector[1] are analysed, with the emphasis on the exchange between Slovenia and selected trading partners, namely Croatia and three European most important trading partners.

For Croatia, a very recent study by Buturac and Rajh (2006) shows that the high quality exports are experienced for tobacco and fish products, while the majority of agri-food products (edible products and preparations, cereal, flour or starch preparations of fruits or vegetables) are characterised by low export quality. The loss of comparative advantages for the Croatian food industry in the last few years is due to the higher level of liberalization in domestic markets and significant growth of imports of food products, while the exports are stagnating. Slovenian agri-food trade and its determinants are analysed mainly by Bojnec *et al*. (2005) and Majkovič *et al*. (2005). Investigation on vertical intra-industry trade and its relationship with factor endowment is conducted by Fertö (2005) in the case of agri-food exchange between Hungary and EU. Škuflić (2005) in the overall trade analysis argues that

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[1] The agri–food sector comprises agricultural production and food industry, while we refer to agricultural and food products as agri-food products.

in the case of Croatia the integration process negatively influences on the level of intra-industry trade (IIT) due to the low competitiveness and associated high adjustment costs. Among trading partners with high level of intra-industry trade Poland and Slovenia are emphasised.

The article is composed as follows: first, we explain the methodology and data used. Then we analyse the export and import structures of agricultural and food products. The trade with agricultural and food products is disentangled into different trade types, which differ substantially. As such this development reveals to a certain extent the state of development in agriculture and food industry. In the final chapter, conclusions are derived.

2. METHODOLOGY AND DATA

When discussing about trade issues, the country's prevailing trade types and their determinants are often the research subject. This is a typical approach in the mainstream economic literature for in-depth insights into the countries' and sectors' specific characteristics on trade developments, trade types and trade specialization for the economy as a whole and/or for their respective sectors. The common research and policy question that arises is on the nature of trade: whether it is inter-industry trade (trade between the industry groups) or whether we are dealing with intra-industry trade (IIT) with simultaneous exports (X) and imports (M) within the same industry group. Moreover, the research question is also what kind of IIT we are dealing with. An approach, used by Fontagné *et al.* (1997), disentangles trade into one-way (inter-industry) and two-way (intra-industry) trade type, with the latter further disaggregated into different types of IIT. Therefore, this methodology allows us to take a look at the nature of two-way IIT distinguishing between horizontally and vertically differentiated products. It is often assumed that differences in export vis-à-vis import prices reflect quality differences. So, to measure trade quality differences, we use differences in unit values of X and M for the same product group. A threshold of 10 per cent for trade overlap is introduced (see also Abd-el-Rahman, 1991; Greenaway *et al.* 1994; Fontagné *et al.*, 1997). When the minority flow represents at least 10 per cent of the majority flow, that overlap is considered as IIT. Below that threshold, the trade overlap is not significant and is defined as inter-industry type. Products with the ratio X-to-M prices within a 15 per cent threshold in a given year are considered as similar or horizontally differentiated (Fontagné *et al.*, 1997):

$$(1) \qquad 1.15 \leq UV_{kk'pt}^{X} / UV_{kk'pt}^{M} \leq 1.15,$$

where *UV* refers to unit value and *X* and *M* refer to exports and import, respectively, at the 6-digit Combined Nomenclature (CN) product level. Indices *k* represent the declaring country, *k'* the partner country and *p* the product in year *t*. When the equation (1) for two-way trade or for IIT does not hold, products are considered as vertically differentiated. It is assumed that differences in quality are reflected in price differences. In the latter case of vertically differentiated IIT we consider the exchange of qualities, while in the former case of horizontally differentiated IIT the exchange of varieties. According to Fontagné *et al.* (1997) determinants of IIT in horizontally differentiated products are different from those in vertical (see also Fertö, 2005). In the former case, products sold at the same price may be considered as perfect substitutes, while in the second, common ranking of consumer preferences can be associated with differences in quality. In this case, the adjustment costs might be sizeable, since it might not be equivalent to specialize in high or low quality products in the same industry. So, IIT is divided into exchange of horizontally (HIIT) differentiated products in varieties and vertically (VIIT) differentiated products in qualities:

$$(2) \quad \text{IIT} = \text{HIIT} + \text{VIIT}.$$

It is assumed that VIIT has two components, high quality (HQVIIT) and low quality (LQVIIT) (Díaz Mora, 2002). A high share of LQVIIT implies that a country is specializing into relatively low-price export goods in the vertically differentiated product groups. A high share of HQVIIT implies that VIIT is in the form of high-value added exports. Therefore, trade flows can be classified into different trade types according to the similarity in unit values (UV) and to the overlap in trade flows. Table 4 summarizes the criteria for decomposition of trade flows and trade flows' classification, as it is used in the empirical part of this paper.

Table 1.

Criteria for decomposition of trade flows and trade flows classification

Degree of Overlap between Export (X) and Import (M) Values: Does the minority flow represent at least 10% of the majority flow?	**Similarity of Export and Import Unit Values: Do X and M unit values differ less than 15%?**	
	Yes (horizontal differentiation)	No (vertical differentiation)
Yes	*Two way trade in similar products*	*Two – way trade in vertically differentiated products* LQVIIT: if $UV_{kk'pt}^{X} / UV_{kk'pt}^{M} < 1/1.15$: low export prices (indicates low export quality) and high quality of imports HQVIIT: if $UV_{kk'pt}^{X} / UV_{kk'pt}^{M} > 1.15$: high export quality and low import quality
No	*One – way trade*	

X – export, M – import, LQVIIT – low quality vertical intra-industry trade (IIT), HQVIIT – high quality vertical IIT, and UV – unit value.
Source: Bojnec, Majkovič and Turk, 2005.

Aiginger (1997) further proposes differentiation of trade flows by the use of unit value indicator (UV) according to whether it is accompanied by trade surplus or deficit. This approach enables a distinction between the markets where the quantity traded is determined more with price competition and those with non-price (quality) competitiveness. The results are presented in a four-quadrant scheme when:

- The home country has a high unit value $(UV_X > UV_M)$ and trade deficit indicating unsuccessful price competition. Industries in such sector have lost price competitiveness in a market in which prices are important, with the trade deficit caused by high production costs and thus lack in price competitiveness.

- The home country has a low unit value ($UV_X < UV_M$) and trade surplus indicating successful price competition.
- The high unit value ($UV_X > UV_M$) and the exported quantity exceed the imported quantity indicating successful quality competition. This consequence is attributed to the quality lead, reflected by demand or it is a sign of successful specialization in the respective market segments. Such trade performance is aimed at by advanced countries reflecting successful quality competition and sector's excellence.
- The low unit value ($UV_X < UV_M$) and trade deficit despite low export prices. This points out an unattractive sector due to structural problems.

For Slovenia, the trade indices for agri-food products have been calculated at the 6-digit of CN level, Chapters from 1 to 24 (see also Table 2), on the basis of the trade data obtained from the Statistical Office of the Republic of Slovenia (SORS, 2005). The data comprises exports and imports of agri-food products for the years from 1996 to 2005. The results presented are focused mainly on data for the pre-enlargement 2003 and the post-enlargement 2005 and main Slovenian agri-food trading partners.

Table 2.
Classification of product groups used in the empirical part of the paper

Products' group	CN Chapter (Number and full description)
Live animals	1. Live animals
Meat	2. Meat and edible meat offal
Fish	3. Fish and crustaceans, molluscs and other aquatic invertebrates
Dairy produce	4. Dairy produce; birds' eggs; natural honey; edible products of animal origin, not else specified or included
Products of animal origin	5. Products of animal origin, not else specified or included
Live trees, other plants	6. Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage
Vegetables	7. Edible vegetables and certain roots and tubers
Fruits and nuts	8. Edible fruits and nuts; peel of citrus fruits or melons
Coffee, tea	9. Coffee, tea, mate and spices
Cereals	10. Cereals
Milling industry	11. Products of the milling industry; malt; starches; inulin; wheat gluten
Oil seeds	12. Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder
Vegetable saps and extracts	13. Lac, gums, resins and other vegetable saps and extracts
Vegetable plaiting material	14. Vegetable plaiting materials; vegetable products not else specified or included
Fats, oil, waxes	15. Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes
Meat, fish preparations	16. Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates
Sugar	17. Sugar and sugar confectionery
Cocoa	18. Cocoa and cocoa preparations
Cereals preparations	19. Preparations of cereals, flour, starch or milk; pastry cooks' products
Vegetable, fruit preparations	20. Preparations of vegetables, fruit, nuts or other parts of plants
Other preparations	21. Miscellaneous edible preparations
Beverages	22. Beverages, spirits and vinegar
Food industry residues	23. Residues and waste from the food industries; prepared animal fodder
Tobacco	24. Tobacco and manufactured tobacco substitutes

3. RESULTS

Patterns of trade geography are influenced by different factors, such as political and economic factors, but usually also strongly determined by historical and cultural linkages. Slovenia started to diversify its trade during the 1980s with the economic decline of the former Yugoslav economy, but reorientation was more substantial for other manufactured goods than agri-food products. Being part of the same state until 1990s, having historical

links, similar language and common border, the bilateral trade agreements being in force in the nineties, are all very likely reasons for the orientation of Slovene agri-food traders towards traditional markets. According to Bojnec and Hartman (2004), in 1992 the export of agri-food products to EU market accounted for almost 32%, and former Yu market for 54%. On the import side, the EU share was 29% and former Yu 43%. So the export competitiveness toward EU fell significantly, while supply from Yugoslav markets with the then unfavourable political situation was replaced by other countries, most notably EU. Yet with the EU entry in 2004 the Slovenian preferential trade status in the area is abolished and the changes due to the worsening position of Slovene agri-food traders are already visible.

Table 3.

Slovenian agri-food trade structures (in % of import and export, respectively for selected trading partners), 2003 and 2005.

	2003		2005	
Country	*Export share*	*Import share*	*Export share*	*Import share*
Austria	3.06	10.02	10.13	14.96
Germany	4.96	10.67	5.23	13.30
Italy	13.84	14.51	23.53	20.65
Croatia	19.75	7.74	17.56	5.40
Rest of the world	58.39	57.07	43.56	45.69
Total	100	100	100	100

Source: Authors' calculations based on SORS data.

For Slovenia, the main European agri-food trading partners in 2005 are Austria, Germany and Italy, which account for 76% of trade with the EU-15 countries (detailed computations available at authors). Among third countries, notably traditional markets of former Yugoslavia are pivotal for Slovene agri-food traders, with Croatia as the most important market. The geographical repartition of Slovene agri-food commerce with the most important trading partners is revealed in Table 3. After the EU enlargement, the increasing importance of the European market is observed in terms of market shares. But it must be stressed out that in nominal values, after the enlargement, the European export to Slovenia has risen significantly, while the imports vis-à-vis EU15 declined substantially. Due to this fact, Slovenian agri-food trade deficit with EU15 increased from -355 mio € in 2003 to 502 mio € in 2005. The same trend of decline can be seen with the trade balance with the former Yugoslav republics. Traditional trade surplus in these markets decreased from 180 mio € in 2003 to 103 mio € in 2005.

Potential trade effects of the EU enlargement for the ten newcomers are analysed through the gravity model by Papzoglou, Pentecost and Marques (2006). The model predictions suggest that export growth of less well integrated transition economies (like Lithuania) is more substantial than of those better integrated (like Hungary). After the EU enlargement, the accession economies become more integrated with the world trading system (rises in levels of both imports and exports, but the rise in imports substantially higher than in exports), with the rise on the export side mainly to EU15 members, whilst trade with the rest of the world declines. The trade deficit as a consequence of EU enlargement should arise in comparison to 2003. This finding is consistent with our results for Slovenian agri-food sector. They suggest the increased integration following the elimination of trade barriers has made EU products more exportable to the accession countries to a much greater extent than the products of the new member states have been to the EU.

On the basis of the trade type analysis it has been found that the prevailing trade type with European partners is the inter-industry trade, which implies higher adjustment costs of

displacement of resources across different industries. A similar picture is shown by Fontagné *et al.* (1997), who report that the IIT has increased since the mid 1990s in intra-European flows and become the pivotal type of trading of EU-15. But when the results are disentangled to the industry level, the one-way trade type accounted for 61% in trade flows for food and beverages, while for agriculture the share remained even higher (almost 74%) in the year 1994. These shares are relatively stable through the analysed period 1980-1994.

In the meantime, intra-industry trade, which is often observed in trade among countries with similar factor endowments and smaller economic distances, is observed in the exchange of agri-food products of Slovenia with neighbouring Croatia (see Table 4). This finding is also consistent with Škuflić's results (2005) for overall trade among Slovenia and Croatia. Possible explanation of this development pattern is that the higher proportion of both IIT in vertically and in horizontally differentiated products is often arising from the countries' similarities in factor endowments and similar preferences and tastes by the consumers. Adjustment costs in such IIT trade development are generally considered to be much smaller than those associated with the inter industry trade specialization. The latter tends to drive forces towards a concentration of economic activity on a limited number of industries and the abandonment of others. We can assume that Slovenian trading partners are characterized by their different economic size and different factor endowments. The higher the share of IIT, the greater is the external integration of a certain product category, and thus the lower are the expected pressures and related adjustment costs arising from further trade liberalization. And vice versa, the restructuring and reallocation of production factors across industries would be much more painful as such processes require not only adjustments along the product differentiation within the certain product lines, but particularly movements of production factors, their reallocations and restructuring between different industries.

Among a few recent studies, analysing trade types in the case of agri-food trade, Fertö (2005) explains the determinants of vertically differentiated trade in the case of agri-food trade between Hungary and the EU with an econometric model. Vertical intra-industry trade, though still less important than inter-industry trade, dominates over horizontal, suggesting the exchange of products of different quality. The greater prevalence of vertical IIT suggests that any economic adjustment costs to the Hungarian agri-food sector are likely to be higher than in the case when trade would be predominantly of horizontal nature.

Table 4.

Slovenian agri-food trade types (in %) with selected trading partners, 2003 and 2005

	Trade types							
	Inter-industry/one-way trade		*Two-way (IIT) trade in vertically differentiated products*				*Two way (IIT) trade in similar products*	
			low quality		*high quality*			
	2003	2005	2003	2005	2003	2005	2003	2005
Austria	89.22	77.17	6.48	9.50	1.50	4.78	2.80	8.55
Italy	88.78	76.07	3.73	11.62	6.73	8.57	0.76	3.75
Germany	76.28	82.14	16.29	11.85	7.36	4.72	0.07	1.29
Croatia	47.79	49.64	24.76	19.35	18.66	12.60	8.79	18.41

Source: Authors' calculations based on SORS data.

Table 5.

Agri-food trade between Slovenia and Croatia, by product groups in 2003

High UV, quantity deficit	*Low UV, quantity surplus*
Fish; Milling industry; Vegetable plaiting material; Food industry' residues; Tobacco	Dairy produce; Products of animal origin; Fruits and nuts; Sugar; Other preparations;
5 sectors, balance: -11.64 mio €	*5 sectors, balance: 9.93 mio €*
High UV, quantity surplus	*Low UV, quantity deficit*
Live animals; Meat; Live trees, other plants; Coffee, tea; Oil seeds; Meat, fish preparations; Vegetable, fruit preparations; Beverages;	Vegetables; Cereals; Vegetable saps and extracts; Fats, oils, waxes; Cocoa; Cereal preparations;
8 sectors, balance: 29.63 mio €	*6 sectors, balance: -5.42 mio €*

Note: Total agri-food balance for Croatia in 2003 is 22.50 mio €
Source: Authors' calculations based on SORS data.

Table 6.

Agri-food trade between Slovenia and Croatia, by product groups in 2005

High UV, quantity deficit	*Low UV, quantity surplus*
Fish; Vegetable saps and extracts; Vegetable plaiting material; Sugar; Tobacco;	Products of animal origin; Fruits and nuts; Milling industry; Meat, fish preparations;
5 sectors, balance: -7.71 mio €	*4 sectors, balance: 6.41 mio €*
High UV, quantity surplus	*Low UV, quantity deficit*
Live animals; Meat; Dairy produce; Live trees, Other plants; Coffee, tea; Cereals; Oil seeds; Vegetable, fruit preparations; Beverages; Food industry' residuals;	Vegetables; Fats, oil, waxes; Cocoa; Cereals preparations; Other preparations;
10 sectors, balance: 26.96 mio €	*5 sectors, balance: -7.86 mio €*

Note: Total agri-food balance for Croatia in 2005 is 17.79 mio €
Source: Authors' calculations based on SORS data.

The use of unit values, as proposed by Aiginger (1997) enables us to distinguish between price and quality competition on selected markets (see Table 5 and 6). Out of the four trade categories, the third one ($UV_X > UV_M$ and $X > M$) is most promising from the perspective of

technological or dynamic competitiveness. A country with high quality and prices is well prepared for future competition, if a large part of its industry is located in the sector where high unit values are consistent with an export surplus (Aiginger, 1998).

The results in Tables 5 and 6 reveal the position of Slovenian agri-food traders on Croatian market in years 2003 and 2005, before and after change in the trade regime (abolishment of trade agreements due to the Slovenian accession to the EU in 2004). This is probably one of the reasons for the decrease in trade balance, with trade surplus fall by 21% in 2005 compared to 2003. The division of trade on the market according to price competition and quality dominance is yielding the following picture. In year 2003 as well as 2005 the majority of traded agri-food products reflect successful quality competition – despite the higher export than import unit value the trade surplus is recorded. Regarding the price competition, the lack in price competitiveness yielded with a deficit of -7.71 mio € in 2005 (-11.64 mio € in 2003). On the other hand, the successful price competition is revealed in both years, but we must point out its significant fall in 2005 compared to 2003 from 9.93 mio € to 6.41 mio €. At the same time, the structural problems' area seems to deteriorate in 2005 compared to 2003 (increase of 45% in value terms), indicating that the attention is needed in problematic sectors for Slovene agri-food traders (e.g. vegetables).

The results revealed that Slovenia is loosing its quality and price competitiveness in agri-food products on Croatian market, which is also reflected in the worsening of the agri-food trade balance in the analyzed market.

4. CONCLUSIONS

Slovenia is a traditional net-importer of agricultural and food products. The exchange with its main trading partners differs not just by value or composition of trade, but also by prevailing trade types. As for Croatia, the prevalence of IIT is observed. IIT pattern is often recorded in trade among countries with similar factor endowments as well as among countries with small economic distances. In such case, adjustment costs, factor mobility and income distribution are changing less substantially. On the other hand, the commerce with three most important European agri-food trading partners is characterised by the persisting inter-industry trade. A possible explanation of this phenomenon is that these trading partners experience a different degree of factor endowments and/or different degree of competitiveness of their agri-food sectors compared to Slovenian.

The analysis of trade performance of Slovene agri-food products on Croatian market reveals the lesser competitiveness in 2005 compared to 2003 from the price and quality aspects. Due to the integration process, the expected changes in patterns of trade, trade types and trade specialization in Slovenian agri-food trade in the near future are likely to depend on the extent of structural changes within the sectors.

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RAZVOJ TRGOVINE S POLJOPRIVREDNIM I PREHRAMBENIM PROIZVODIMA: SLUČAJ RAZMJENE SLOVENIJE I HRVATSKE

SAŽETAK

U radu se analizira struktura poljoprivredne i prehrambene trgovine između Slovenije i Hrvatske i istovremeno pokazivaju se karakteristike, značajne za ostale Europske važne trgovinske partnere. Analiza spoljne trgovine odmah ispred i nakon slovenske integracije u Evropsku uniju, pokazuje na efekte nastale zbog promjene slovensko-hrvatskog trgovinskog režima. Za slovenske poljoprivredne i prehrambene proizvode na hrvatskom tržišču značajan je pad u konkurenciji na području cene i kvalitete. U 2005 godini značajno je poslabšanje trgovinske balance u usporedbi sa 2003. Analiza trgovinskih tipova nakazuje da u slučaju Hrvatske dominira intra-industrijska razmjena, dok u slučaju Evropskih partnera inter-industrijska trgovina je značajnija.

Ključne riječi: *trgovina poljoprivrednim i prehrambenim proizvodima, Slovenija, Hrvatska, intra-industrijska trgovina, inter-industrijska trgovina*