COUNTRY-SPECIFIC DETERMINANTS OF HORIZONTAL AND VERTICAL INTRA-INDUSTRY AGRI-FOOD TRADE: THE CASE OF BULGARIA AND ROMANIA

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Abstract: The article analyses patterns and country-specific determinants of agri-food trade of Bulgaria and Romania with the European Union. As literature focusing on agricultural aspects of the topic is limited, the paper seeks to contribute to the literature by providing up to date results and suggestions as well as by identifying the determinants of horizontal and vertical intra-industry trade of the Bulgaria and Romania after EU accession. Results suggest that intra-industry agri-food trade is mainly of vertical nature, referring to trade of different quality products. Results verify that determinants of horizontal and vertical IIT are similar and suggest that economic size and FDI are positively, while factor endowments and distance are negatively related to both sides of IIT. Results are mainly in line with the majority of empirical literature in the field.

Keywords: intra-industry trade, determinants, Bulgaria, Romania. **JEL code:** Empirical Studies of Trade – F14

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1. Introduction

Agri-food trade of the New Member States (NMS) has changed remarkably during the previous decade. One of the major factors contributing to such changes was EU accession, by which former trade barriers have diminished. The article analyses the patterns and determinants of agri-food trade of Bulgaria and Romania with the European Union by using the theory of intra-industry trade. There is a wide range of literature generally analysing intra-industry trade patterns but one important shortcoming of such literature is that it ignores the distinction between horizontal and vertical IIT and ignores the fact that they may have different determinants. Literature focusing on the country-specific determinants of vertical and horizontal intra-industry trade is rather limited and those analysing agricultural (or agri-food) trade are extremely rare.

The paper seeks to contribute to the scant literature of the field in two ways. First, it covers latest theory and data available on the topic to provide up to date results and suggestions. Second, it seeks to identify the determinants of horizontal and vertical intra-industry trade of Bulgaria and Romania after EU accession. Results are especially important for these countries as they both became EU members in 2007.

In order to meet these aims, the article is structured as follows. The first part provides an overview of the literature and recent empirical studies of the topic, while the second summarises methods of horizontal and vertical IIT measurement. The third part describes some basic patterns of horizontal and vertical intra-industry agri-food trade between Bulgaria, Romania and the European Union, followed by the presentation of hypotheses and empirical results. The last part concludes.

2. Literature review

Traditional trade theories assume constant returns to scale, homogenous products and perfect competition and aim to explain inter-industry trade based on comparative advantages. However, a significant portion of the world trade since the 1960s took the form of the intra-industry trade rather than inter-industry trade. Consequently, traditional trade models proved to be inadequate in explaining this new trade pattern as there is no reason for developed countries to trade in similar but slightly differentiated goods.

In the 1970's, an increasing amount of research dealt with this issue, providing a theoretical basis for intra-

industry trade (IIT), defined as the simultaneous export and import of products belonging to the same statistical product category. The first synthesising model of IIT was developed by Helpman and Krugman (1985), creating a framework for intra-industry trade theory by using the Chamberlin monopolistic competition theory. This model combines monopolistic competition with the Heckscher-Ohlin (HO) theory, incorporating factor endowments differences, horizontal product differentiation and increasing returns to scale. It has pointed out that comparative advantages drive inter-industry trade through specialisation, while economies of scale drive intra-industry trade.

According to the pioneering work of the Falvey (1981), notions of horizontal and vertical product differentiation have come into existence in the literature. Horizontal IIT refers to homogenous products with the same quality but with different characteristics, while vertical IIT means products traded with different quality and price. Following the author's work, three types of bilateral trade flows may occur between countries: inter-industry trade, horizontal IIT and vertical IIT.

Horizontal differentiation is more likely between countries with similar factor endowments, while according to Falvey and Kierzkowski (1987), vertically differentiated goods occurs because of factor endowment differences across countries. As the authors suggest, the amount of capital relative to labour used in the production of vertically differentiated good indicates the quality of the good. Consequently, higher-quality products are produced in capital abundant countries while lower-quality products are produced in labour abundant countries. Thereby vertical IIT occurs as the capital abundant country exports higher-quality varieties as well as the labour abundant country exports lower-quality products. It is therefore predictable that the share of vertical IIT will increase as countries' income and factor endowments diverge.

Many studies have analysed the determinants of intra-industry trade in general (e.g. Leitão and Faustino 2008, Rasekhi 2008, Wang 2009), though just a limited amount of literature is focused on the country-specific determinants of vertical and horizontal intra-industry trade. Greenaway et al. (1994) were the first to analyse country-specific factors of horizontal and vertical intra-industry trade in the UK and found that vertical IIT is more important in the UK than horizontal IIT and that the inter-country pattern of vertical IIT is systematically related to a range of explanatory variables. Aturupane et al. (1999) searched for the determinants of horizontal and vertical intra-industry trade between Eastern Europe and the European Union and showed that the determinants of the two types of IIT are likely to differ, with vertical IIT being more a reflection of endowment or technology-based factors, and horizontal IIT being more dependent on factors such as scale economies and imperfect competition.

Kandogan (2003) analysed IIT of transition countries and concluded that variables from the increasing returns trade theory, such as scale economies, similarity of income levels, and number of varieties produced play important roles in horizontal IIT, whereas factors such as comparative advantage or dissimilarity in income levels are more related to

vertical IIT. Zhang and Li (2006) investigated country-specific factors of intra-industry trade in China's manufacturing and underlined that the more countries differ in relative country size and relative factor endowments, the less likelihood there is for IIT and horizontal IIT. They also emphasised that difference between countries in relative factor endowments lead to more inter-industry trade, which in turn suppresses IIT and vertical IIT.

Fertő (2005, 2007) analysed Hungarian intra-industry agri-food trade patterns with the EU15 and confirmed the comparative advantage explanation of vertical IIT, while stressing that using a measure of IIT that reflects the level of trade produces better regression results than those based on the degree or share of IIT.

Caetano and Galego (2007) were searching for the determinants of intra-industry trade within an enlarged Europe and found that determinants of horizontal and vertical IIT differed, although both had a statistically significant relationship with a country's size and foreign direct investment. Turkcan and Ates (2010) investigated for the determinants of IIT in the U.S. Auto-Industry and besides confirming that determinants of horizontal and vertical IIT differ, showed that vertical IIT is positively associated with average market size, differences in market size, differences in per capita GDP, outward FDI and distance, while it is negatively correlated with the bilateral exchange rate variable.

Leitao (2011) examined intra-industry trade patterns in the Portugese automobile sector and concluded that intra-industry trade occured more frequently among countries that were similar in terms of factor endowments as well as pointed out that no positive statistical association existed between HIIT and Heckscher-Ohlin variables. Ambroziak (2012) investigated the relationship between FDI and IIT in the Visegrad countries and found that FDI stimulated not only VIIT in the region but also HIIT.

2.1. Measuring horizontal and vertical IIT

Several methods exist to measure intra-industry trade. First, the classical Grubel-Lloyd (GL) index has to be mentioned, which is expressed formally as follows (Grubel and Lloyd, 1975):

$$GL_i = 1 - \frac{|X_i - M_i|}{(X_i + M_i)} \quad (1)$$

where X_i and M_i are the value of exports and imports of product category i in a particular country. The GL index varies between 0 (complete inter-industry trade) and 1 (complete intra-industry trade) and can be aggregated to level of countries and industries as follows:

$$GL = \sum_{i=1}^{n} GL_i w_i \text{ where } w_i = \frac{(X_i + M_i)}{\sum_{i=1}^{n}(X_i + M_i)} \quad (2)$$

where w_i comes from the share of industry i in total trade. However, several authors criticised the GL-index, for five main

reasons: (1) aggregate or sectoral bias, (2) trade imbalance problem, (3) geographical bias, (4) inappropriateness to separate horizontal and vertical intra-industry trade (HIIT and VIIT), (5) inappropriateness for treating dynamics. Detailed discussion of these problems but the fourth would distract from the basic aim of this paper; a comprehensive review can be found in Fertő (2004).

The fourth problem of the GL index is given by the joint treatment of horizontal and vertical trade. Literature suggests several possibilities for solving this problem. Among these solutions, the most widespread one is based on unit values developed by Abd-el Rahman (1991). The underlying presumption behind unit values is that relative prices are likely to reflect relative quantities (Stiglitz, 1987). According to the widespread view in the literature based on this presumption, horizontally differentiated products are homogenous (perfect substitutes) and of the same quality, while vertically differentiated products have different prices reflecting different quality (Falvey, 1981). According to the method of Greenaway et al. (1995), a product is horizontally differentiated if the unit value of export compared to the unit value of import lies within a 15% range at the five digit SITC level. If this is not true, the GHM method is talking about vertically differentiated products. Formally, this is expressed for bilateral trade of horizontally differentiated products as follows:

$$1 - \alpha \leq \frac{UV_i^X}{UV_i^M} \leq 1 + \alpha \qquad (3)$$

where UV means unit values, X and M means exports and imports for goods i and $\acute{\alpha} = 0.15$. If this equation is not true, GHM method talks about vertically differentiated products. Furthermore, Greenaway et al. (1994) added that results coming from the selection of the 15% range do not change significantly when the spread is widened to 25%. Blanes and Martín (2000) developed the model further and defined high and low VIIT. According to their views, low VIIT means that the relative unit value of a good is below the limit of 0.85, while unit value above 1.15 indicates high VIIT.

Based on the logic above, the GHM index comes formally as follows:

$$GHM_k^p = \frac{\sum_j \left[\left(X_{j,k}^p + M_{j,k}^p \right) - \left| X_{j,k}^p - M_{j,k}^p \right| \right]}{\sum_j \left(X_{j,k} + M_{j,k} \right)} \qquad (4)$$

where X and M stands for export and import, respectively, while p distinguishes horizontal or vertical intra-industry trade, j is for the number of product groups and k is for the number of trading partners (j, k = 1, ... n).

There is another method in the literature to distinguish HIIT and VIIT. Fontagné and Freudenberg (FF method, 1997) categorize trade flows and compute the share of each category in total trade. They defined trade to be „two-way'' when the

value of the minority flow represents at least 10% of the majority flow. Formally:

$$\frac{Min(Xi, Mi)}{Max(Xi, Mi)} \geq 10\% \qquad (5)$$

If the value of the minor flow is below 10%, trade is classified as inter-industry in nature. If the opposite is true, the FF index comes formally as:

$$FF_k^p = \frac{\sum_j \left(X_{j,k}^p + M_{j,k}^p \right)}{\sum_j \left(X_{j,k} + M_{j,k} \right)} \qquad (6)$$

After calculating the FF index, trade flows can be classified as follows: horizontal two-way trade, vertical two-way trade and one-way trade.

According to Fontagné and Freudenberg (1997), the FF index tendentiously provides higher values compared to GL-type indices (like the GHM index) as equation 5 refers to total trade, treated before as two-way trade. The authors suggest that FF index rather complements than substitutes GL-type indices as they have measured the relative weight of different trade types in total trade. In conclusion, they found that the value of GHM index is usually between the GL and FF index.

All the indices shown above measure the share of intra-industry trade instead of its level which is a much better index as Nilsson (1997) suggests. According to the author, IIT should be divided by the number of product groups in total trade, resulting in an average IIT by product group. Applying this logic to horizontal and vertical IIT, the Nilsson index is formally express as:

$$N_k^p = \frac{\sum_j \left[\left(X_{j,k}^p + M_{j,k}^p \right) - \left| X_{j,k}^p - M_{j,k}^p \right| \right]}{n^p} \qquad (7)$$

where the numerator equals to that of the GHM index, while n refers to the number of product groups in total trade. Nilsson argues that his measure provides a better indication of the extent and volume of IIT than GL-type indices and is more appropriate in cross-country IIT analyses.

In order to perform calculations based on the above equations, the article uses the Eurostat international trade database using the HS6 system (six digit breakdown) as a source of raw data. Agri-food trade is defined as trade in product groups HS 1-24, resulting in 964 products using the six digit breakdown. The article works with trade data for the period 2005–2010 due to data availability. In this context, the EU is defined as the member states of the EU27.

3. Horizontal and vertical IIT patterns

Using the above methods, horizontal and vertical intra-industry trade were calculated for agri-food trade between

Bulgaria, Romania and EU27 for the period 1999–2010. Table 1 shows that agri-food intra-industry trade is mainly vertical in nature in both countries, as evident from the vertical values compared to the horizontal ones. However, low values for total IIT (the sum of vertical and horizontal IIT) indicate that inter-industry trade prevails in both countries agri-food trade with EU27 between 1999 and 2010. These findings are consistent with the results of previous research in the region (Ambroziak, 2012). It is important to note, though, that all indices analysed increased in the third period, indicating that intra-industry trade (as a measure of economic integration) has grown after EU accession.

Table 1: Horizontal and vertical agri-food IIT in Bulgaria and Romania with EU27 trade in 1999–2010*

Indicator	Bulgaria			Romania		
	1999–2002	2003–2006	2007–2010	1999–2002	2003–2006	2007–2010
GL	0.04	0.05	0.10	0.02	0.03	0.08
GHMH	0	0.01	0.02	0.01	0.01	0.01
GHMLV	0.02	0.03	0.07	0.01	0.01	0.05
GHMHV	0.01	0.01	0.02	0.01	0.01	0.02
FFH	0.01	0.01	0.04	0.01	0.01	0.02
FFLV	0.04	0.06	0.10	0.02	0.02	0.08
FFHV	0.02	0.02	0.03	0.01	0.02	0.02
NH	115	441	4585	323	505	5283
NLV	602	1426	10223	565	1688	14212
NHV	304	818	2892	552	1142	6013

Source: Own calculations based on *Eurostat* (2012)

Note: For definitions of GHMp, FFp and Np, where p is horizontal (H) or vertical (V) intra-industry trade, see equations (4), (6) and (7) in the text. Np is measured in thousand euro.

Despite the steadily increasing absolute VIIT numbers in the period, the share of VIIT in total IIT in Bulgaria and Romania shows a decreasing trend, indicating that less quality-based products are traded with EU27 *(Figure 1)*. The highest decrease can be seen in Bulgaria where VIIT gave 88% of total IIT in 1999, while only 53% in 2010. In case of Romania, a heavy decrease in the share of VIIT compared to total IIT around the millennium was followed by a stable rate of 75–80% after EU accession.

Figure 2 and 3 provide further insights to the analyses above. Using the idea of Blanes and Martín (2000), VIIT was separated into vertically high and low categories, suggesting different qualities of trade. Taking into account the geographical patterns of IIT in Bulgaria and Romania, it becomes evident that low vertical IIT dominates agri-food trade, while the share of high vertical IIT varies around 30% in most cases. Similar results can be obtained if this pattern is analysed in time. The overall picture is quite unfavourable to both countries as the trade of low quality products is usually associated with low prices and unit values, suggesting structural problems in agriculture (Ambroziak, 2012).
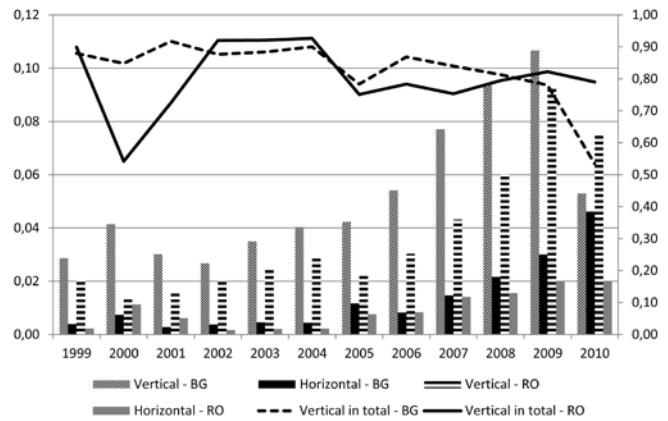

Figure 1: The share of vertical IIT in total IIT between Bulgaria, Romania and EU27, 1999–2010*
*Based on the GHM-method.
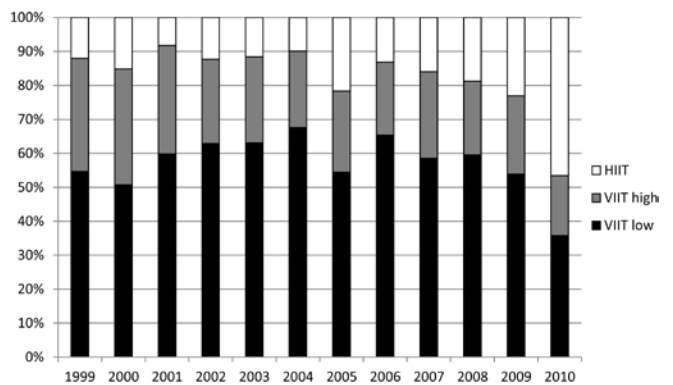Source: Own calculations based on *Eurostat* (2012)

Figure 2: The pattern of IIT in agri-food products between Bulgaria and EU27, 1999–2010, (%)*
*Based on the GHM-method.
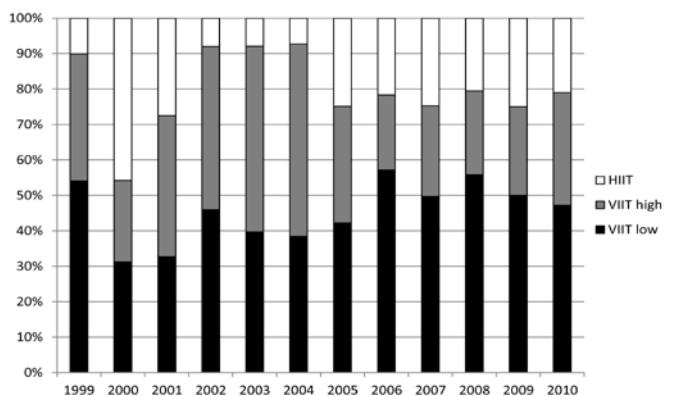Source: Own calculations based on *Eurostat* (2012)

Figure 3: The pattern of IIT in agri-food products between Romania and EU27, 1999–2010, **(%)***
*Based on the GHM-method.
Source: Own calculations based on *Eurostat* (2012)

In short, IIT is mainly of a vertical nature in Bulgaria and Romania, suggesting the exchange of products of different quality. Moreover, it seems that the majority of agri-food trade between these countries and its EU partners has still remained one-way (or inter-industry) in nature, suggesting complementarity rather than competition in production (Fertő, 2007).

4. Determinants of horizontal and vertical IIT

As described in the literature review, theory argues that HIIT and VIIT determinants differ. This may explain why econometric analyses having total (horizontal and vertical) IIT as their dependent variable may be mis-specified. Therefore, the determinants of HIIT and VIIT will now be investigated separately for the case of Bulgaria's and Romania's agri-food trade with EU27. The balanced panel data set contains trade with each and every EU member state (26 members plus the reporter) for twelve years (1999–2010) and 964 products, resulting in almost 600,000 observations. As the majority of literature regresses a measure of IIT on a range of possible explanatory variables without any predefined method, this article uses panel estimation techniques, capturing both cross-sectional and time-dependent special effects. Therefore, consistent with the literature on the determinants of IIT, hypotheses are as follows:

H1. Difference in factor endowments between trading partners increases (decreases) the share of vertical (horizontal) IIT in total trade.

The difference in factor endowments is usually measured by inequality in per capita GDP, in line with the model developed by Falvey – Kierzkowski (1987). Linder (1961) considers that countries with similar demands have similar products, consequently vertical type trade increases with differences in relative factor endowments. Factor endowments are proxied by the logarithm of absolute value of the difference in per capita GDP between Bulgaria and Romania and their trading partners (lnDGDPC), which is expected to be positively related to the share of vertical IIT. LnDGDPC is measured in PPP in current international dollars and data comes from the World Bank WDI database.

H2. The smaller the difference in economic size of the two partner economies, the higher the expected IIT in their trade.

The larger the international market, the larger the opportunities for production of differentiated intermediate goods and the larger the opportunities for trade in intermediate goods. The logarithm of the absolute difference in the average GDP of trading partners is used as a proxy for the average size of markets. LnAVGDP is measured in PPP in current international dollars and the source of data is also the World Bank WDI database. A positive sign for both horizontal and vertical IIT is expected.

H3. The larger the share of foreign direct investment (FDI) in the host country, the higher the share of HIIT and VIIT.

Multinational companies have crucial influence on IIT through their FDI activities. Investing in production facilities abroad creates the possibility to exchange products at different levels in the production stage, thereby contributing to IIT. The logarithm of the absolute difference of stocks of FDI (in billion USD) in Bulgaria and Romania is used to test this hypothesis. FDI is measured in current international USD and data is coming from the WDI database. A positive sign is expected for VIIT as well as HIIT.

H4. IIT will be greater the closer the countries are geographically.

The distance between countries well reflects transport costs. It is evident that the closer the countries are, the cheaper trade is. Variable lnDIST indicates the geographic distance between the reporting country and each of its trading partners by calculating the logarithm of the distance between the capital cities of trading partners in kilometres. The source of data is the CEPII database. LnDIST is expected to be negatively related to HIIT and VIIT.

In order to test hypotheses above, the following standard panel regression model is employed:

$$lnIIT_{ijt} = \alpha_0 + \alpha_1 lnDGDPC_{ijt} + \alpha_2 lnAVGDP_{ijt} + \alpha_3 lnDFDI_{ijt} + \alpha_4 lnDIST_{ijt} + v_{ij} + \varepsilon_{ij}$$

where $lnIIT_{ijt}$ is log of measure of total, vertical, and horizontal IIT, i = Bulgaria/Romania and j = EU27 partner country, t = time; $lnDGDPC_{ijt}$ is the log of absolute difference in per capita GDP between i and j. LnAVGDP is the log of average value of GDP between i and j, while lnFDI is the log of absolute difference of FDI between i and j; lnDIST is log of distance between the capital cities of i and j. The expected signs for HIIT are α_1 and $\alpha_4 < 0$, α_2 and $\alpha_3 > 0$, while for vertical IIT are $\alpha_1, \alpha_2, \alpha_3 > 0$ and $\alpha_4 < 0$. Table 2 provides an overview of the details associated with variables.

Table 2: Description of independent variables

Variable	Variable description	Data source	Expected sign	
			HIIT	VIIT
lnDGDPC	The logarithm of per capita GDP absolute difference between trading partners measured in PPP in current international USD	World Bank WDI database	-	+
lnAVGDP	The logarithm of average GDP absolute difference between trading partners measured in PPP in current international USD	World Bank WDI database	+	+
lnFDI	The logarithm of FDI net inflows absolute difference between trading partners measured in current international USD	World Bank WDI database	+	+
lnDIST	The logarithm of absolute difference between trading partners capital city measured in kilometres	CEPII database	-	-

Source: Own composition

5. results and discussion

The use of a fixed effects model to capture country differences was rejected as a time invariant regressor (lnDIST) is incorporated in the model. Random effects models have been estimated employing generalised least squares and maximum-likelihood approaches. The most robust results in terms of statistical significance were found with the former method, therefore only this specification is reported.

Three equations were estimated in line with the three methods of measuring intra-industry trade given in the literature review. Regarding the determinants of horizontal IIT, it is observable that all the three methods provide similar results *(Table 3)*. LnDGDPC and lnDIST are negative for all estimations, while lnAVGDP and lnFDI show positive signs. It can also be seen that lnDGDPC, lnAVGDP and lnDIST are highly significant in all cases, while lnFDI are less significant. Note that results for the Nilsson-index remain to be less significant than the others. These results are in line with previous expectations on the signs of the relationship. None of the hypotheses above can be rejected.

Table 3: Determinants of horizontal IIT in Bulgaria and Romania

Independent variable	Dependent variable		
	GHM^H	FF^H	N^H
lnDGDPC	−0.0059*** (−2.61)	−0.0086** (−2.48)	−1672.67** (−2.21)
lnAVGDP	0.0023*** (2.72)	0.0027** (2.05)	650.08** (2.30)
lnFDI	0.0019** (1.94)	0.0033** (2.14)	502.81 (1.56)
lnDIST	−0.0070*** (−3.36)	−0.0089*** (−2.79)	−1798.52** (−2.56)
Constant	0.0055 (0.69)	0.0061 (0.51)	834.25 (0.31)

Note: Numbers in parentheses are z statistics; significance levels are *** = 1%, ** = 5%, * =10%.
Source: Own calculations based on Eurostat (2012)

As to the determinants of vertical intra-industry trade, results by method (see *Table 4*) show similar signs than those occurred in the horizontal case. All variables meet previous expectations on signs. Note, however, that lnDGDPC seems to be less significant than in the previous case, though all other variables are strongly significant in most cases (with Nilsson-indices to be slightly less significant than the others). Moreover, none of the hypotheses above can be rejected.

The results of the predefined econometric model suggest that there is a negative relationship between factor endowments and horizontal IIT, while relationship is ambiguous between factor endowments and vertical IIT, indicating that countries with similar factor endowments trade products of similar quality, while those with different factor endowments trade different quality products. Results also highlight that differences in economic sizes are positively associated with IIT, suggesting that countries with different sizes are more likely to have IIT trade patterns. Moreover, the article identifies

a negative relationship between distance and IIT meaning that geographical proximity fosters agri-food IIT. Furthermore, a positive relationship exists between FDI and both sides of IIT, meaning that more foreign capital generate more trade of similar products between Bulgaria, Romania and the EU.

Table 4: Determinants of vertical IIT in Bulgaria and Romania

Independent variable	Dependent variable		
	GHMV	FFV	NV
lnDGDPC	−0.0046** (−0.75)	−0.0056* (−0.57)	−1920.4 (−1.43)
lnAVGDP	0.0058*** (2.68)	0.0108*** (3.11)	1908.88*** (3.82)
lnFDI	0.0051*** (2.84)	0.0074*** (2.81)	424.87 (0.75)
lnDIST	−0.0242*** (−3.71)	−0.0432*** (−3.99)	−4959.08*** (−3.95)
Constant	−0.0251 (−0.97)	−0.0486 (−1.11)	−2474.64 (−0.52)

Note: Numbers in parentheses are z statistics; significance levels are *** = 1%, ** = 5%, * = 10%.
Source: Own calculations based on Eurostat (2012)

As none of our hypotheses can be rejected, it is proven that the determinants of Bulgarian and Romanian agri-food IIT are similar to other countries in the region (Ambroziak 2012, Fertő 2007, Caetano and Galego, 2007). Moreover, it turned out that determinants of horizontal and vertical IIT are similar in this case.

6. Conclusions and limits

The article analysed patterns and country-specific determinants of agri-food trade of Bulgaria and Romania with the European Union. Three different approaches were used to calculate intra-industry trade indices (GHM, FF and the Nilsson-method), providing the basis for regressions run on the determinants of horizontal and vertical IIT. The following results were obtained.

First, it became clear that IIT is of vertical nature in the relations analysed, referring to trade of different quality products. Although the share of IIT is increasing after accession, the majority of agri-food trade is still inter-industry in nature. Taking into account the geographical patterns of IIT in Bulgaria and Romania, it becomes evident that low vertical IIT dominates agri-food trade.

Second, results of suggest a negative relationship between factor endowments and horizontal IIT, while relationship is ambiguous between factor endowments and vertical IIT, indicating that countries with similar factor endowments trade products of similar quality, while those with different factor endowments trade different quality products. Results also suggest that differences in economic sizes are positively associated with IIT, while FDI and IIT are positively associated, meaning that more foreign capital suggests more IIT.

However, the article has several limitations. First of all, the choice of variables for testing hypotheses is crucial and it is clear that different indicators might end in different results for the same hypothesis. Second, the measurement of variables also plays an important role as even the same variables can be measured in many ways. Third, the change of the dataset used might also result in different results as methodology of statistical offices usually varies. Fourth, different model specification might also alter results, though the main trends are not suspected to change. In the future, it might be interesting to test whether changes above end up in statistically significant different results.

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