The pattern of agricultural trade between Hungary and Slovenia

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Abstract

This paper investigates the patterns of agri-food trade between Hungary and Slovenia employing a highly disaggregated OECD dataset by the years 1993-2002. We also focus on types of trade that have been dominant in bilateral trade flows over the analyzed period. Hungary experienced surplus in agri-food trade by individual product groups in almost all individual years. The degree of intra-industry trade (IIT) is relatively low and relatively lower proportions of IIT are in horizontally and relatively greater proportions are in vertically differentiated agri-food products. Interestingly, almost all-vertical IIT is in high-valued products suggesting trade specializations in varieties and niche products within product categories.
Keywords: bilateral agri-food trade, trade types, Hungary, Slovenia.

1. Introduction

For many years agri-food trade analyses have been based mostly on the traditional concept of comparative advantage. However, the landscape of agri-food trade has changed. The recent empirical research emphasize the increasing role of intra-industry trade (IIT) in agri-food trade which shed light on the usefulness of "the New Trade Theory" (NTT) in explanation of agri-food trade (VAN BERKUM and VAN MEIJL, 2000). The NTT offers various explanations of IIT which stress the importance of the distinction between horizontal and vertical product differentiation. The former occurs when varieties of a product exhibit

different characteristics but are of a similar quality, and the latter, when varieties are of different qualities. The significance of the distinction is that the industry and country characteristics associated with IIT may differ depending on the type of product differentiation (GREENAWAY et al., 1994). The horizontal IIT theory based on the monopolistic competition with increasing returns to scale (e.g. HELPMAN and KRUGMAN, 1985), while vertical IIT emphasise the role of differences in relative factor endowments (FALVEY and KIERZKOWSKI, 1987).

Although there is much research about various aspects of European agriculture, research focusing on agri-food trade is underdeveloped. We are interested in to investigate the patterns in trade flows and trade types in agri-food trade between Hungary and Slovenia during transition to a market economy and associated different efforts towards trade liberalization and adjustments towards the European Union (EU) membership.

The paper contributes to the existing literature in at least two significant directions. First, the paper contributes to a better understanding of patterns in bilateral Hungarian-Slovenian agri-food trade, employing recent developments in international trade theory. Thus the paper provides an insight of the changing nature of bilateral agri-food trade between Hungary and Slovenia explaining how these trade flows have developed. Second, the paper applies in empirical work recent theoretical and methodological developments in international trade focusing on trade types and their dynamics in bilateral Hungarian-Slovenian agri-food trade. The focus is particularly on theory and methodology of IIT (GREENAWAY et al., 1994, FERTŐ, 2005, BOJNEC et al., 2005). The paper identifies the nature (vertical or horizontal) of the IIT between Hungary and Slovenia seeking to determine the factors explaining IIT. Thus the results may also be of a broader relevance to those with a direct involvement in commercial trading by improving our general understanding of agri-food trade flows and patterns between Hungary and Slovenia.

2. Measuring vertical and horizontal intra-industry trade

Unit value of exports/imports has been often used for assessing product quality in trade data and in the separation of horizontal and

vertical IIT (GREENAWAY et al., 1994). Trade flows are defined as horizontally differentiated where the spread in the unit value of exports relative to the unit value of imports is less than 15% at the five-digit Standard International Trade Classification (SITC) level, and vertically differentiated otherwise where relative unit values are outside this range. Bilateral trade of a horizontally differentiated product, j, occurs where the unit values of exports (UV_j^x) and imports (UV_j^m), for a particular dispersion factor, α (e.g. 0.15), satisfies the following condition:

$$1\text{-}\alpha \le \frac{UV_j^x}{UV_j^m} \le 1\text{+}\alpha. \tag{1}$$

Similarly, bilateral trade of a vertically differentiated product is defined as being where:

$$\frac{UV_j^x}{UV_j^m} < 1\text{-}\alpha, \quad \text{or} \quad \frac{UV_j^x}{UV_j^m} > 1\text{+}\alpha. \tag{2}$$

The vertical IIT represents specialization in varieties of different quality requiring different factor endowments. We distinguish between high and low quality vertical IIT. When the relative value of a product is below/over the limit of 0.85/1.15 (1-α/1+α), it is considered as low/high quality vertical IIT. The 15% range of relative unit value that is chosen could be considered arbitrary. But recent studies have found that results increasing the range from 15% to 25% do not alter radically the division of trade into horizontally and vertically differentiated products (FERTŐ, 2005). Therefore we adopt the approach of a ±15% unit price threshold as a means of separating horizontally and vertically differentiated products. We compute measures of IIT to scale the IIT for horizontal (vertical) trade by the share of total horizontal (vertical) trade in total gross trade, such that the two measures sum to the overall IIT. GREENAWAY et al. (1994) express horizontal (vertical) matched trade as a share of gross bilateral trade:

$$GHM_k^p = \frac{\sum_j \left[\left(X_{j,k}^p + M_{j,k}^p\right) - \left|X_{j,k}^p - M_{j,k}^p\right|\right]}{\sum_j \left(X_{j,k} + M_{j,k}\right)} \tag{3}$$

where X and M are values of exports and imports, *p* is either horizontal or vertical trade, *j* is the product category (*j=1,…n*) and *k* is a trading partner. This approach is also applied in this paper.

3. The pattern of Hungarian-Slovenian agri-food trade

To conduct the empirical analysis and to analyze trade patterns in the Hungarian-Slovenian agri-food trade we use detailed trade data from OECD. Different trade liberalization efforts prior the EU membership had not caused considerable changes neither in Hungarian agri-food exports to Slovenia nor vice versa from Slovenia to Hungary (Table 1). Agri-food trade between Hungary and Slovenia has remained unbalanced at similar levels with some oscillations by individual years. Due to relatively a small amount of Slovenian exports, agri-food trade balance is almost in an amount of Hungarian agri-food exports to Slovenia (BOJNEC and FERTŐ, 2005). It seems that the multilateral Central European Free Trade Agreement (CEFTA), in which participated both countries, had not caused considerable increase in bilateral agri-food trade flows. This finding is consistent with the finding by BOJNEC and HARTMANN (2004). The observed agri-food trade levels and their developments under limited trade liberalization and policy changes seem to be related to different exports abilities of the agri-food sectors to compete in the neighbouring country's agri-food markets. As the most striking, it is hardly possible to find any agri-food product category in which Slovenia experienced any considerable surplus in trade with Hungary.

Except for some years for some product categories such as for 02 dairy products, 03 fish, 05 beverages, 12 tobacco and tobacco products, 21 raw hides, skins and furskins, and 41 animal oils and fats, Slovenia is a considerable net importer of agri-food products from Hungary (BOJNEC and FERTŐ, 2005). This particularly holds for the product categories within the group 0 food and live animals with relatively great imports of cereals and cereals preparations (wheat, rice, barley, maize, meals

and flour) and meat and meat preparations (fresh, chilled, frozen, dried, salted, and smoked meat), but less in the case of the product category 4 animal and vegetable oils, fats and waxes, where Hungarian trade surplus has been reduced. Therefore, the empirical evidence indicates that while there are largely greater Hungarian agri-food exports to Slovenia than imports from Slovenia, the patterns in agri-food trade developments over time differ by individual products (see also BOJNEC and FERTŐ, 2005).

Table 1: Exports and imports of agricultural and food products, 1993-2002 (000 USD)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Hungarian agri-food imports from Slovenia										
0 Food	665	1040	2785	2059	1542	498	631	860	800	1344
1 Beverages and tobacco	223	435	172	214	196	283	168	586	394	599
2 Crude materials	622	1112	1253	302	225	331	229	153	290	791
4 Animal and vegetable oils	0	0	0	85	3018	1323	2	81	214	593
59212: Starch	0	10	2	23	7	0	0	0	0	0
Total	1510	2597	4212	2683	4988	2435	1030	1680	1698	3327
Hungarian agri-food exports to Slovenia										
0 Food	39690	49937	103706	78098	92551	82801	89596	76498	77371	76334
1 Beverages and tobacco	173	174	331	392	332	611	1410	3307	1518	1413
2 Crude materials	4496	7296	7002	4384	5173	3818	5548	5477	4777	5824
4 Animal and vegetable oils	21069	23835	15712	13240	20284	1658	7815	5003	2801	1520
59212: Starch	49	22	0	173	126	0	0	0	65	58
Total	65477	81264	126751	96287	118466	88888	104369	90285	86532	85149
Balance (Hungarian exports - imports)										
0 Food	39025	48897	100921	76039	91009	82303	88965	75638	76571	74990
1 Beverages and tobacco	-50	-261	159	178	136	328	1242	2721	1124	814
2 Crude materials	3874	6184	5749	4082	4948	3487	5319	5324	4487	5033
4 Animal and vegetable oils	21069	23835	15712	13155	17266	335	7813	4922	2587	927
59212: Starch	49	12	-2	150	119	0	0	0	65	58
Total balance	63967	78667	122539	93604	113478	86453	103339	88605	84834	81822

Source: Own calculations based on OECD data.

4. Trade types in bilateral trade flows

One-way and inter-industry trade types dominate in agri-food trade between Hungary and Slovenia (Table 2).

Table 2. Intra-industry trade (IIT) in agri-food products between Hungary and Slovenia (%)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Degree of IIT	1.8	1.5	1.1	1.7	6.3	4.7	1.4	3.0	2.8	3.1
• Horizontal IIT	0.0	0.0	0.0	0.7	0.1	0.0	0.0	0.7	0.0	0.0
• Low Vertical IIT	0.8	0.6	0.0	0.0	0.0	0.4	0.3	0.1	0.2	0.1
• High Vertical IIT	99.2	99.4	100.0	99.3	99.9	99.6	99.7	99.2	99.8	99.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Total trade is decomposed on degree of inter-industry trade and degree of intra-industry trade. The degree of IIT is decomposed on the proportion of horizontal, low vertical and high vertical IIT.
Source: Own calculations on the basis of OECD data.

Except in 1997, the proportion of IIT is less than 5%, which is relatively low. The vertical IIT is dominant in the total IIT confirming the results of recent empirical research on IIT. FERTÖ (2004) found a higher level of IIT of Hungary with the EU 15 countries. Surprisingly, the importance of IIT in agri-food products has not increased significantly after partial trade liberalisation as the trade theory suggests. BOJNEC et al. (2005) for Slovenian agri-food trade found that IIT is based on products differentiated in quality where low-quality vertical IIT prevail. This finding is roughly consistent from our finding in this paper for bilateral Hungarian-Slovenian agri-food trade flows where high vertically differentiated products are predominant in Hungarian agri-food exports to Slovenia, but less and more unstable vice versa for Slovenian agri-food exports to Hungary. Within Hungarian vertically different-tiated agri-food products prevails high quality vertical IIT implying greater Hungarian trade specialization in matched two-way trade flows on high-quality varieties within the same product category. This finding is more consistent with matched bilateral trade more typical for

countries with more developed food processing, as it is the case for Hungary.

5. Conclusions and policy implications

There is a growing literature on agri-food trade between individual Central and Eastern European (CEE) countries and the EU. Less research activities has been focusing on the agri-food trade within the CEE region. So trade analysis between individual CEE countries is scarce. In spite of the signed CEFTA, research focus on trade between individual CEE countries and between former CEFTA countries has never gained particular relevance. The CEE countries particularly focused to the EU membership and the CEE intra-regional research and policy activities have been seen of a lower priority. Due to this, more ad hoc arguments rather than arguments based on real empirical analysis have often served such policy debates.

The aim of this paper has been to fill this gap in literature by investigating the patterns and trade types in agri-food trade between Hungary and Slovenia. Hungary has experienced surplus in agri-food trade with Slovenia, but patterns in development differ across product groups over time. For example, the large Hungarian surplus is increasing further in the case of cereals and cereals preparations, but has been reduced slightly for meat and meat preparations. The analyzed period 1993-2002 covers different stages in bilateral and multilateral trade arrangements, but agri-food trade developments do not seem to be related rapidly to possible liberalization changes. Even more, in-depth evidence does not provide any straightforward signs on any radical and considerable changes in agri-food trade flows associated with some declared policy changes. They were either less substantial than envisaged or they have had fewer impacts than it has been often argued in different political debates.

Finally, we do find that structure of agri-food trade between Hungary and Slovenia is basically one-way trade. The vertical IIT plays dominant role within total IIT. These findings are reinforcing the comparative advantage explanation of IIT which is consistent with recent empirical research (FERTŐ, 2005). Moreover our results are similar to findings that have been so far presented for Slovenian agri-food trade, except of the Slovenian agri-food trade with the traditional

former Yugoslav markets. Slovenia has experienced an asymmetry in agri-food trade by prevailing net importing from the EU and CETA countries and net exporting to the former Yugoslav markets (BOJNEC et al., 2005). Such agri-food trade developments imply a greater proportion of one-way and inter-industry trade. Within the IIT for Slovenian agri-food products there is relatively low proportion of horizontal IIT and a greater proportion of vertical IIT. Within vertical IIT high quality vertical IIT is less significant and more unstable over time. On the other hand, high quality vertical IIT is far the most significant for Hungarian agri-food trade with Slovenia. Such IIT types are more consistent for trade between countries with developed agri-food sectors on one side (Hungary) where bilateral trade in similar product offers opportunities for utilization of economies of scale in specialized productions and for exports of high quality varieties for consumers with higher incomes (Slovenia), different tastes and food consumption preferences.

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