TRADE AND INTEGRATION: A GRAVITY MODEL OF TRADE FOR SELECTED EU CANDIDATE COUNTRIES

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In the majority of the EU potential members agricultural sector is playing a prominent role. Such an outcome is based on the high contribution of the agricultural sector on GDP, employment and trade accounts. EU initiated bilateral trade liberalization with the Western Balkans through the establishment of the ATPs. Furthermore, trade liberalization is extended in the regional level through the establishment of renewed CEFTA 2006. Despite the significant improvement, their export competitiveness remains weak. In the long run, agricultural exports might contribute on improvement of the export performance of the EU candidates. Main findings of the gravity model employed in this paper suggest that exports are positively affected by product size (GDP), and to lesser extent by the GDP of trading partners. Exports fall with the increase of the distance, and the fall in the value of exports is greater as larger is the distance between the trading partners. Therefore, the marginal fall in exports increases as far as the geographical distance between the trading partners increase. Initial assumptions that PTAs and cultural ties facilities the trade flows were affirmatively confirmed. Trade liberalization had a positive implication on improving export performance of the EU candidate countries

Keywords: EU enlargement, economic transformation, agricultural trade, gravity model

JEL codes: F1, F15, Q10

1. Introduction

The EU enlargement has its roots since the late 1950s when the Treaty of Rome was signed. Since then the EU went through the six phases of enlargement and its expansion remains a strategic aim for the EU itself, but most importantly it is a process of crucial relevance for its candidate members. At the current date, the EU enlargement involves countries from the region of the Western Balkans, Turkey and Iceland. Despite the evident diversities concerning the stage of economic development among these economies, the common denominator of their strategic objectives remains the EU accession. Their accession into the community of the EU Member States brought them an accelerating economic growth. Moreover, the motive of the EU integration serves as the driving benchmark to enhance the process of economic transition and agricultural transformation, accompanied by improvement of the national competitiveness.

Majority of the current EU candidate countries are undergoing the process of economic transition. Although the process of transformation is centred on fundamental economic changes, transition is a multifaceted phenomenon that encompasses complex structural, institutional, and behavioural adjustments (Blejer and Skreb, 1997). Because of its significant size and structural deficiencies, agriculture remains one of the most critical issues in the enlargement context (EC, 2009). International trade is powerful force affecting the process of economic development. It influences a country's economic growth, income distribution, use of the natural resources, and economic and political relationships with the rest of the world (Perkins *et al*, 2001). Theories of international trade have identified several sources of gain from international trade. They argue that larger markets help to achieve economies of scale. Another argument is that trade is beneficial because it permits countries to exploit their comparative advantage (Mattli, 1999). Statistical evidence shows that economic growth and international trade are positively correlated (Van der Berg and Lewer, 2007). Agricultural trade expands its developing role, in particular, for the EU candidate countries. Because of its sensitivity related to the food security, barriers to the agricultural trade are the last obstacles before the full trade liberalization of with the EU candidate countries. Empirical studies (Bojnec and Ferto, 2010) suggest that agro-food exports from the EU candidates to the EU are highly concentrated on a few of the most important products with trade specialization. These are mostly primary bulk raw commodities, which are related to natural factor endowments. Export specialization on bulk raw commodities makes

export developments vulnerable to changing market conditions. Accession into the EU will affect the candidate countries in various ways. Doyle and Fidrmuc (2006) indicate that the utilitarian considerations. Two broad categories of effects are important:

1) New members can take full advantage through free movement of goods, capital and labour.

2) As the new members are relatively poor compared to the EU states, they should benefit from redistribution within the EU channeled through the Structural and Cohesion funds and the CAP.

2. Materials and methods

The main objective of this paper is assessment of the role of trade in the context of the EU enlargement. Therefore, the empirical assessment of the gravity model is employed here in order to provide direction on predicting export flows of the EU candidate countries, as well as the key variables determining their export performance. Here is observed the impact of trade liberalization between the EU and its candidate members. Partial objectives involve the comparative analyses related to the development of the total and agricultural trade in the EU candidate countries. In particular, the role of agricultural trade represents the prioritized part of our investigation. The group of countries investigated in this paper involves EU candidate countries: Albania, Bosnia and Herzegovina, Croatia, Kosovo, Macedonia, Montenegro, Serbia, as well as Turkey and Iceland. The main arguments in favour of investigating this group of economies are based on the facts that these countries represent: a homogenous geographic area (excluding Iceland), operating in the common free trade area, and interrelated by the common cultural ties.

2.1. Theoretical foundation of gravity model of the international trade

The gravity model has proven to be the most accurate tool for the explanation and prediction of bilateral trade flows (Broadman, 2006). It is not easy to decide whom to anoint as inventor of the gravity model. The concept is so ''natural'' that it seems always to have been used to describe economic links between pairs of geographical units, either with or without the word ''gravity'' Perhaps, the most classic and extensive application of the model to international trade was by Linnemann (1966), who continued work first reported in Tinbergen (1962), who in turn was contemporaneous with Pyhonen (1963). Specialist in other fields, however, had used versions of the gravity model before international economists did. It seems safest to cite Isaac Newton as the

original progenitor of the gravity model. Newton's gravitational model says that the attraction between two heavenly bodies is proportional to the product of their masses and inversely related to the distance between them (Frankel *et al*, 1997).

According to Grimwade (2007) gravity model of bilateral trade were among the first type of models to be used in empirical work concerned with the effects of European integration. It seeks to explain trade flows between pairs of countries (bilateral trade flows) by variables drawn from both the importing and the exporting country. The gravity model of bilateral trade, in its most basic form, says that trade between country i and country j is proportional to the product of GDP_i and GDP_j and inversely related to the distance between them. Other explanatory variables that are often added (Frankel *et al*, 1997). Borrowing from Newtonian physics, the model consists of a single equation postulating that the amount of trade between two countries depends positively on economic mass (GDP) and negatively on resistance (transport costs). Historical and cultural similarities, including colonial links and common language, tend to reduce the cross-border search and communication costs because of familiarity with customs, institutions, and legal systems, thus facilitating trade (Nellis and Parker, 2004). One of the great benefits of the gravity model is that its central notion – economic interaction depends positively on masses corrected for distance – can be applied to many different situations and applications (van Bergeijk and Brakman, 2010).

2.1.1. *The gravity model equation*

The gravity model is based on the assumption that trade between countries depends positively on their size and inversely on distance (Frankel *et al*, 1997), economically rich and geographically close countries trade more together than with third countries (Pokrivčák and Šindlerová, 2011). In its simplest form, the gravity equation states that the bilateral trade between two countries is directly proportional to the product of the countries GDP's. Thus, larger countries will tend to trade more with each other, and countries that are more even in their relative sizes will also trade more (Feenstra, 2002). The basic form of the gravity equation is as follows (van Bergeijk and Brakman, 2010):

$$T_{ij} = \frac{GDP_i^a \; GDP_j^\beta}{D_{ij}^\theta} \qquad (1)$$

Where: T_{ij} indicates bilateral trade between country i and j; GDP_i indicates the economic size of i, measured by GDP; Dij indicates the bilateral distance between the two countries; parameters a, β and θ are often estimated in a log-linear reformulation of the model. This equation explains bilateral trade using economic size and distance: the larger the two trading partners, the larger the trade flows; the larger the distance between the two countries, the smaller bilateral trade.

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$$X^{ij} + X^{ji} = \left(\frac{2}{Y^w}\right) Y^i Y^j \tag{2}$$

This gives our simplest derivation of the gravity equation, where the bilateral exports from country i to country j are proportional to the product of their gross domestic products (GDPs). Accordingly, the McCallum model is adjusted for logarithmic form by adding the supplementary variables:

$$\ln X_{ij} = a + \beta_1 \ln Y_1 + \beta_2 \ln Y_j + \gamma \delta_{ij} + \rho \ln d_{ij} + \varepsilon_{ij} \tag{3}$$

For the purpose of this paper, here is adopted the above equation to fit it to the gravity model for the EU candidate countries. Practically, we formulated the basic form of the gravity model equation as follows:

$$T_{ij} = a + \beta_1(GDP_i) + \beta_2(GDP_j) + \beta_3(Dist_{ij}) + \gamma_1(Lang_{ij}) + \gamma_2(PTA_{ij}) + \varepsilon_{ij} \tag{4}$$

$$\log(T_{ij}) = a + \beta_1 \log(GDP_i) + \beta_2 \log(GDP_j) + \beta_3 \log(Dist_{ij}) + \gamma_1(Lang_{ij}) + \gamma_2(PTA_{ij}) + \varepsilon_{ij} \tag{5}$$

The final form of equation of the gravity model (equation 5) displays the first three explanatory variables explaining the variability for factors, such as: GDP_i representing the gross domestic product of exporter, GDP_j the gross domestic product of importer; and $Dist_{ij}$ the

distance between the trade partners i and j. The remaining two variables $Lang_{ij}$ and PTA_{ij} are the dummy variables. In our gravity model, $Lang_{ij}$ is equal to 1 in case the investigated countries have a common language ties, and conversely the 0 if they have language barriers. The same is applied in the case of existence of the common preferential trade agreement PTA_{ij} concerning the bilateral trade between the observed countries. The ε_{ij} represents the error term.

The econometric analysis involving the technique of OLS regression and fix effect estimations are applied here. The panel data used to perform the gravity model analysis cover the period 2002-2011. The list of export flows from 44 trade partner countries is investigated. Gravity model covers the export flows of the EU candidate countries and their main world trade partners.

2.2. Data availability

The data collected for the gravity model cover the period of the last decade (2002-2011). It lists the variables for the group of overall 44 countries. It covers the export flows of the EU enlargement countries with the main world trade partners, including the EU-27 countries, EFTA countries, BRIC countries (Brazil, Russia, India and China), USA and Japan. The intra-EU enlargement countries exports as well are the part of our gravitation model. The sources of the used data to construct our gravity model were collected from the National Statistical Agencies and the Eurostat. Accordingly, we were using the data from the World Bank (for the PTAs) and the data of CEPII for the distance and the language (cultural) proximity.

3. Results and discussion

3.1. The state of trade development in the EU candidate countries

The trade balance of the EU candidate countries during the observed period 2004-2011 (Table 1) affirms the fact that all investigated economies cope with a trade deficit. The sharper negative trade balance is evidenced in the smaller and less productive economies (Kosovo, Montenegro, Albania and Bosnia and Herzegovina), while the larger economies in the group of EU candidate countries were displaying more balanced trade accounts. As the result of the recent global recession, the trade pattern of the all observed economies were aggravated, particularly the trade volume. Contraction of the trade turnover during the period of crisis was accompanied with

sharper trade deficit. However, the post-crisis period shows that trade accounts of the EU candidate countries have a tendency to recover at the proximate stage of the pre-crisis period.

Based on the outcome of our investigation (Table 2), Iceland is uniquely exploiting its natural comparative advantage derived from its aquatic resources. Iceland recorded the best export performance in 2011, estimating about 11,000 EUR exports per capita. At the same time, Croatia increased significantly its exporting potential during the observed period by achieving the peak level of 2,000 EUR exports per capita in 2011. The export performance of Macedonia, Turkey, Serbia and Bosnia and Herzegovina was varying between 1,500 EUR and 1,000 EUR. While the remaining EU candidate economies (Montenegro, Albania and Kosovo), estimated their export performance below 1,000 EUR. Moreover, the import side of the trade performance in the case of the EU candidate economies shows a mirroring reflection comparing to the export. Despite the significant improvement of their export performance, small economies such as that of Kosovo, Montenegro and Albania had a lowest export/import coverage ratio. The range of export/import coverage in these economies (in 2011) fluctuated between the lowest 12.6% in Kosovo, 24.9% in Montenegro and 36.0% in Albania (Figure 1). The remaining Western Balkan countries marked a slow but significant increase between 2004 and 2011. The most visible improvement of the export/import coverage was estimated in Croatia and Serbia. Both countries improved their trade coverage from 48.3% to 60.3% in case of Croatia, and from 32.8% to 58.4% in the case of Serbia. Based on the evaluation of the main trade indicators, Macedonia so far is the best-performing economy taking into account the benefits derived from the trade with the rest of the world. It estimated an increase of export/import coverage from 59.5% to 63.5%, and such occurrence was followed by the continual openness to trade (113% of the GDP).

Trade openness is considered to serve as a benchmark for the developing economies, such as some of the EU aspiring countries. The higher degree of openness is considered to shift developing economies from the poverty and enable the efficient resource allocation. Considering the group of the EU candidate countries (Table 2), we could highlight that the degree of openness to trade was marking continues upgrading trend during the whole decade of 2000s. Hand to hand with Macedonia, Bosnia and Herzegovina as well was improving its openness to trade at the comparative level of its GDP (93.5%). Montenegro and Serbia as well accounted a relatively high degree of trade openness estimated at the level of 73.2%, respectively 70.5%. On

the other hand, Albania and Kosovo made the most significant shift on improving of their trade openness since 2004, estimating a sharp increase from 40% to about 60% in 2011.

The outcome of our comparative analysis indicates that the group of the smaller economies constituting the EU Potential Candidate countries were showing a greater openness to trade, but the proximate degree of sensitivity to the export propensity, in comparison with the larger economies nominated as the EU Candidate countries (Figure 2). Most obviously, such outcome is significantly affected by the gap on the state of economic development in which the EU Potential candidates are. Thus, it could be assumed that EU Potential countries are tending to capture the gains from the trade rather than benefiting from exploiting other national resources. Final remark concerning the trade openness should take into account the positioning of the EU-27. The outcome of our evaluation indicates the significant differentiation between the EU and its aspiring countries. For example, in comparison with the degree of the trade openness in Turkey (49.4%), the EU-27 displays the halve score concerning the trade openness (25.4%). Undoubtedly, impact of the trade barriers (particularly for the agricultural products) could be notified as the most important factor determining the underlined differences between the EU and the candidate countries.

3.2. Trade liberalization and the process of EU accession

Trade is one of the most prominent resources not only for the economic growth, but as well as for the economic integration. The trade liberalization and enhancement of the bilateral trade relations between the EU and its potential member was following such a path (Table 3). Since the early 2000s, the EU was liberalizing trade ties with the Western Balkan countries through the establishment of the Autonomous Trade Preferences (ATP), which were renewed subsequently in 2005 and 2011. Furthermore, trade liberalization is an inseparable part of the Stabilization and Association Agreement (SAA). Accordingly, through the establishment of the Interim Trade Agreement (ITA) with the EU Candidate's, the EU affirms the full trade liberalization within a five year period after such an agreement enters into force. On the other hand, the process of the EU trade liberalization with Iceland and Turkey has its earlier and deeper roots. Iceland joined the EFTA community in 1970, and since then enjoys the liberalized trade with the EU. While, since 1996, Turkey was strengthening the trade ties with EU by establishing the Custom Union (CU). Moreover, in order to enhance the intra-regional trade flows among the Western Balkan

countries, the renewed CEFTA was established in 2006. Initiated and supported strongly by the EU institutions, the CEFTA 2006 framework abolished a bulk of 32 bilateral trade agreements between the Western Balkan countries. The framework of the trade liberalization of the Western Balkan countries is extended with the establishment of the bilateral FTAs with the EFTA community – Croatia and Macedonia since 2002, and Albania and Serbia since 2010. In addition, Montenegro signed FTA with the EFTA in November 2011 and is expected to enter into force at the earliest date. Bosnia and Herzegovina and Kosovo remains the only Western Balkan countries which were not yet establishing the free trade agreement with the EFTA community, despite their strong trade and migrant connections – particularly with Switzerland and Norway as the founding members of EFTA. On the other hand, trade liberalization between the Western Balkans and Turkey were particularly evolving after 2000s. Liberalization of trade was initiated with Macedonia in 2000, afterwards followed with Bosnia and Herzegovina and Croatia in 2003. The circle of bilateral FTAs between the Turkey and Western Balkans was concluded in 2008 (Albania) and 2010 (Serbia and Montenegro). Most obviously, Kosovo once again remains the single Western Balkan country on the scope of the trade liberalization with Turkey. Lastly, Serbia and Montenegro are the only economies within the Western Balkans enjoying a preferential trade agreement with Russia. Since its establishment in the early 2000s, free flow of the goods from the both countries have an extended market access in comparison with the other Western Balkan countries. Uniquely, Macedonia is the only country from the region to establish the FTA with Ukraine – an additional opportunity to exploit a significantly large European market.

3.3. Regional integration and trade liberalization: The CEFTA 2006

The EU built its enlargement strategy based on the ability of the aspirant countries to establish the stable neighbouring cooperation. The trade liberalization is considered to be an effective tool to enhance the regional integration. After a bulk of bilateral free trade agreements between the Western Balkan countries since the early 2000s, in December 2006 countries of the Western Balkans and Moldova established a common free trade area – CEFTA 2006 (Central European Free Trade Area). Establishment of the CEFTA 2006 was inspired by the successful story of the trade liberalization, and later economic integration of the CEE countries. Namely, the actual V4 Visegrad countries (Czech Republic, Hungary, Poland and Slovakia) established the first CEFTA

(1992) in order to accelerate their intra-trade flows and enhance region's competitiveness towards the expected competitive pressure resulting from economic integration into the EU. In the later stages, other Central and Eastern European countries (Bulgaria, Rumania) joined as well the first CEFTA, up to the date of their full membership in the EU. Thus, CEFTA should be considered as a trade-enhancing mechanism which brought significant benefits to the trade liberalization for the current New Member States of the EU.

Taking into the account the historical developments related to the trade liberalization of the Western Balkans, we could assume that the process of liberalization was designed on the two parallel axes. Firstly, the EU liberalized its market towards the Western Balkans, and on the later stage the free movement of goods and services within the Western Balkan region was established. According to our regional-based estimations and the cumulative trade flows for the period 2004-2011 (Figure 3), members of the CEFTA 2006 had a large portion of trade preferences with the EU-27. Nearly two thirds (73.5%) of the total trade flows from the CEFTA-2006 region had only two main regional destinations: the EU and the intra-CEFTA 2006 region. From it, over 56.1% of the total trade flows were directed with the EU Member States, while 17.4% within the CEFTA 2006 countries. We must emphasise that between 2004 and 2011 the share of total exports to the EU-27 was shrinking from 62.3% to 58.8%, while the intra-CEFTA 2006 export flows were marking an incremental increase of 2.3%. From the shrinking trade directions with the EU-27 were benefiting other world trade partners (mostly the BRIC countries) by gaining the further market share of the CEFTA-2006 at the level of 1.3%.

Provisions of the CEFTA 2006 agreement came into force in 2007 that is why we must notify that since that period the world economy (as well as the CEFTA 2006 countries) was affected by the global economic recession. Apparently, distorting effects of recession were influencing direction of the multilateral trade flows between the EU, CEFTA 2006 countries and the rest of the world. Individual country-based assessment of the CEFTA 2006 economies shows a certain variation regarding the trade preferences of each CEFTA 2006 economy. However, the common denominator of all observed countries remains the large share of trade exchange with the EU-27. The cumulative estimation for the period 2004-2011 (Figure 4) indicates that Albania built the strongest trade ties with the EU market, despite the limited geographic trade diversification. Namely, 79.2% of the country's total exports were directed to the EU (vast

majority to Italy and Greece), while 63.7% of imports were originating from EU markets. Only 10.6% of Albanian exports during the observed period had the CEFTA 2006 countries destination, while 10.2% went to the rest of the world. The EU candidate countries such as Croatia, Macedonia and Serbia estimates a significant share (over 60%) of their exports delivered to the EU. Their exports to the CEFTA 2006 economies are significantly higher than it was noticed in Albania, and vary from 20.5% of the Croatian exports to the highest 31.7% of the Macedonian exports. Similarly to the case of Macedonia, Bosnia and Herzegovina has a diversified territorial distribution of its exports, estimating for 55.8% in EU and over 31.2% in CEFTA. Lastly, the two smallest economies of the CEFTA 2006 region, Kosovo and Montenegro despite their limited exporting potential shows the highest degree of the territorial diversification concerning to their exports. Both countries directed below a half of their exports to the EU markets (42.7% of Kosovo exports, respectively 45.1% of Montenegro's), while the exports to the CEFTA 2006 countries in both countries exceeded a third of their total exports.

3.4. Agricultural trade and the EU accession

The empirical evidence from the international trade shows that agricultural products are the primary reason why the governments imply barriers to trade. A common rationale behind such a protectionist policy is argued by the scarce agricultural resources, food security and other environmental-related factors. Taking into account already evidenced role of agriculture in the GDP formation and employment, one could draw the conclusion about the high exporting potential of the EU C/PC economies. However, the empirical evidence opposes such presupposition in the case of the most of the EU aspirant countries. Moreover, concerning the balance in agricultural trade one can be assumed, aside from Iceland, Serbia and Croatia, all other economies are net agricultural importers. The sharpness of the deficit in the agricultural trade of the EU varies from one country to another. In the case of the Western Balkan countries (see Figure 5) we can evidence positive agricultural trade balance only in the case of Serbia. All of the remaining Western Balkan countries were coping with the significantly high agricultural trade deficit. In particular, the EU Potential Candidates (Albania, Bosnia and Herzegovina and Kosovo) and Montenegro were showing a weaker agricultural trade performance.

Despite the trade deficit, majority of the EU candidate countries went through a relatively dynamic growth of their agricultural export performance (Figure 6). Regarding the EU candidate

countries, our estimates show that Serbia tripled (201.8%) its agricultural export since 2004, while the import of the agricultural products had a significantly lower portion of growth (44.5%). On the other hand, Turkey and Macedonia estimated a double-folded increase of their agricultural export performance, marking a rise of 114.3%, respectively 113.0%. During the observed period, Macedonia displayed slightly higher growth of the agricultural imports (82.0%) in comparison with Serbia, while in the case of Turkey agricultural imports were growing at a faster rate (202.3%) than its exports. Overall assumption related to these best-performing agricultural exporting economies shows that Serbia and Macedonia achieved to improve their agricultural balance of trade. Conversely, in the case of Turkey we noticed the shrinking indices of the agricultural trade balance. Other EU candidate countries, characterized with a high share of agricultural exports in the total structure of exports (such as Iceland and Croatia) had a moderate growth of their export performance. Since 2004, agricultural exports in Iceland increased just by 2.7%, while the Croatian exports had a significantly higher growth (69.6%). Moreover, during the observed these both economies exhibited a balanced growth of agricultural exports and imports. Moreover, Iceland remains a net exporter in terms of agricultural trade, giving a rise of importance that fisheries play on the overall economic performance of this country. On the other hand, Croatian agricultural trade pattern signifies a static degree of deficit at the proximate level of 600 million EUR.

Concerning the EU potential candidates, the common denominator of our analysis indicates a sharp agricultural trade deficit. Despite the fact that the dynamics of growth in agricultural export surpassed the abovementioned pattern of the EU candidate countries, the gap between the export and import remains sharp. For example, agricultural exports in Kosovo marked a fourfold increase since 2004, but at the same time imports were doubled. Furthermore, Kosovo's pattern of agricultural trade shows a very low coverage of the agricultural imports, estimating just about 4.6% of the total agricultural products imported into the domestic market. Since 2004, Albania as well estimated a negative agricultural balance of trade, while the pattern of the agricultural trade growth shows that exports and imports were growing at the relatively balanced level, respectively 98.8% and 82.0%. Finally, Bosnia and Herzegovina displayed the fastest-growing agricultural exports economy comparing to the overall group of the EU candidate countries. The estimated growth of agricultural exports since 2004 marked over four-

fold increase (322.5%), and most significantly the level of imports was increasing just for 45.4%. Accordingly, Bosnia and Herzegovina achieved to diminish gradually the huge gap of its foreign trade with agricultural products.

3.4.1.   Importance of the agricultural trade in the EU candidate countries

Importance of the agricultural sector in the EU aspiring countries extends its role on the trade performance as well. Analysis of the trade flows for the period 2004-2011 (Figure 7) shows that the largest share of the agricultural exports in the total export turnover was estimated in Iceland (47.1%), Serbia (21.1%) and Macedonia (15.7%). The group of countries constituting Montenegro, Croatia and Kosovo indicates a double digit impact of the agriculture on the total exports, varying from 11.7% to 10.0%. Lastly, the lowest share of the agricultural exports in the total structure of exports, we noticed in the case of Turkey (9.7%), Bosnia and Herzegovina (7.6%) and Albania (6.8%).

However, the more detailed annual evaluation indicates that in the case of Iceland agricultural exports were steadily decreasing their share on the structure of total exports, marking a decline from 63% in 2004 to 43% in 2011. On the other hand, in the case of Serbia despite some insignificant variations we could estimate a relatively steady and unchanged tendency of the agricultural contribution into the total exports (22%). Furthermore, in Croatia, Montenegro, Turkey we noticed a slow but a positive rising significance of the agricultural exports into the total exports. In all these countries, importance of the agriculture in the total trade varied from the 24.1% in Montenegro to the lowest 4.6% in Turkey. The group of countries comprising Albania, Bosnia and Herzegovina and Kosovo marked a slow decrease in the importance that agricultural products play in their foreign trade. Thus, Kosovo's agricultural exports contributed with about 11.4% (in 2004) in the total exports, while in 2011 the share of agricultural exports declined in 8.3%. Similar tendency is noticed in the case of Albania, which currently estimates only 8.6% contribution of the agricultural exports in country's total exports. Identical pattern of the agricultural contribution of exports is noticed in the EU-27 (6.5%).

3.4.2.   Structure of the agricultural trade of the EU candidate countries

Between 2006 and 2011, the EU candidate countries were increasing agricultural trade flows with EU-27 for about 34%, marking a rise from 9.1 billion EUR to 12.3 billion EUR (Figure 8).

During the same period, the EU Candidate countries made up 91.6% of the total agricultural trade with the EU, while the EU Potential Candidates constituted just over 8.4% of the total agricultural flows with the EU-27. Such gap is derived because of the smaller economic size and lower agricultural productivity in the EU Potential Candidates. Moreover, the total trade pattern shows the proximate indications, where the EU Potential Candidates constituted 5.8% of the total trade flows.

Concerning the volume of agricultural exports, Turkey undoubtedly remains in the forefront of the agricultural supplies to the EU market accounting an annual average of over 3.2 billion EUR, or 58.1% of the total agricultural exports from the EU candidates. Concerning the Western Balkan countries, the average value of exports during the same period estimated 1.3 billion EUR. From the overall agricultural exports from the Western Balkans, Serbia exported over a half (52.2%), while Croatia a quarter (24.9%), Macedonia 12.9% and the other countries the rest of agro-exports to the EU. The cumulative flow (2006-2011) of the agricultural exports indicates that EU remains the most important market for the EU C/PC countries. The share of agricultural products distributed to the EU varies from one country to another (Figure 9). Accordingly, following the total trade pattern, Iceland (75.9%) and Albania (64.7%) constitutes economies with the largest share of the agricultural exports distributed to the EU market during the period 2006-2011. On the other hand, Montenegro and Kosovo estimates the lowest share (17.2% and 11.2%) of its agricultural exports absorbed by the EU markets.

3.4.3. The balance of agricultural trade and its specialization with EU

Trade relations between the EU and its aspirant countries are established under the asymmetric foundations. This means that trade barriers (in particular case quotas) are subsequently released after the 5 year period from the date of entry into the force of the SAA and the Interim Trade Agreement (ITA). The evidence from the trade pattern of the EU candidate countries (Figure 10) suggests such an outcome. It indicates an increasing agricultural export flows from the EU candidate countries and the shrinking of the agricultural trade deficit. An opposite occurrence took place regarding the trade accounts of the non-agricultural sector. Namely, here we could estimate an increase of trade deficit gap between the EU and its potential candidate countries.

3.5. The gravity model of bilateral trade

The gravity model is an econometric approach, widely used to estimate the impact of regional and bilateral trade agreements in order to stimulate the trade potential – in our case exports. It enables the use of the large number of trade determining variables, and it is particularly relevant in modelling of heterogeneity behaviours of each pair of countries in trade flows. Our methodological approach in determining the gravity model of bilateral trade lays on the application of the panel data techniques. Concerning the fact that the cross-section approach is affected by a problem misspecification and omission, our objective was to investigate both, the OLS model estimates and fixed effect model.

3.5.1.   The main findings of the Ordinary Least Squares (OLS) estimation

The OLS (Ordinary Least Square) method estimates explain over 65% of the total variability for the total exports of the EU potential countries. The heteroscedasticity OLS estimations presented in the Table 4 are in line with standard errors. The variable of exporter´s GDP (*ln_gdp_exp*) has an increasing impact on the export turnover, since it indicates positive coefficients. We can assume that the size of exporter's GDP is significant for all models. The outcome of OLS indicates that importer's GDP (*ln_gdp_imp*) has a positive impact, although at a lesser extent than the exporter's GDP. On the other hand, distance (*ln_dist*) is significant and has a negative impact on the export flows. Variables language (*lang*) and membership in common trade areas (*pta*) are significant and increases overall export potential.

Exporter's GDP has a positive impact on exports, based on the increase of the production volume increases the export potential as well. On the other hand, importer's GDP has a positive influence but its impact is lower. This could be explained by the fact that an increase in the importer's GDP influences on the decreasing demand for imports, accordingly increasing self-sufficiency of the same.

Distance influences in the significant scale on the export flows. The larger is the distance between the trade partners the export is declining. This is explained due to increasing of the transaction and insurance cost, that might increase the price of exported goods and services. Membership in the common trade area is important as well for increasing the export performance. This argument is supported by the fact that the liberalization of trade enables access without the trade barriers and decreases the trade costs by supporting the foreign trade

flows. Language (cultural) similarities have a significant effect on foreign trade of EU aspirants. Particularly, ties between the Slavic origin languages could display an important factor in such outcome. Accordingly, we can suppose that existence of the compatriot nationals in the importer's countries could play a role on export flows as well. Lastly, we can underline the fact that establishment of CEFTA 2006 and the gradual bilateral trade liberalization with the EU could be considered as the accelerating indicators of the increasing exports from the EU Potential/Candidate countries

3.5.2.   Panel data analysis: Model with the fixed effects

In the panel data model with the fixed effects, variables (*ln_dist*) and (*lang*) are unchangeable model factors over the time. The output result of the model with fixed effects (Table 5) explains 21% of total variability. Exporter's GDP (*ln_gdp_exp*) seems to have an increasing influence on the export flows – as the coefficient is positive (in model 1 and 2). Accordingly, the outcome of our analysis indicates that importer's GDP (*ln_imp_exp*) is significant as well (in model 1 and 2). On the other hand, the importance of the membership in the common free trade area (*pta*) indicates the significance of this variable at the lesser extent than it is noticed in the case of the GDP size. Such an occurance could be explained by the fact that the *pta* is not related directly to the common fix model variables. However our intention was to derive an empirical evidence concerning the impact of the trade liberalization – through the CEFTA 2006 and EU trade liberalization, in the EU candidate countries. Lastly, based on the outcome of gravity model with fixed effects we can assume that the export performance of developing countries tend to be more depending on the above excluded variables (*ln_dist*) and (*lang*). The common finding of the fix model shows that the exporter's GDP and importer's GDP plays the most significant role on the increasing the export performance of the investigated economies.

4. Conclusion

The EU candidate countries constitute the group of divergent economies. Characterized with endowed agricultural resources and favourable climatic conditions, here we evidenced underutilization of the agricultural potential in some of the less developed countries in the group of the EU candidate countries. The pattern of agricultural trade in the observed economies has a

common denominator. Excluding Iceland and Serbia, the remaining group of countries are net importers. Accordingly, a significantly high share of agricultural imports indicates a higher exposure on the price volatility, particularly concerning to the food-related products.

Agriculture continues to play a prominent role in the observed group of EU candidates. Despite their agricultural resource endowment, there is evidence of underutilization of the agricultural sector. EU initiated bilateral trade liberalization with the Western Balkans through the establishment of the ATPs. Furthermore, trade liberalization is extended in the regional level through the establishment of renewed CEFTA 2006. Despite the significant improvement, their export competitiveness remains weak. Main findings of the gravity model assessment suggest that exports are positively affected by product size (GDP), and to lesser extent by the GDP of trading partners. Exports fall with the increase of the distance, and the fall in the value of exports is greater as larger is the distance between the trading partners. Therefore, the marginal fall in exports increases as far as the geographical distance between the trading partners increase. This could be explained by the fact that marginal transport costs increase proportionally with the geographical distance between partners. Initial assumptions that PTAs and cultural ties facilities the trade flows were affirmatively confirmed. Trade liberalization had a positive implication on improving export performance of the EU candidate countries.

Tables and Figures

Table 1: Balance of trade in the EU candidate countries (in million EUR)

Country	Exports				Imports				Trade balance			
	2004	2006	2008	2011	2004	2006	2008	2011	2004	2006	2008	2011
Albania	488	629	916	1,406	1,886	2,437	3,580	3,905	-1,398	-1,808	-2,664	-2,500
Bosnia H.	1,441	2,640	3,432	4,204	4,758	5,822	8,330	7,938	-3,317	-3,182	-4,899	-3,734
Croatia	6,454	8,252	9,585	8,816	13,354	17,105	20,817	14,630	-6,901	-8,853	-11,232	-5,814
Iceland	2,322	2,758	3,650	3,499	2,988	4,788	4,167	3,115	-666	-2,030	-517	384
Kosovo	57	111	198	313	1,063	1,306	1,928	2,480	-1,007	-1,195	-1,730	-2,167
Macedonia	1,345	1,914	2,693	3,198	2,259	2,915	4,455	5,038	-914	-1,001	-1,763	-1,841
Montenegro	382	441	416	454	813	1,457	2,530	1,823	-431	-1,016	-2,114	-1,369
Serbia	2,832	5,102	7,428	8,439	8,623	10,463	15,581	14,450	-5,792	-5,360	-8,152	-6,010
Turkey	50,897	68,020	89,559	97,008	78,530	111,096	136,441	173,093	-27,633	-43,076	-46,882	-76,085

Source: Own calculation based on the data from National Statistical Agencies, Eurostat

Table 2: Trade performance indicators in the EU candidate countries

Country	Exports of goods			Imports of goods			Trade openness (2011)
	Per capita	Share of GDP	Average annual growth (2004-2011)	Per capita	Share of GDP	Average annual growth (2004-2011)	
	in EUR	in %	in %	in EUR	in %	in %	
Croatia	1,998	19.2	17.1	3,316	31.8	13.7	50.9
Iceland	10,987	34.7	18.8	9,781	30.9	13.0	65.6
Macedonia	1,554	43.9	29.7	2,449	69.2	27.9	113.1
Montenegro	735	14.6	14.9	2,949	58.6	28.0	73.2
Serbia	1,115	26.0	37.3	1,910	44.5	20.9	70.5
Turkey	1,316	17.7	23.8	2,348	31.7	27.6	49.4
Albania	440	15.1	36.0	1,223	42.0	25.9	57.2
Bosnia H.	1,094	32.4	36.5	2,065	61.1	20.9	93.5
Kosovo	142	6.7	69.2	1,123	53.1	29.1	59.8
EU-27	3,048	12.1	20.1	3,355	13.3	20.5	25.4

Source: Own calculation based on the data from National Statistical Agencies, Eurostat, IMF
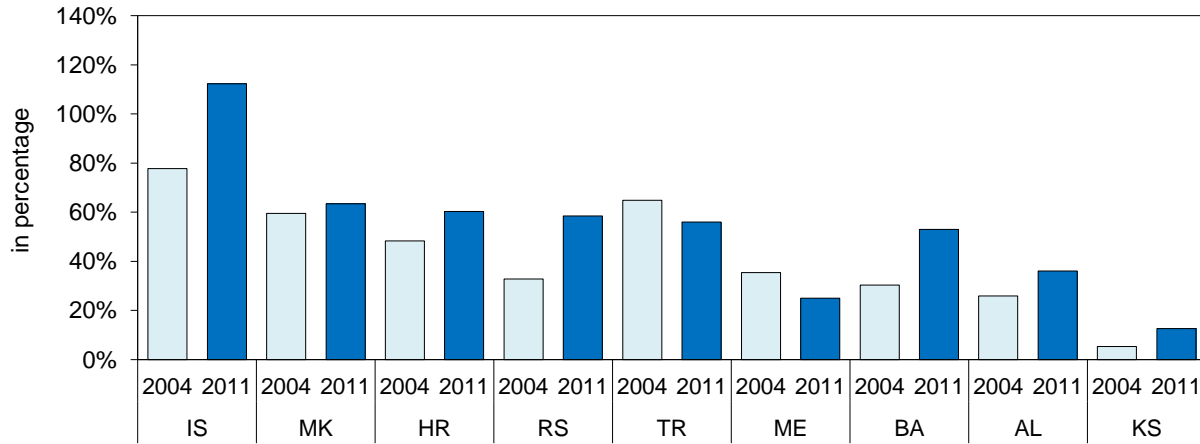
Figure 1: Export/import coverage in the EU candidate countries (2004-2011)
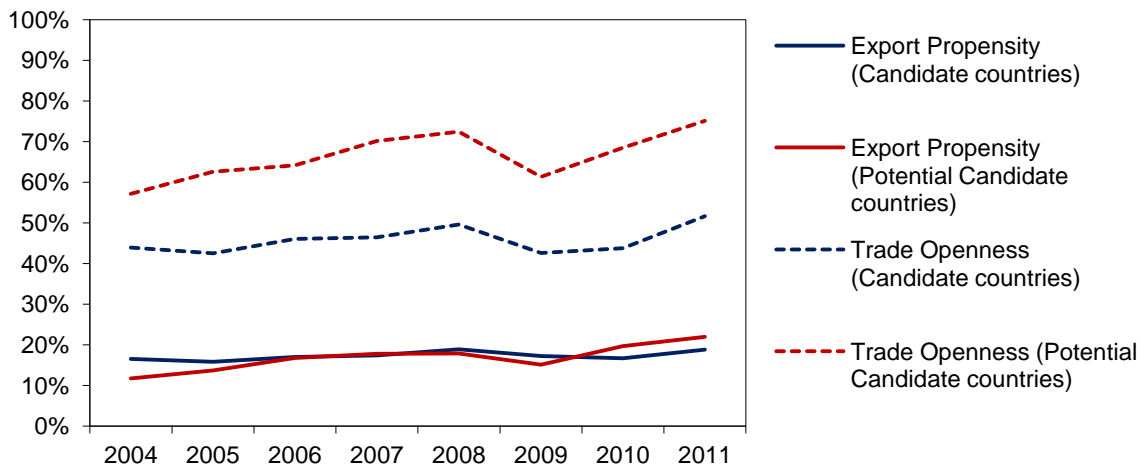Source: Own calculation based on the data from Eurostat, National Statistical Agencies

**Figure 2:** Trade openness and export propensity in the EU enlargement countries
Source: Own calculation based on the data from National Statistical Agencies, Eurostat, IMF

Table 3: List of the Free Trade Agreements between the EU candidates and the rest of world

Country	European Union		EFTA	CEFTA	Turkey	Russia	Ukraine
	ATP*	ITA**					
Albania	2000	01.12.2006	01.11.2010	01.05.2007	01.05.2008	x	x
Bosnia H.	2000	01.07.2008	x	01.05.2007	01.07.2003	x	x
Croatia	2000	01.02.2005	01.01.2002	01.05.2007	01.07.2003	x	x
Iceland	x	01.04.1973	01.03.1970	x	x	x	x
Kosovo	2000	x	x	26.07.2007	x	x	x
Macedonia	2000	01.06.2001	01.01.2001	01.05.2007	01.09.2000	x	05.07.2010
Montenegro	2000	01.05.2010	x	01.05.2007	01.03.2010	2000	x
Serbia	2000	01.02.2010	01.10.2010	01.05.2007	01.09.2010	2000	x
Turkey	x	01.01.1996	01.04.1992	x	x	x	x

Source: Own compilation based on the WTO database and CEFTA portal

* ATP – Autonomous Trade Agreement, **ITA – Internal Trade Agreement
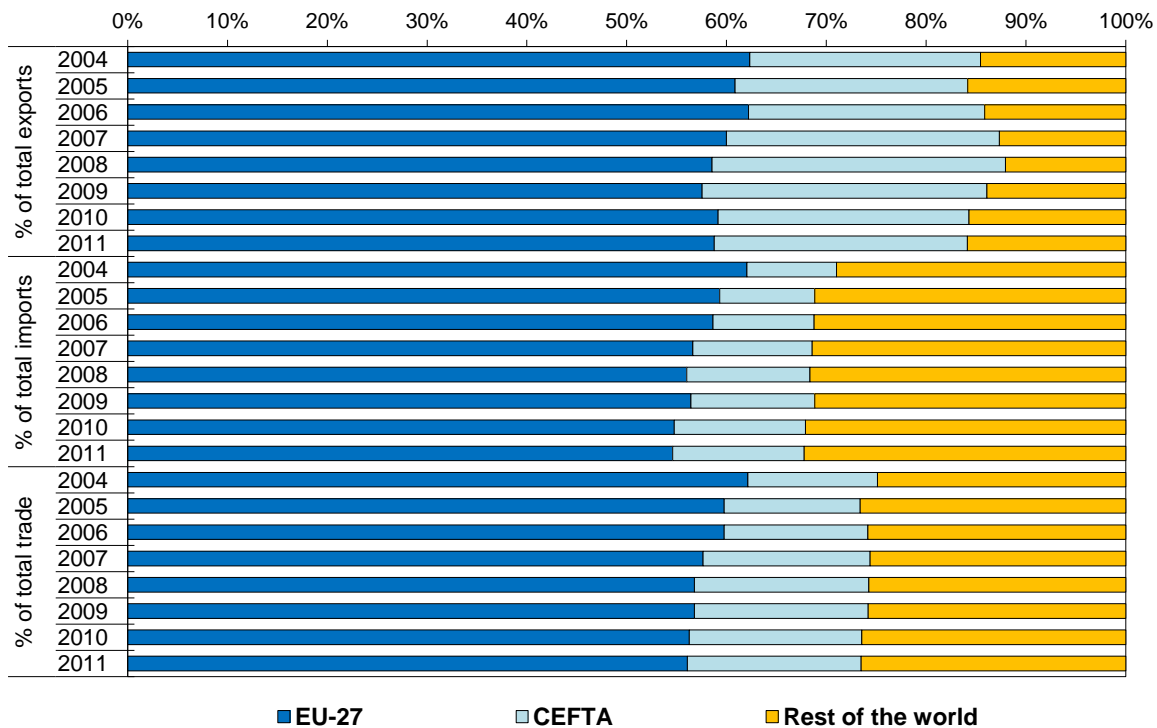
Figure 3: Trade flows of the CEFTA-2006 countries (2004-2011)
Source: Own calculations based on the data from the National Statistical Agencies
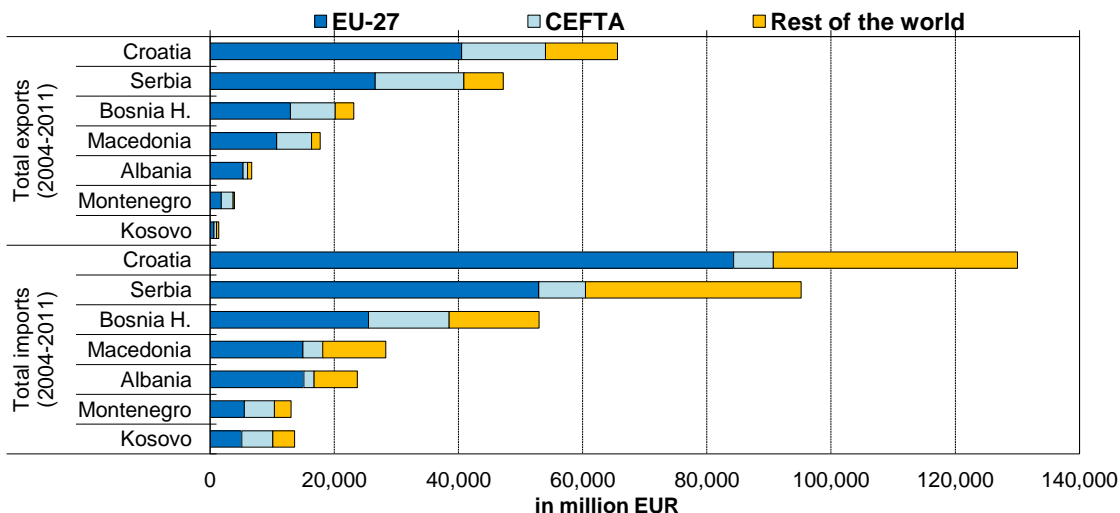
Figure 4: Trade direction of the CEFTA 2006 countries
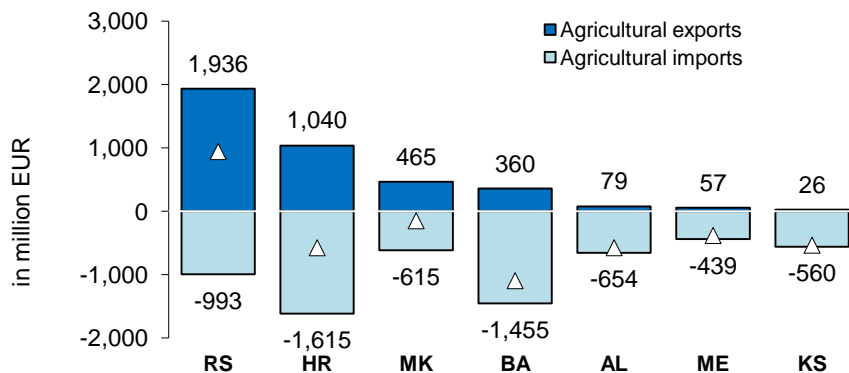Source: Own calculations based on the data from the National Statistical Agencies

Figure 5: Agricultural trade balance of the Western Balkan countries (2011)
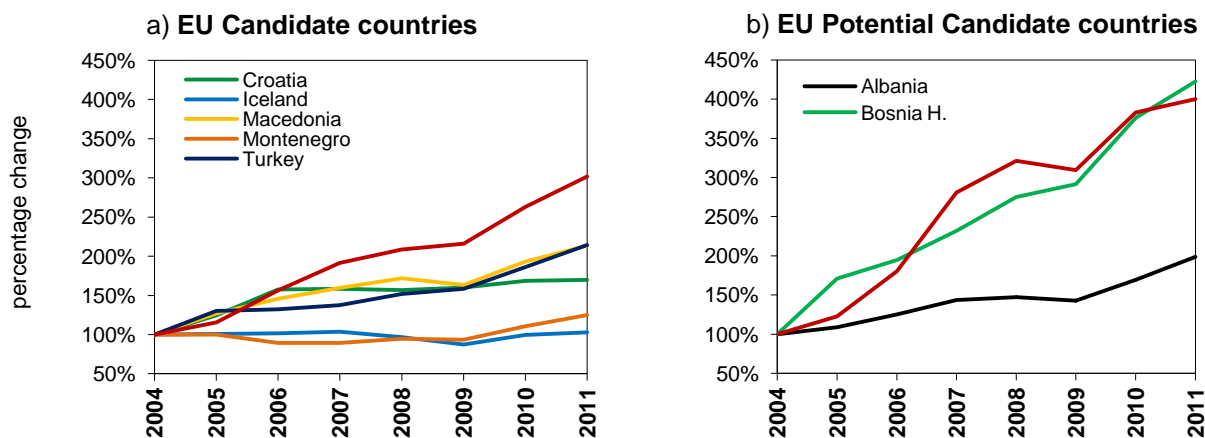Source: Own calculations based on the data from the National Statistical Agencies

a) **EU Candidate countries**

b) **EU Potential Candidate countries**

Figure 6: Agricultural export growth rate (2004=100)
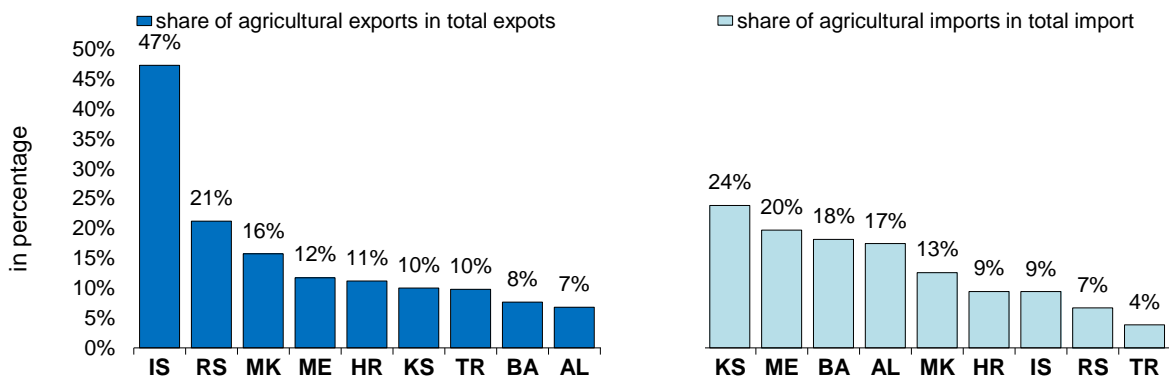Source: Own calculations based on the data from the National Statistical Agencies

Figure 7: Importance of the agricultural trade in the total trade (2004-2011)
Source: Own calculations based on the data from the National Statistical Agencies
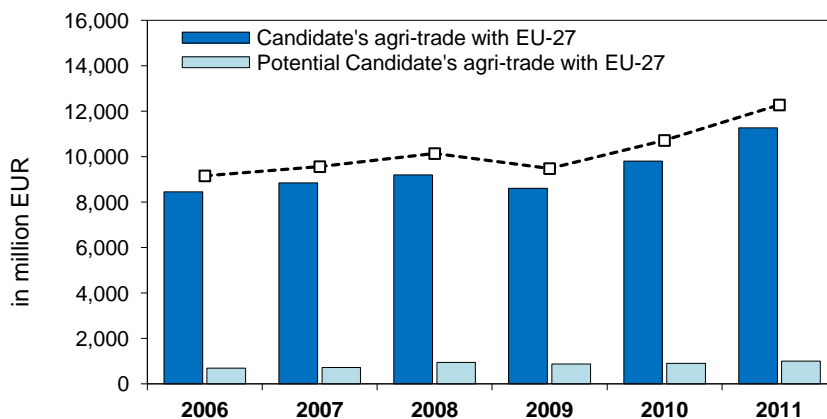
Figure 8: Agricultural trade with EU-27 (2006-2011)
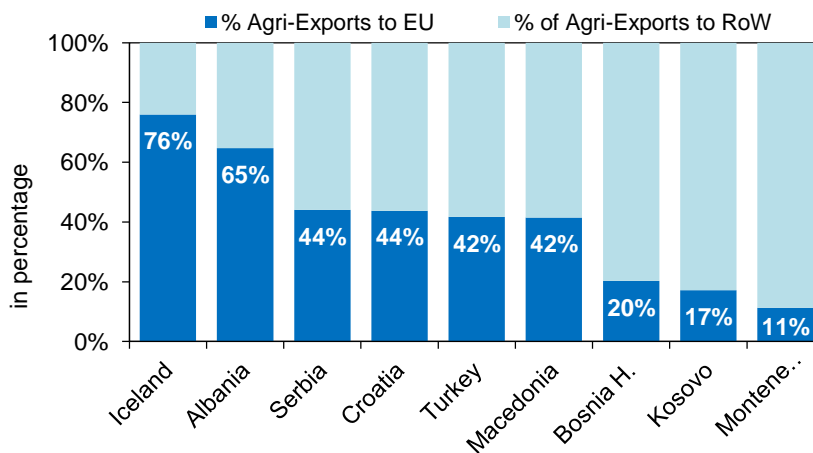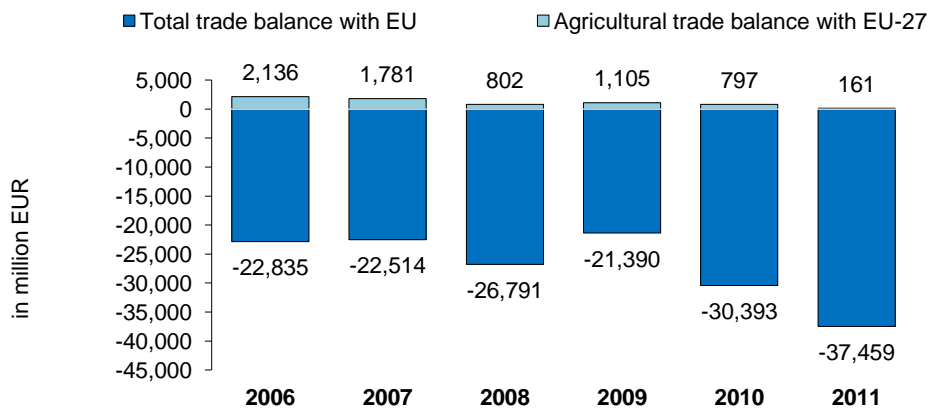Source: Own calculations based on the data from the Eurostat

Figure 9: Share of agricultural exports flows to EU-27 (2006-2011)
Source: Own calculations based on the data from the Eurostat

*cumulative for the period 2006-2011

Figure 10: Total and agricultural trade balance of the EU candidate countries with EU-27
Source: Own calculations based on the data from the Eurostat

Table 4: OLS estimation for the EU candidate exports: Random effects (logarithmic model)

VARIABLES	(1) ln_export	(2) ln_export	(3) ln_export	(4) ln_export
ln_gdp_exp	1.446***	1.446***	0	0
	(0.0180)	(0.0180)	(0)	(0)
ln_gdp_exp_sq			0.723***	0.724***
			(0.00900)	(0.00901)
ln_gdp_imp	0.775***	0.777***	0	0
	(0.0178)	(0.0179)	(0)	(0)
ln_gdp_imp_sq			0.389***	0.389***
			(0.00894)	(0.00893)
ln_dist	-1.423***	-1.424***	0	0
	(0.0465)	(0.0465)	(0)	(0)
ln_dist_sq			-0.712***	-0.712***
			(0.0232)	(0.0232)
lang	1.505***	1.511***	1.511***	1.507***
	(0.0935)	(0.0937)	(0.0937)	(0.0938)
pta	0.404***	0.412***	0.412***	0.409***
	(0.0885)	(0.0891)	(0.0891)	(0.0890)
dummy_2002				0
				(0)
dummy_2003				-0.0373
				(0.190)
dummy_2004				0.102
				(0.171)
dummy_2005				0.0899
				(0.161)
dummy_2006				-0.0364
				(0.162)
dummy_2007				-0.0804
				(0.160)
dummy_2008				-0.168
				(0.163)
dummy_2009				-0.126
				(0.160)
dummy_2010				-0.0738
				(0.162)
dummy_2011				0.0566
				(0.162)
year		-0.0118	-0.0118	
		(0.0119)	(0.0119)	
Constant	-11.22***	12.42	12.42	-11.22***
	(0.371)	(23.91)	(23.91)	(0.388)
Observations	3107	3107	3107	3107
R-squared	0.657	0.657	0.657	0.658

Robust standard errors in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$)
Source: Own calculations

Table 5: Fixed effects estimations for the exports of the EU candidates (logarithmic model)

VARIABLES	(1) ln_export	(2) ln_export	(3) ln_export	(4) ln_export
ln_gdp_exp	0.797***	0.657***	0	0
	(0.132)	(0.143)	(0)	(0)
ln_gdp_exp_sq			0.328***	0.313***
			(0.0713)	(0.0842)
ln_gdp_imp	1.363***	1.252***	0	0
	(0.171)	(0.208)	(0)	(0)
ln_gdp_imp_sq			0.626***	0.617***
			(0.104)	(0.114)
ln_dist	0	0	0	0
	(0)	(0)	(0)	(0)
ln_dist_sq			0	0
			(0)	(0)
lang	0	0	0	0
	(0)	(0)	(0)	(0)
pta	0.314*	0.315*	0.315*	0.312*
	(0.190)	(0.190)	(0.190)	(0.189)
dummy_2002				-0.323*
				(0.176)
dummy_2003				-0.311*
				(0.164)
dummy_2004				-0.234*
				(0.134)
dummy_2005				-0.174
				(0.112)
dummy_2006				-0.179*
				(0.0918)
dummy_2007				-0.138*
				(0.0726)
dummy_2008				-0.183**
				(0.0719)
dummy_2009				-0.227***
				(0.0648)
dummy_2010				-0.119**
				(0.0464)
dummy_2011				0
				(0)
year		0.0212	0.0212	
		(0.0153)	(0.0153)	
Constant	-21.77***	-61.58**	-61.58**	-18.40***
	(1.654)	(28.72)	(28.72)	(3.415)
Observations	3107	3107	3107	3107
R-squared	0.215	0.216	0.216	0.220
Number of id	378	378	378	378

Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1)

Source: Own calculations

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