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Determinants of Albanian Agricultural Export: The Gravity Model Approach

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Abstract

Despite its huge agricultural potential, Albania has a sharp trade deficit with agricultural commodities. The main focus of this study is to analyse key determinants of its agricultural export. Here we employ baseline gravity model considering conventional gravity variables for Albanian export flows for the period 1996-2013. The Poisson Pseudo-Maximum Likelihood (PPML) regression is used for stepwise estimations of the augmented gravity model, including effects of Albanian Diaspora, exchange rate and price stability, trade liberalization and institutional distance. Main findings suggest that agricultural export flow increases with increasing economic size, revealing higher impact of importer's absorbing potential comparatively to Albania's productive potential. On the other hand, growth in domestic demand, resulting from increase in population, leads to reduction of agricultural export. Moreover, agricultural export flows are determined by low transportation costs (distance), adjacency proximity (sharing common border) and linguistic similarities. Presence of Albanian Diaspora residing in the importing countries facilitates export flows. Results of this study reveal that exchange rate variability has a positive impact, while bilateral institutional distance has diminishing effects on Albanian agricultural exports.

Keywords

Agricultural trade, export, gravity model, panel data, Albania.

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Introduction

Albania initiated transition into a market economy since the early 1990s. Transition from communism into free market system was unique and escorted with dramatic turbulences. Early period of market reforms endorsed radical model of the shock therapy, guiding Albania's economic system to drastic and profound structural changes. Price controls were lifted, markets were liberalized and privatization process initiated (McCarthy et al., 2009). Initial reforms, between 1993 and 1996, resulted with outstanding economic growth, marking highest growth rates compared to all transition economies. However, in 1997, flourishing financial pyramid schemes ruined both political and economic system. The country witnessed collapse of pyramid investment schemes, which were larger (relative to the size of the economy) than any previous schemes of this kind (Korovilas, 1999). Hence, Albania plunged into deep economic crisis. Rioting and civil unrest brought the country in the edge of civil war. Events from that period served to Albania as hardship lesson of market and institutional failure. Since then, fast and systematic recovery took place. Sustained economic growth of 2000s, among other factors, is a merit of integration into international markets. Improvement of trade links and injection of foreign investments into domestic economy fuelled development perspective of Albania.

Albania is an agricultural economy. Agriculture employs more than a half of the population and accounts about a quarter of output (Zahariadis, 2007; EC, 2014). Hence, it has a huge potential to become engine of economic growth and competitiveness in international markets (USAID, 2012). Despite its indisputable potential, agricultural sector in Albania faces significant challenges. Predominant constraints of agriculture include small and fragmented farms (average farm size of 1.2 ha), migration from rural areas, underdeveloped irrigation system, low

labour productivity, and limited technological level (USAID, 2012; EC, 2014). Interest for investment in agricultural sector remains low as well. Additional agricultural constraints are derived from the complex land reform (see Cungu and Swinnen, 1999; Deininger et al., 2012; Qineti et al., 2015). Majority of the small farms in Albania are subsistent and agricultural production serves to home consumption. Empirical studies (i.e. Mc Carthy et al., 2009) suggest that the farm households cultivating staple crops achieve to market only 4 to 8 percent of their production. The rest is used for self-consumption.

Studies utilizing aggregate trade flows in Albania (see Xhepa and Agolli, 2004; Asllani, 2013; Fetahu, 2014; Sejdini and Kraja, 2014) report unexploited trade potential. They suggest that main constraints of Albanian foreign trade rest on the limitations of domestic supply. Trade flows are determined by trade links with neighbouring countries, low transportation costs and cultural links. Moreover, they put emphasis on non-tariff trade barriers such as market access, border procedures, free movement, development and dissemination of information.

Albania has adopted a liberal trade regime since the very beginning of its economic transition. It was among the first steps of transition reforms. The process of trade liberalization has been intensified particularly after the accession of Albania in WTO in the year 2000 (Government of Albania, 2015). Membership in WTO induced deep reforms in legislation and trade policies in compliance with WTO guiding principles. The main objectives of Albania's trade policy are coherent with WTO principles and therefore guarantee the absence of quantitative restrictions on imports and exports, export subsidies, any kind of tax on exports and export bans (WTO, 2016). Further steps of trade liberalization followed Albania's involvement in the regional integration through a network of bilateral Free Trade Agreements (FTAs) with its regional countries. Later on, bulk of bilateral FTAs melted into the creation of Regional Trade Agreement (RTA), known as renewed Central Europe Free Trade Agreement (CEFTA 2006). This RTA incorporated group of countries from Southeast Europe (Albania, Bosnia and Herzegovina, Croatia, Kosovo, Macedonia, Montenegro, Moldova and Serbia) and entered in force in 2007. The map of liberalized trade agreements is further extended with the signature of FTA with Turkey in 2008. In 2008, Albania signed another FTA with European Free Trade Agreement Association (EFTA) countries (Norway, Switzerland, Iceland and Lichtenstein). FTA with EFTA countries entered in force in 2011. Most importantly, since 2009, Albania is implementing the Stabilization and Association Agreement (SAA) with the European Union (EU). Meanwhile the free trade agreement, which is integral part of SAA, is in force since 2006. However, early roots of trade liberalization with the EU date from 1999. Since then, Albania benefited from Autonomous Trade Preferences with the EU, granting duty-free access to EU market for nearly all products from Albania (excluding only wine, sugar, certain beef products and certain fisheries products, which enter the EU under preferential tariff quotas, as negotiated under the SAA). Summing up, Albania's trade is operating in free trade regime with EU, EFTA, Turkey, and its neighbouring CEFTA 2006 countries.

The main objective of this paper is to explain main determinants of agricultural export in Albania. The paper is organized as follows: the next section provides retrospective of previous studies employing gravity model in agricultural trade. The following section describes methodology, estimation strategy as well as variables and data used in empirical estimation. Then we present and discuss results of the estimation in the subsequent section. Lastly we summarize and draw conclusions.

To our knowledge, this paper is first attempt that employs gravity model in determining key aspects of agricultural export in the case of Albania. This study estimates implications of conventional gravity variables including wide range of other factors, such as border effects, cultural links, migration, price instability and exchange rate variability, free trade agreements, quality of institutions, on the potential of agricultural export in Albania.

Retrospective of previous studies

Gravity model has been used in agricultural trade analysis as a baseline model for estimating the effect of a variety of policy issues. Country level analysis utilizing gravity model in agricultural trade analysis are scarce. Thus, Ševela (2002) applied gravity model to explain Czech agricultural export. Except of conventional variables, the study observes effects of import tariff for agricultural products, exchange rate and membership in EU and EFTA. Results of the study are consistent with theoretical framework of the gravity model.

Previous studies analyse many different trade determinants. Studies dealing with the effects of trade liberalization (FTAs, RTAs and Preferential

Trade Agreements) suggest that these instruments serve as an attractive platform to promote agricultural trade. Typically, positive effects of trade liberalization are translated in elimination of trade restrictions and facilitating integration through liberalization of non-tariff barriers. With some exception, majority of the previous studies suggest net trade creating effects (Jayasinghe and Sarker, 2008; Grant and Lambert, 2008; Korinek and Melatos, 2009; Sun and Reed, 2010; Koo et al., 2006). Pishbahar and Huchet-Bourdon (2008) employ extended gravity model to estimate the impact of eleven RTAs on European agricultural imports. Their findings suggest that majority of European Union RTAs supports agricultural exports of developing countries to the EU market. On the other hand, two most important and unilateral (Generalized System of Preference and the agreement with Mexico) have negative effect on agricultural exports.

Studies dealing with effects of immigration links on trade date since the early 1990s. As Gould (1994) stresses out immigrant links have potential to decrease transaction costs resulting from knowledge of home-country markets, language, preferences, and personal contacts (see for example Genc et al., 2012; Head and Ries, 1998; Raulch and Trindade, 2002; Peri and Requena-Silvente, 2010). On the other hand, Parsons (2005) is interested in the effects of the stock of immigrants from the EU expansion countries residing within each EU-15 country. The results indicate that Eastern European immigrants exert a positive influence on both EU-15 imports and exports. It is predicted that a 10% rise in Eastern European immigration will increase EU-15 imports from these countries by 1.4% and EU-15 exports by 1.2%.

Effects of exchange rate volatility are frequently incorporated in analyses of price competitiveness in international markets (for example Maitah et al., 2016) but also in gravity models dealing with agricultural trade. Thus, Cho et al. (2002) employ panel data to estimate gravity models for ten developed country. They found out that real exchange rate uncertainty has had negative effect on agricultural trade. Moreover, the negative impact of uncertainty on agricultural trade has been more significant compared to other sectors. Extension to this study can be found in Kandilov (2008) and studies for specific countries include the work of Fertö and Fogarasi (2011), Sheldon et al. (2013), Kafle and Kennedy (2012), Koo et al. (1994), Frankel and Wei (1998).

Institutional effects on agricultural trade have received a great attention recently. Levchenko (2004) investigates quality of institutions (quality of contract enforcement and property rights). His paper studies consequences of trade when institutional differences are the source of comparative advantage among countries. Findings of the study imply that institutional differences are important determinant of trade flows. Moreover, results of the paper suggest that institutional differences diverge less developed countries to gains from trade. Similarly, Linders et al. (2005) found that institutional distance has a negative effect on bilateral trade, presumably because the transaction costs of trade between partners from dissimilar institutional settings are high. They stress out that institutional quality of both the importer and exporter increases the amount of bilateral trade.

Materials and methods

Gravity model specification

Gravity model has become a workhorse (Eichengreen and Irwin, 1998) in international trade analysis. Bulk of empirical studies rank the gravity model among the most accurate tools in explaining and predicting bilateral trade. Conventional theory of gravity model in international trade emerged in the early 1960s with the pioneering studies of Tinbergen (1962) and Pöyhönen (1963). Later on, empirical works utilizing gravity model were initiated by Linnemann (1966). Since then, evolution of the gravity model and diversity of its application was remarkable. Theoretical framework of the gravity model is borrowed from the gravity law of physics. Isaac Newton's gravity model assumes that attraction between two heavily bodies is proportional to the product of their masses and inversely related to the distance between them (Frankel, 1997). Translated into the international trade theory, gravity model suggests that volume of trade between two countries is proportional to their economic size (national incomes) and inversely related to the distance. Therefore, gravity model predicts that economically rich and geographically close countries trade more together than with third countries (Pokrivčák and Šindlerová, 2011). Main advantages of the gravity model lay on results of empirical work. Linders and De Groot (2006) suggest that gravity model is particularly efficient in explaining a large portion of the variation in bilateral trade.

For the last fifty years, gravity equations have

dominated empirical studies in international trade. In its basic form, the amount of trade between countries is assumed to be increasing in their sizes, as measured by their national incomes, and decreasing in the cost of transportation between them (Cheng and Wall, 2005). Therefore, the basic form of the gravity equation is expressed as follows:

$$T_{ij} = \beta_0 \frac{GDP_i^{\beta_1} GDP_j^{\beta_2}}{DIST_{ij}^{\beta_3}} \quad (1)$$

where T_{ij} is bilateral trade between country i and j; GDP_i (GDP_j) is economic size of country i (j) measured by GDP; $DIST_{ij}$ is bilateral distance between the two countries; β_0 is a constant, β_1, β_2 and β_3 are parameters often estimated in a log-linear reformulation of the model.

For the purpose of this study, we employ modified gravity model used by McCallum (1995). It is adjusted for logarithmic form and allows adding supplementary variables:

$$\ln X_{ij} = \beta_0 + \beta_1 \ln GDP_i + \beta_2 \ln GDP_j + \beta_3 \ln DIST_{ij} + \beta_4 \delta ij + \varepsilon_{ij} \quad (2)$$

where X_{ij} is trade flow from country i to country j (in our case export), GDP_i and GDP_j is GDP of the country i and country j, $DIST_{ij}$ is distance between country i and j, δ_{ij} is dummy variable for the other factors influencing trade flows, and ε_{ij} is error term.

We adopted the above equation to fit it to the gravity model for agricultural exports in Albania. Further we adjusted the basic form of the gravity model equation (baseline model is called Model 1 in the Results section) for agricultural exports of Albania as follows:

$$\ln X_{ij} = \beta_0 + \beta_1 \ln GDP_i + \beta_2 \ln GDP_j + \beta_3 \ln GDPpc_i + \beta_4 \ln POP_j + \beta_5 \ln POP_i + \beta_5 \ln DIST_{ij} + \varepsilon_{ij} \quad (3)$$

where X_{ij} is the value of agricultural exports from country i (Albania) to country j (importer). GDP_i and GDP_j stand for real GDP of country i and j, and measure economic size of the two economies. POP_i and POP_j are market size variables indicating population of the country i and j. $DIST_{ij}$ represents distance between country i and j. ε_{ij} is a stochastic disturbance term that is assumed to be well-behaved.

In order to estimate key determinants of agricultural export, we follow a stepwise procedure. First, we estimate the baseline gravity model to determine the coefficients of Albania's agricultural export flows (hereinafter Model 1). Subsequently, we augment the baseline model with dummy variables controlling for the income effects (Model 2), effects of adjacency, linguistic similarities and cultural links (Model 3), effects Albanian Diaspora (Model 4), effects of bilateral exchange rate and price stability of the importing country (Model 5), effects of trade liberalization with CEFTA, EU, EFTA and Turkey (Model 6), and institutional effects (Model 7). Finally, we estimate pooled effects of all variables included in the model (Model 8). For this purpose, the baseline model is modified with supplementary variables, as follows:

$$\begin{aligned}\ln X_{ij} = {} & \beta_0 + \beta_1 \ln GDP_i + \beta_2 \ln GDP_j + \beta_3 \ln POP_i \\ & + \beta_4 \ln POP_j + \beta_5 \ln DIST_{ij} + \beta_6 GDPpc_{ij} \\ & + \beta_7 ADJ_{ij} + \beta_8 LAND_j + \beta_9 LANG_{ij} \\ & + \beta_{10} COL_{ij} + \beta_{11} \ln DIA_{ij} + \beta_{12} \ln EXR_{ij} \\ & + \beta_{13} INF_j + \beta_{14} CEFTA_{ij} + \beta_{15} SAAeu_{ij} \\ & + \beta_{16} EFTA_{ij} + \beta_{17} FTAtur_{ij} + \beta_{18} INSTdist_{ij} \\ & + \varepsilon_{ij} \quad (4)\end{aligned}$$

where $GDPpc_{ij}$ is income effect variable indicating income differential between Albania and importer. The next two variables determine transportation costs. ADJ_{ij} is a dummy indicating if country i and j share common land border. $LAND_j$ dummy shows whether importing country j is landlocked. Variables aiming to capture cultural and historical similarities, respectively transaction and information costs follow. $LANG_{ij}$ shows whether country i and j has a common primary language. COL_{ij} indicates whether importer was Albania's colonizer. DIA_{ij} is stock of Albanian Diaspora in partner countries. EXR_{ij} is real exchange rate variable measured by the units of the importing country's home currency per Albanian Lek (ALL) and INF_j represents inflation rate (annual CPI rate) in the importing country. $CEFTA_{ij}$, $SAAeu_{ij}$, $EFTA_{ij}$ and $FTAtur_{ij}$ stands for free trade agreements with CEFTA, European Union, EFTA and Turkey. $INSTdist_{ij}$ shows bilateral institutional distance between Albania and import partner (see Linders et al., 2005).

Model variables

The dependent variable used in this study is the volume of Albanian agricultural exports to its partner countries. In this paper, we utilize conventional income variables explaining bilateral trade flows. Exporter's GDP (Albania) explains country's productive potential, while GDP of importing partner reflects absorbing potential, respectively purchasing power (see Koo et al., 1994). Theoretical framework of the gravity model predicts positive relationship to trade for both variables. Population is another

conventional variable injected in the model with the aim to explain relationship between market size and Albanian agricultural export flows. There is no a priori relationship between exports and the populations of either the exporting or importing country (Martinez-Zarzoso and Nowak-Lehmann, 2003; Armstrong, 2007). An estimated coefficient of population of the exporter may have negative or positive sign depending on whether the country exports less when it is big (absorption capacity) or whether a big country exports more compared to a small country (economies of scale).

In order to investigate effects of transportation costs we embrace the variable of geographical distance between the capital city of Albania (Tirana) and capitals of importing countries. Increasing distance between trading partners proxies higher transport costs and decreases Albanian export flows. Therefore, gravity model predicts negative coefficient for this variable. Similarly, trade with landlocked countries involves higher trade costs, therefore negative coefficient is expected. On the other hand, lower transport and transaction costs are associated with neighbouring countries. Hence, we expect positive coefficient for the variable explaining exports with countries that share common border with Albania (see Anderson and Van Wincoop, 2001; Jansen and Piermartini, 2009).

Further, gravity equation is augmented with dummy variables predicting effects of cultural and historical similarities between Albania and importing countries. Here we impose dummy variables explaining whether Albania's trade partners were a former Albania's colonizer or if they share common primary language. These variables have been frequently used in the literature aiming to capture information costs. In particular, our interest is extended to the effects of Albanian migrants living in importing countries. Literature suggests that migrant ties can stimulate exports by lowering transaction costs and bringing their preferences for goods produced in home country. Hence, Albanian migrants might lower information and transaction costs through knowledge of home-country markets, language, business contracts etc. Therefore, empirical studies suggest that larger migrant stocks are associated with higher trade flows (see Gould, 1994; Bryant et al., 2004; Parsons, 2005).

The effects of trade liberalization are observed by incorporating dummy variables controlling for the impact of RTA with CEFTA 2006 countries (in force since 2007), SAA with EU (in force since 2009), FTA with EFTA (in force since 2011) and FTA with Turkey (in force since 2008).

Effects of exchange rate are frequently incorporated in gravity models dealing with agricultural trade (see Koo et al., 1994; Frankel and Wei, 1998; Hatab et al., 2010). In our case, annual exchange rate is determined by the Albania's currency units (ALL/Albanian Lek) per one unit of the importing country currency. We expect that an increase in exchange rate would devaluate Albanian currency, hence exports would be cheaper. In such a case, devaluation of the domestic currency should increase Albanian agricultural export. Therefore, as the result we expect a coefficient with positive sign. Another factor influencing trade flows is price stability. In order to capture effects of price stability here, we incorporate in the model inflation rate (annual CPI rate) of the importing partner. Therefore, we expect a negative sign for the coefficient of inflation.

There is common agreement that institutional quality has substantially positive impact on bilateral trade flows (De Groot et al., 2004) and reducing the level of uncertainty (Jansen and Nordås, 2004). Therefore, if trade is supported by an effective rule of law, and if government regulation is transparent, countries engage in more trade (Linders et al., 2005). Following De Groot et al. (2004) we measure effects of bilateral institutional distance between Albania and its trading partners. Institutional distance between country pairs is measured as follows:

$$INSTdist_{ij} = \frac{1}{6}\sum_{k=i}^{6}(I_{ki} - I_{kj})^2 / V_k \qquad (5)$$

INSTdist is institutional distance, I_{ki} indicates country i score on World Governance Indicator's k^{th} dimension and V_k is variance of this dimension across all countries.

In the last stage this paper, we estimate Albanian export potential by comparing actual and predicted export flows with individual trading partners.

Gravity model estimation technique

The choice of gravity equation estimator has been frequently debated among the scholars dealing with performance of the gravity model. Prevalence of heteroskedasticity and zero bilateral trade flows in the standard empirical methods were the focus of criticism (see Helpman et al., 2008; Westerlund and Wilhelmsson, 2009; Silva and Tenreyro, 2006). Hence, Silva and Tenreyro (2006) argue that

standard empirical methods employed in estimating gravity equations are inconsistent and lead to biased results. They suggest that the use of standard log-linear estimator suffers from the presence of heteroscedasticity, which in turn might yield biased estimates of the true elasticities. On the other hand, various approaches have been employed in dealing with zero flows. Some authors suggest dropping the zero flows from sample (Linneman, 1966) or adding a constant to all trade flows to estimate log-linear equation (Rose, 2004).

Despite controversies and existence of wide range of estimation techniques such as Heckman model (Gomez-Herrera, 2013), FGLS (Martinez-Zarzoso, 2013), Helpman model (Helpman et al., 2008), Tobit model (Martin and Pham, 2008) etc. previous studies reveal that it is difficult to advocate a sole estimation technique as the best-performing. Choice of the method should be based on both economic and econometric considerations (Linders and De Groot, 2006) including robust specification checks and tests (Martinez-Zarzoso, 2013). For the purpose of this study, we adopted econometric approach using the Poisson Pseudo-Maximum Likelihood (PPML) estimator model, as proposed by Silva and Tenreyro (2006, 2011). PPML provides a natural way to deal with zero values and is robust to different patterns of heteroskedasticity. Even the critical voices (Martin and Pham, 2008) of PPML estimator suggest that in the case of small fraction of zero values, the PPML estimator model is the best performing method for the gravity model estimation. In this study the share of zero values is relatively low (18.6 percent), which indicates that the use of PPML estimator is appropriate.

Data

Panel data used in this study comprises Albanian agricultural exports to 46 import partners, including countries from EU-28, CEFTA 2006, EFTA and BRICS, as well as USA, Japan and Turkey. Data utilized in this study cover the period 1996-2013. Trade flows observed here cover 92% of Albanian agricultural exports for the given period. Data on agricultural export flows were obtained from the UNCTAD, disaggregated according to Standard International Trade Classification (SITC, rev. 3). Data on real Gross Domestic Product (GDP), population, exchange rate and inflation were acquired from the same source. Data on distance between capital cities, together with dummies on cultural and historical links such as adjacency (sharing common land border), common primary language and Albania's former colonizer were obtained from the CEPII (Centre d'Etudes Prospectives et d'Informations Internationales) database. Data on common RTAs with trading partners were utilized from the WTO (World Trade Organization). Lastly, data for institutional distance were obtained from the World Governance Indicators (WGI) database (Kaufmann et al., 2010). Data on the stock of Albanian Diaspora residing in the importing countries were obtained from the World Bank migration database. Missing data for the given time period in the case of institutional variables and stock of Albanian migrants were interpolated. Definition of variables, expected coefficient signs and basic statistics of the employed variables are summarized in Appendix Table 1. Correlation matrix presented in the Appendix Table 2 suggests that the issues related to multicollinearity are not present in the dataset. Data processing and empirical estimations were conducted on Stata 12.

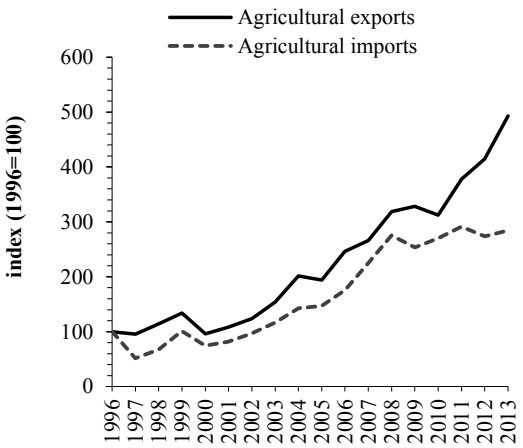
Results and discussion

Agricultural trade in Albania

Albania is endowed with natural resources, such as fertile land, and suitable climatic conditions for agricultural production. Abundance of natural resources combined with low labour costs provides good grounds for intensification of labour intensive agricultural activities. Moreover, geographical layout, proximity to the EU market, and access to sea transport, make export potential viable in terms of low transport costs. Therefore, agriculture fulfils preconditions to excel Albanian export and shrink the actual sharp trade deficit. Despite its great potential, Albania remains a country with low agricultural exports and high dependency on imports. Since the early period of transition, agricultural exports marked a significant growth. Between the period 1996 and 2013, volume of agricultural exports increased from 32.4 million USD to 171.3 million USD. Data on Albanian agricultural trade (Figure 1) reveals that since 1996 agricultural exports marked over a five-fold increase, while imports rose at slower pace (3 times). Despite such impressive growth, data from 2013 suggest that agricultural exports/ import coverage rate is only 20%, meaning that import to export ratio is as high as 5:1 (Figure 2).

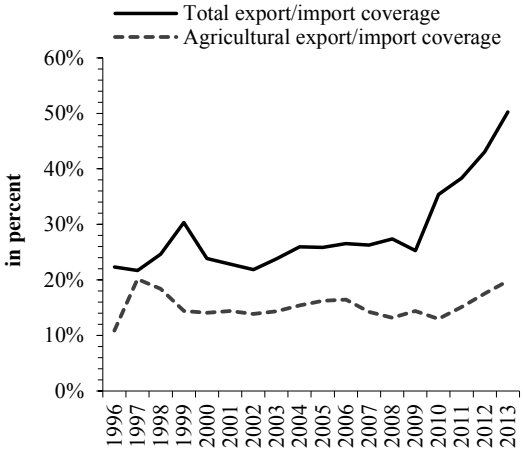
Destination of Albanian agricultural export

European Union is the main economic and trade partner for Albania since the beginning of transition process. Among others, strong trade linkages are



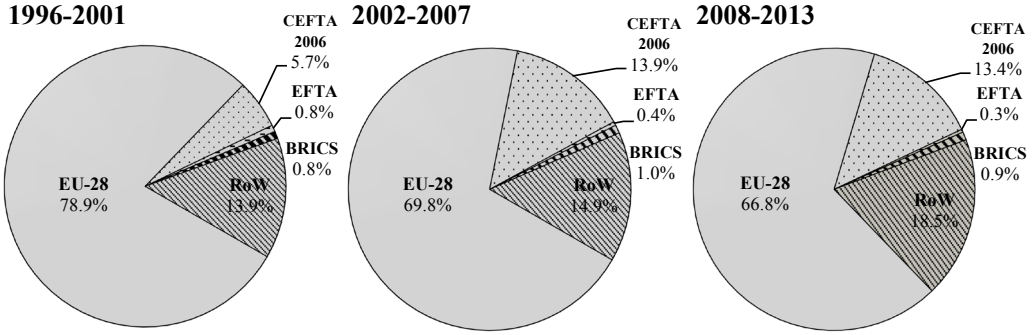
Source: UNCTAD, own elaboration

Figure 1: Growth of Albanian agricultural trade.



Source: UNCTAD, own elaboration

Figure 2: Agricult. import/export coverage.



Source: UNCTAD, own elaboration

Figure 3: Agricultural exports, by trading blocs (in percentage).

reflected in the case of Albanian agricultural export destination. The share of agricultural exports to EU-28 constitutes two thirds (66.8%) of total agricultural exports for the period 2008-2013 (Figure 3). A slight decline in the share of agricultural exports to EU is directly affected by the global crisis of 2008-2009. According to ACCIT (2013) the crisis in Italy and Greece and drastic decline of domestic demand in both neighbouring countries had a direct impact in the slowdown of Albanian exports. Moreover, our estimations confirm that this is particularly true in the case of agricultural exports. Before the crisis (2007) share of agricultural exports to Italy was 40.0% while in 2013 it dropped at 35.1%. Similar outcome took place with agricultural exports to Greece, a fall from 10.5% in 2007 to 8.7% in 2013.

On the other hand, trade links with the majority of CEFTA 2006 countries have been well established even before the free trade agreement entered in force. Share of agricultural exports to the group of neighbouring SEE (South Eastern Europe) countries is 13.4%. Despite significant increase since 1996-2001, the share of agricultural exports to CEFTA 2006 countries remained relatively constant. In addition, EC (2015) suggest that Albanian export potential to these group countries remains unexploited. Establishment of the CEFTA 2006 has particular merits in lowering technical barriers, but remains behind in releasing administrative barriers such as customs procedures, as well as dealing with barriers in the area of sanitary and phytosanitary measures. EFTA is inferior agricultural export partner to Albania. Total share of agricultural exports to EFTA countries is incremental, accounting for 0.3% of total agricultural exports. Unattractiveness of Albanian agricultural exports to this group of economies reflects high transport costs due to the large distance between EFTA members and Albania. Similarly to the trade pattern with EFTA, agricultural trade with informal trading block of BRICS countries (Brazil, Russia, India, China and South Africa)

is very low. Total agricultural exports to BRICS during the period 1996-2013 were statistically insignificant (less than 1%) or 13.7 million USD.

Empirical results

Baseline model estimations reported in the Table 1 (Model 1) reveal that obtained results are persistent with theoretical framework. The coefficients of importer's economic size (GDP) and market size (POP) are positive and statistically significant. Importer's economic size is positive and significant in all estimated models, while the significance of the importer's market size varies over the estimated models. Results suggest that Albanian agricultural export will increase proportionally with an increase of importer's economic size. On the other hand, Albania's economic size is found to be positive but statistically insignificant, whilst the domestic market size has a robust significant negative coefficient. Ceteris paribus, increase in Albanian population enables domestic market to absorb a greater portion of agricultural production and reduces surpluses dedicated for export. This outcome is particularly relevant in the low income countries where agricultural and food commodities are perceived as normal goods. As expected, our results illustrate that distance has negative impact on agricultural exports in all estimated models. Such an outcome is typical for conventional gravity model analysis, since the distance is expected to affect export flows negatively. Increasing geographical distance between the capital city of Albania (Tirana) and capitals of importing countries proxies higher transport costs and decreases therefore agricultural export flows.

In addition to the traditional variables, we adjust the baseline model with the variable of bilateral income differential aiming to test for the relative strength of the Linder hypothesis vis-à-vis the Heckscher-Ohlin (HO) hypothesis. Yielded result (Model 2) implies that estimated coefficient of this variable is negative, but statistically insignificant. However, the estimates of the pooled model (Model 8) find the variable statistically significant at 5 percent. Such result implies that income disparities tend to decrease agricultural export flows, emphasizing income convergence as relevant factor in promoting export. Therefore, findings of this study support the Linder hypothesis in the case of Albania.

Results of the model augmented with effects of adjacency (sharing common border), linguistic similarities and colonial links (Model 3) confirm the common validity with theoretical foundations of the gravity model. Positive and significant coefficients obtained for these variables depict that Albanian agricultural export is strongly influenced by the transportation and transaction costs. Indeed, results predict higher agricultural export flow with countries that share common border with Albania. Similarly, common primary language and colonial links with the importing country tend to foster agricultural export flows. On the other hand, effect of landlocked importing country, despite the expected negative coefficient sign, is found statistically insignificant.

Once we extended the baseline model with the effects of Diaspora (Model 4), results revealed a strong impact of the Albanian immigrants residing in the importing country. Presence of a larger Albanian immigrant stock in the importing countries is associated with lower transaction and information costs and higher agricultural export flows. Moreover, relevance of the Albanian Diaspora, as it can be seen in the pooled model estimates (Model 8), prevails on its significance over the transaction costs (adjacency) and linguistic similarities (common language). Therefore, any trade enhancing policy aiming to promote agricultural export in the case of Albania should perceive Diaspora as irreplaceable platform for export promotion and growth.

Results of the effects of the bilateral exchange rate and price stability in the importing country are presented in Model 5. As expected, exchange rate has a significant positive coefficient, indicating that depreciation in Albanian Lek (ALL) against the currencies of importing partners facilitates agricultural exports. By contrary, coefficient of price stability (inflation) is found statistically insignificant, despite the expected negative coefficient sign.

Findings of this study yield relatively ambiguous results related to the effects of trade liberalization (Model 6). Results show that RTA with CEFTA 2006 countries had positive and significant impact on agricultural export creation, while export diversion effects prevail from the FTA with EFTA members. Accordingly, results induce negative coefficients for SAA with EU and FTA with Turkey, but statistically insignificant. This outcome should be interpreted with cautions, for at least two particular reasons. Firstly, impact of the free trade agreements in agriculture tends to produce delayed effects because

AGR_exp	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
ln_GDP_imp	0.855***	0.927***	1.011***	0.367***	0.579***	0.967***	1.134***	0.781***
	-0.058	-0.087	-0.07	-0.066	-0.102	-0.069	-0.1	-0.135
ln_GDP_exp	0.135	0.15	0.068***	0.045	0.303**	-0.005	-0.292	-0.471***
	-0.14	-0.137	-0.134	-0.113	-0.144	-0.176	-0.182	-0.166
ln_POP_imp	0.303***	0.209**	0.337***	0.464***	0.554***	0.228***	-0.129	0.037
	-0.059	-0.094	-0.064	-0.069	-0.091	-0.072	-0.118	-0.116
ln_POP_exp	-5.595**	-5.597**	-5.476**	-8.953***	-4.993**	-9.579**	-5.784***	-14.680***
	-2.345	-2.334	-2.456	-1.883	-2.284	-4.801	-2.197	-2.915
ln_DIST	-2.462***	-2.426***	-2.293***	-1.330***	-2.371***	-2.434***	-2.135***	-1.146***
	-0.1	-0.097	-0.107	-0.097	-0.108	-0.095	-0.135	-0.113
GDPpc_dist		-0.047						-0.065**
		-0.029						-0.032
ADJ			1.098***					0.016
			-0.152					-0.202
LANG			0.933**					-0.640**
			-0.363					-0.251
LAND			-0.043					0.766***
			-0.196					-0.21
COL			0.394***					0.764***
			-0.135					-0.175
ln_DIA				0.303***				0.275***
				-0.022				-0.034
ln_EXR					0.276***			0.144***
					-0.072			-0.052
INF					-0.009			-0.014***
					-0.006			-0.005
CEFTA						0.561*		0.688**
						-0.311		-0.272
SAA_eu						-0.291		-0.396***
						-0.206		-0.139
FTA_efta						-1.875***		-1.105**
						-0.37		-0.454
FTA_tur						-0.005		-0.671***
						-0.224		-0.218
INST_dist							-0.152***	-0.146***
							-0.037	-0.027
cons	47.137**	46.869**	42.975**	68.938***	40.106**	79.437**	51.457***	117.275***
	-19.777	-19.641	-20.504	-15.83	-19.218	-39.713	-18.65	-24.271
R2	0.884	0.886	0.877	0.933	0.889	0.878	0.891	0.949
Observations	792	792	792	747	792	792	783	738

Source: Own elaboration

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 1: PPML regression results of the gravity model: Agricultural export of Albania.

of the asymmetric nature of FTAs. Actually, this outcome is persistent with previous studies indicating that it may take a several years or even longer until actual export creation effects in agriculture occur. And secondly, it might signal weak competitiveness of the Albanian farmers and their inferior position towards heavily subsidized farmers of the importing countries.

The effects of institutional environment in agricultural export are observed in Model 7. Results of the baseline model extended

with bilateral institutional distance derive significant negative coefficient indicating that costs of agricultural export increase with institutional distance. Performance of Albanian agricultural export diminishes with higher institutional quality disparities between trading partners. Indeed, institutional heterogeneity induces higher transaction costs and restrictive effects on Albanian agricultural export. Therefore, the greater is the institutional quality gap with the importing country the lower are Albanian agricultural export flows.

Potential of agricultural export

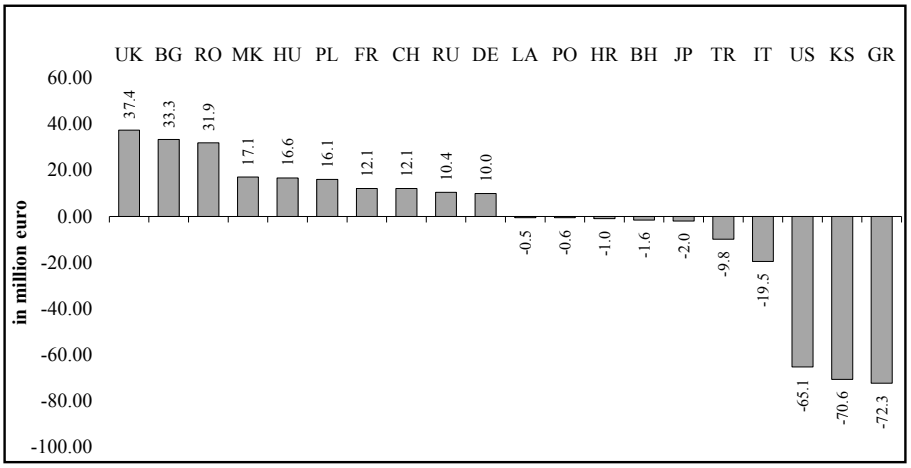
In the last section of this study we estimate Albania's export potential by comparing actual agricultural exports with predicted exports. Results presented in this section show the absolute difference between the actual and predicted level of agricultural export (A – P). A positive value implies the possibility of agricultural export expansion while a negative value indicates that Albania has exceeded its export potential with a trading partner. For the sake of simplicity, results of the export potential are presented in the aggregate format for the period 1996-2013.

As it is revealed in the Figure 4, Albania overexploits its agricultural export potential with its traditional EU neighbouring markets (Greece and Italy), culturally proximate trade partners (Kosovo, Turkey, Croatia, Bosnia and Herzegovina) as well as geographically distant countries (USA and Japan). On the other hand, Albania has unused agricultural export potential particularly with the Central and Eastern European Countries (CEECs) such as Bulgaria, Romania, Hungary and Poland. With this group of new EU member countries, Albania has institutional similarities and comparatively lower transport and transaction costs. Therefore, market access into these markets is significantly easier compared to the EU developed countries. Additional advantage to the market expansion in such markets is related to similarities in consumer preferences and the common status of transitional economies, such as it is the case of Albania.

On the other hand, results of this study identify untapped export potential of the Albanian agricultural exports in the group of developed European countries. This is particularly true for the Western European markets such as UK, France, Switzerland and Germany. As it is noted from the results of previous section (particularly in the case of Italy and Greece) primary advantage to market expansion in this group of countries is large presence of Albanian Diaspora. Migrant links, among other factors, might serve as a solid platform for intensification towards these export markets. On the other hand, the main barriers in exploiting export potential in these countries are related to higher transport and transaction costs, institutional dissimilarities and higher quality standards.

Discussion and remarks

Our gravity analysis for Albanian agricultural export leads to comparable results as models for other countries. For example, a study of determinants of Turkish agricultural exports to the European Union (Erdem and Nazlioglu, 2008) found that Turkish agricultural exports to the EU are positively correlated with the size of the economy, the importer population, the Turkish population living in the EU countries, the non-Mediterranean climatic environment, and the membership



Source: UNCTAD, own elaboration

Figure 4: Potential agricultural export 1996-2013 (actual export - predicted export).

to the EU-Turkey Customs Union Agreement while they are negatively correlated with agricultural arable land of the EU countries and geographical distance between Turkey and the EU countries. Results from Albania also confirm importance of traditional gravity variables and importance of exporter's Diaspora for export of agricultural products.

Transformation of the agricultural sector is a very sensitive aspect. In many Central and Eastern European Countries it was connected to the transition process and later also with adoption of common EU rules. Experience from Central and Eastern European Countries (see Svatos and Smutka, 2010; Svatos et al., 2010) revealed, that the process of EU accession reflected positively in results of agricultural trade. Moreover, EU accession resulted in agricultural export concentration in the common internal market (Svatos and Smutka, 2010). On the other side, trade creating effect of RTAs was confirmed by Korinek and Melatos (2009). Their gravity model for members of three regional trade agreements suggests that the creation of AFTA (ASEAN Free Trade Agreement), COMESA (Common Market for Eastern and Southern Africa) and MERCOSUR (Southern Cone Common Market) has increased trade in agricultural products between the RTAs countries. They also found that in some cases, lack of transport and communications infrastructure, in addition to supply constraints, lessens the effect of the RTAs on trade flows. Besides RTAs, preferential trade policies can also help to support international trade (Cipollina et al., 2010). Most developing countries can export to the European Union and the United States with preferential market access. The results show (Cipollina et al., 2010) that preferential schemes have a significant impact on trade in terms of margins and intensity, and such effect seems to be stronger in the case of EU preferences, although with significant differences across products. In the case of Albania not all RTAs and FTAs have the same effect on agricultural trade, in our study export creating affect was confirmed for RTA with CEFTA 2006 countries and export diversion effect for FTA with EFTA countries.

According to gravity model for Egypt's agricultural exports (Hatab et al., 2010) 1% increase in Egypt's GDP generates more than 5% increase in its agricultural export flows. In contrast, the increase in Egypt's GDP per capita causes exports to decrease, similarly as in our model. Authors argue on such outcome emphasizing that economic growth increases per capita demand for all normal goods. Moreover, the exchange volatility has positive coefficient (depreciation in Egyptian Pound stimulates agricultural exports) and transportation costs have a negative influence on Egyptian agricultural exports. The same outcome of exchange rate volatility can be observed in the case of Hungarian agricultural exports (Fogarasi, 2011). Other variables, such as population and income (GDP) of export destination countries have positive sign, while distance from Hungary has a negative one.

Effects of the institutional determinants in agricultural trade were investigated by Bojnec and Fertö (2015). They focus on effects of quality of institutions and similarity of institutions in explaining variation in bilateral agricultural and food exports among OECD countries. Study finds out that good quality of institutions reduces the effects of distance. Factors influencing bilateral trade among the Western Balkan countries were identified in the work of Trivic and Klimczak (2015). They considered geographical, economic or political determinants as well as factors constituting cultural, communicational and historical proximity between countries. Their results differ from traditional results gained from gravity analysis in the way that the strongest influence on trade values were exhibited by variables representing ease of a direct communication and similarity of religious structures. In addition, war and one-year-post-war effect showed a strong and statistically important influence. The authors therefore conclude that non-economic factors in the region of the Western Balkans play the most important role in determining trade values between countries. Our analysis for the case of Albania confirms these results to the extent that Albanian immigrants in importing countries represent a significant factor for export growth, even if the countries are geographical neighbours or have similar language. Furthermore our results indicate that more similar institutional environment of the trade partner to Albanian one has positive effect on its agricultural export.

Conclusion

The paper employs gravity model approach to analyse main determinants of agricultural export in Albania. The study utilizes econometric approach using Poisson Pseudo-Maximum Likelihood (PPML) estimation for Albanian agricultural export flows with major trading partners for the period 1996-2013. Main results of the baseline model

suggest that agricultural export flow increase with increasing economic size (GDP), revealing higher impact of importer's absorbing potential comparatively to Albania's productive potential. On the other hand, increase of Albanian market size (population) has diminishing effects on agricultural export flows. Ceteris paribus, growth in domestic demand, resulting from population growth, leads to reduction of agricultural export. As expected, findings of this study suggest that increasing distance between trading partners is associated with reduction of Albanian agricultural export.

Albanian agricultural export is highly concentrated in a limited number of importing partners, respectively in neighbouring countries (such as Italy and Greece). It indicates that geographical proximity, low transport and transaction costs are key drivers of agricultural export. Such an outcome is supported by the results of the augmented gravity model conducted in this study. Namely, results reveal that higher agricultural export flows are associated with neighbouring countries sharing common border. Moreover, stronger linguistic similarities and cultural links with importing partners (such as Kosovo and Macedonia) tend to accelerate Albanian agricultural export. Influence of Albanian Diaspora residing in the importing partner countries is found to have robust effect on the promotion of agricultural export. Interestingly, findings of this study suggest that effects of Diaspora prevail on their importance over the transport and transaction costs.

On the other hand, devaluation of the Albanian currency has significantly positive impact on Albanian agricultural export flow, prevailing on its relevance over the price stability (inflation) in the importing countries. Concerning the effects of trade liberalization on the performance of agricultural export, our findings depict that RTA with CEFTA 2006 countries had trade creating, while FTA and EFTA trade diverse effect. Effects of SAA with EU and FTA with Turkey are found statistically insignificant. Actually, these findings should be perceived with caution due to asymmetric nature and short time lap since these trade agreements entered into force.

Lastly, bilateral institutional distance tends to diminish Albanian agricultural exports. Therefore, institutional convergence with the EU standards, based on the principles of well functioning market economy, would influence the extension of Albanian exports in those European markets (in which breakthrough of Albanian agricultural exports is limited due to institutional barriers). Moreover, improvement of institutional quality would have influence on interim institutional stability for domestic farmers, including better credit access, fight against corruption and sustainable political stability.

Findings of this study are important for trade and agricultural policy makers. From the trade policy perspective, one should assume that the platform of agricultural export promotion should aim market diversification in those countries (other than neighbouring countries) in which Albanian farmers can exploit their comparative advantage. Indeed, Albania is a small and open economy operating in the liberalized trade regime therefore any trade restrictive efforts might produce negative effects. On the other hand, from the agricultural policy perspective, special attention should be paid to measures that lead to improvement of the competitiveness of local farmers. Public investments in the rural infrastructure and irrigation system should be accompanied with direct farmer support. Notably, Albania has huge potential to become competitive actor in international markets if supportive measures are directed in increasing productivity of labour intensive agricultural sectors, such as fruits, vegetables, medical plants and fishery. Further specialisation in these sectors is supported by the present factor market endowments, natural resources and climate conditions in Albania.

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Appendix

Variable	Code	Definition	Source	Period	Expected sign	Summary statistics				
						Obs.	Mean	STD.	Min	Max
Agricultural export	AGR_exp	Agricultural exports of Albania (in million USD)	UNCTAD	1996-2013		792	1.628	5.435	0.000	60.215
GDP importer	ln_GDP_imp	Log of real GDP of importing country (in million USD)	UNCTAD	1996-2013	+	792	11.89	2.096	7.066	16.641
GDP exporter	ln_GDP_exp	Log of real GDP of Albania (in million USD)	UNCTAD	1996-2013	+	792	8.804	0.598	7.743	9.465
Population importer	ln_POP_imp	Log of population of importing country (in thousands)	UNCTAD	1996-2013	+/–	792	9.365	1.942	5.599	14.125
Population exporter	ln_POP_exp	Log of population of exporting country (in thousands)	UNCTAD	1996-2013	+/–	792	8.016	0.031	7.966	8.047
Distance	ln_DIST	Log of Distance between capitals of Albania and importer	CEPII	1996-2013	–	792	7.233	0.962	5.050	9.159
GDP pc distance	GDPpc_dist	GDP per capita distance between Albania and importer	UNCTAD	1996-2014	+/–	792	1.869	3.554	0.000	27.698
Adjacency	ADJ	= 1 if Albania and importer share common border	CEPII	1996-2013	+	792	0.068	0.252	0.000	1.000
Language	LANG	= 1 if Albania and importer share common language	CEPII	1996-2014	+	792	0.034	0.182	0.000	1.000
Landlocked	LAND	= 1 if importer is landlocked, dummy	CEPII	1996-2015	–	792	0.182	0.386	0.000	1.000
Colony	COL	= 1 if importer was Albania's colonizer, dummy	CEPII	1996-2016	+	792	0.023	0.149	0.000	1.000
Albanian Diaspora	ln_DIA	Log of Albanian migrant stock in importing country	World Bank	1996-2016	+	747	5.904	2.934	0.000	13.425
Exchange rate	ln_EXR	Log of exchange rate between ALL/currency of importer	UNCTAD	1996-2013	+	792	3.665	1.661	-0.76	7.157
Inflation	INF	Inflation rate of the importer (CPI annual rate)	UNCTAD	1996-2013	–	792	7.086	39.37	-4.48	1058.3
CEFTA 2006	CEFTA	= 1 if RTA with CEFTA 2006 countries, in force	WTO	Since 2007	+	792	0.061	0.239	0.000	1.000
SAA with EU	SAA_eu	= 1 if SAA with EU, in force	WTO	Since 2009	+	792	0.172	0.377	0.000	1.000
EFTA	FTA_efta	= 1 if FTA with EFTA countries, in force	WTO	Since 2011	+	792	0.011	0.106	0.000	1.000
FTA Turkey	FTA_tur	= 1 if FTA with Turkey, in force	WTO	Since 2012	+	792	0.008	0.087	0.000	1.000
Institutional distance	INST_dist	Institutional distance between Albania and importer	WGI	1996-2016	+/–	783	3.662	3.228	0.000	11.938

Note: RTA (Regional Trade Agreement). FTA (Free Trade Agreement), SAA (Stabilization and Association Agreement), ALL (Albanian Lek), CPI (Consumer Price Index)
Source: Own elaboration

Appendix Table 1: Definition, expected sing and basic statistics of the model variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
(1) AGR_exp	**1.000**																		
(2) ln_GDP_imp	0.259	**1.000**																	
(3) ln_GDP_exp	0.128	0.171	**1.000**																
(4) ln_POP_imp	0.182	0.825	-0.009	**1.000**															
(5) ln_POP_exp	-0.137	-0.151	-0.827	0.008	**1.000**														
(6) ln_DIST	-0.171	0.563	-0.041	0.473	0.037	**1.000**													
(7) GDPpc_diff	-0.008	0.177	0.252	-0.182	-0.235	0.165	**1.000**												
(8) ADJ	0.130	-0.249	0.040	-0.169	-0.037	-0.475	-0.118	**1.000**											
(9) LANG	0.003	-0.258	-0.004	-0.141	0.003	-0.375	-0.087	0.621	**1.000**										
(10) LAND	-0.079	-0.197	0.018	-0.224	-0.017	-0.344	0.187	0.143	0.334	**1.000**									
(11) COL	0.038	0.075	-0.004	0.144	0.003	-0.038	-0.085	-0.040	-0.025	-0.075	**1.000**								
(12) ln_DIA	0.527	0.315	0.119	0.164	-0.088	-0.376	0.114	0.450	0.212	0.067	0.108	**1.000**							
(13) ln_EXR	0.154	0.010	-0.083	-0.148	0.046	-0.147	0.090	-0.065	-0.271	-0.250	0.108	0.233	**1.000**						
(14) INF	-0.024	-0.074	-0.117	0.023	0.059	-0.081	-0.061	-0.022	-0.016	-0.032	0.099	-0.013	0.028	**1.000**					
(15) CEFTA	0.006	-0.246	0.222	-0.162	-0.249	-0.386	-0.118	0.322	0.259	0.130	-0.035	0.104	-0.142	-0.012	**1.000**				
(16) SAA_eu	0.135	0.068	0.495	-0.090	-0.683	-0.072	0.131	-0.048	-0.075	0.001	-0.075	0.073	0.159	-0.052	-0.105	**1.000**			
(17) EFTA	-0.029	0.054	0.120	-0.040	-0.175	0.033	0.368	-0.028	-0.018	0.043	-0.018	0.035	0.033	-0.016	-0.024	0.043	**1.000**		
(18) FTA_Tur	0.051	0.068	0.095	0.086	-0.118	-0.022	-0.048	-0.023	-0.014	-0.043	0.573	0.075	0.023	0.003	-0.020	-0.043	-0.010	**1.000**	
(19) INST_dist	-0.126	0.176	-0.311	-0.234	0.280	0.276	0.431	-0.233	-0.190	0.048	-0.183	0.022	0.210	-0.105	-0.254	-0.104	0.076	-0.108	**1.000**

Source: Own elaboration

Appendix Table 2: Correlation matrix.