

# **INTRA-INDUSTRY TRADE IN AGRI-FOOD PRODUCTS BETWEEN HUNGARY AND THE EU**

## **NON-TECHNICAL SUMMARY**

As a precursor to full accession early in this new century, Hungary signed an Association Agreement with the European Union (EU) in 1991. This has led to partial trade liberalisation and increased competitive pressures for both partners. The economic effects of closer integration depend, amongst other things, on whether trade is of an inter-industry or intra-industry nature. Much of the theoretical and empirical literature on intra-industry trade (IIT) has presumed that products are horizontally differentiated. This type of IIT predicts low economic adjustment costs from trade liberalisation. However, if vertical product differentiation predominates, then adjustment costs may be significantly higher. Thus, recent empirical developments suggest that horizontal and vertical IIT need to be identified and analysed separately.

Intra-industry trade tends to be positively correlated with participation in preferential trade agreements. There is a large literature on IIT in manufactured goods, but that for agri-food products is sparse, especially in distinguishing between horizontal and vertical IIT. And yet the intra-industry nature of international agri-food trade is growing in importance. As regards IIT between East and West Europe, there is an increasing amount of research, but this too tends to neglect agriculture and food.

In this paper we examine in detail the intra-industry nature of agri-food trade between Hungary and the fifteen member states of the EU during the period 1992-98. The data are supplied by the OECD at the four-digit level of the Standard International Trade Classification (SITC). There are 253 four-digit product categories, to which we add two five-digit product categories (wheat starch and maize starch). The full sample therefore covers 255 product categories and accounts for bilateral trade flows between Hungary and the EU member states in each of the seven years.

We present an analysis of the intra-industry nature of agri-food trade between Hungary and the European Union, following the Association Agreement signed in 1991. A slight growth in intra-industry trade (IIT) is indicated by the Grubel-Lloyd index. However, it is not uniform by product group or EU member state or over time, reflecting different patterns of bilateral integration and an economic restructuring process that is far from complete.

But, horizontal and vertical intra-industry trade has different implications for adjustment costs, thus it is not sufficient to focus only on total intra-industry trade. Employing various empirical methods to distinguish horizontal and vertical intra-industry trade, our results suggested that intra-industry trade between Hungary and the EU in agri-food trade was mainly characterised by vertical intra-industry trade, indicating higher adjustment costs. This was reinforced by another finding; that agri-food trade was predominantly one-way trade. We also found that the pattern of various types of trade revealed a relatively high variance by countries and temporally.

We also presented two methodological points. First, after Rajan (1996) we showed that the standard GL index fails to correctly identify the *level* of intra-industry trade. Furthermore, our results confirmed that the index proposed by Nilsson (1997) provided a better approximation to the level of intra-industry trade. Second, various methods applied to distinguish horizontal and vertical intra-industry trade may yield quite different results, causing a potentially serious problem for subsequent empirical work.

Recent literature emphasises that the GL based indices are an appropriate measure of static intra-industry trade, but are not a good proxy for adjustment costs arising from trade liberalisation due to the latter's dynamic nature. Therefore, we applied the concept of marginal intra-industry trade to identify more accurately adjustment costs. The results showed that marginal IIT appears to be low, but assumes greater significance when the index is broadened to include vertical as well as horizontal IIT. Accordingly, the structure of the change in agri-food trade between Hungary and the EU during the period is shown to be predominantly either intra-industry or a vertical nature or inter-industry. Both are believed to incur adjustment costs that are higher than with horizontal IIT, but the dominance of vertical IIT suggests that the agri-food industries of Hungary and the EU may be developing in a complementary manner, involving somewhat lower adjustment costs than may have been feared.

We test for the determinants of IIT between Hungary and its EU partners. Following recent empirical studies, we estimate various types of IIT using different measures of horizontal and vertical differentiation, and employ an array of popular explanatory variables. Our results suggest that separating the measure of IIT into vertical and horizontal trade provides for better estimation of the determinants of trade, and also helps clarify some of the contradictory findings of earlier studies. This is especially the case for inequality in GDP per capita, which often yields opposite signs in different studies. Our results support the proposition that there are different determinants of horizontal and vertical IIT. We also find that Nilsson's measure, accounting for the *level* as well as the degree of IIT, yields better estimation results than the Grubel-Lloyd (GL) based indices. Consequently, use of Nilsson's measure of IIT in empirical analysis may be recommended not only for traditional GL based investigations, but also for testing the determinants of horizontal and vertical IIT.