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DETERMINANTS OF EXPORT IN TRANSITION ECONOMIES: EVIDENCE FROM THE SOUTH EAST EUROPE (SEE-6) AND COMMONWEALTH OF INDEPENDENT STATES (CIS)

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Abstract

The main focus of this study is to analyse key determinants of export in transition economies of South East Europe (SEE-6) and Commonwealth of Independent States (CIS). Here we employ augmented gravity model to estimate impact of the key variables in export flows for the period 2005-2015. The Poisson Pseudo-Maximum Likelihood (PPML) estimator is used for stepwise estimations of the augmented gravity model, including effects of income differential, Diaspora, exchange rate and price stability, trade liberalization, institutional distance and infrastructure. In the last stage of this study we estimate the export potential for both regions. Findings suggest that export flow increases with increasing economic size, revealing higher impact of importer's absorbing potential comparatively to exporter's productive potential. On the other hand, growth in domestic demand, resulting from increase in population, leads to reduction of export. Moreover, exports are determined by low transportation costs (distance), adjacency proximity (sharing common border) and linguistic similarities. 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 exports.

Keywords: ***e****xports, gravity model, panel data, transition economies*

JEL classification: *F1, F12, C23, P2, P5*

1 Introduction

Transition economies in Europe and Central Asia include three main groups of countries: Central and Eastern European countries (CEE), South-East European countries (SEE) and Commonwealth of Independent States (CIS). This study is focused on Albania, Bosnia and Hercegovina, Kosovo, Macedonia, Montenegro, Serbia (SEE-6 or Western Balkan countries) and Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan (CIS countries). It analyses determinants of export flows within intraregional and interregional trade. The main motivation for our analysis is the growing importance of transition and emerging economies in the international market, which raises the need to know factors explaining increasing intensity of exports and successful penetration into new markets as an integral part of their economic growth.

One of the first steps of economic liberalisation was the creation of unions or free trade areas among transition countries. These were established at the very beginning of the transition process in order to enhance trade, to reduce trade barriers and to preserve partnerships based on common historical development and geographical proximity. In 1992, three countries in Central Europe, Poland, Hungary and Czechoslovakia (later split into Czech and Slovak Republic), founded the Central European Free Trade Agreement (CEFTA). Since then, CEFTA expanded by Slovenia, Romania, Bulgaria, Croatia, Macedonia, Albania, Bosnia and Herzegovina, Moldova, Montenegro, Serbia, and Kosovo. But CEFTA membership of countries that joined the European Union terminated when they become EU members. Nowadays, the parties of the CEFTA agreement are: Albania, Bosnia and Herzegovina, Macedonia, Moldova, Montenegro, Serbia and Kosovo (so called CEFTA 2006 countries – in 2006 the Agreement was substantially amended and South-Eastern European countries' membership was approved). On the other hand, countries in Eastern Europe and Central Asia formed the Commonwealth of Independent States (CIS) as a successor to the dissolved Soviet Union. Founding members are Belarus, Russia, Ukraine, Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Moldova, Turkmenistan, Tajikistan, and Uzbekistan (1991); Georgia joined later (1993). Ukraine and Turkmenistan did not sign the CIS Charter adopted in 1993 so they are only associated members to the CIS. Twelve out of fifteen former Soviet republics participated in the CIS, but Georgia withdrew its membership in 2008 (Estonia, Latvia and Lithuania never joined). In 2011, CIS countries signed a multilateral Free Trade Agreement (except Tajikistan) relaxing import and export duties which replaced a series of former bilateral and multilateral agreements (Niemi, 2016). Moreover, Russia, Kazakhstan,

and Belarus formed the Eurasian Customs Union in 2010; by 2012 they implemented the four freedoms (free movement of goods, services, people and capital) and created the Eurasian Economic Space; and in 2014 they formed the Eurasian Economic Union. Since 2015, the Eurasian Economic Union has five members, it has been enlarged by Armenia and Kyrgyzstan (Zelenko, 2011; Niemi, 2016; Tarr, 2016).

Speed of the transition and liberalisation process and the level of economic growth in individual countries differ, as both are influenced not only by institutions and policies applied during transition but also by human and social capital, civil society involvement and trust, by initial conditions and persistent conflicts or wars in some regions (Tridico, 2011). Furthermore, efforts to meet the standards of EU and NATO membership have had a positive impact on the transition process, democracy and governance effectiveness (Luli, 2015; Börzel and Schimmelfennig, 2017) and WTO-membership has improved trade (Felbermayr and Kohler, 2006).

In general, economic liberalisation, as an effect of democratisation, has a positive impact on growth (Fidrmuc, 2003). The interconnection of stabilisation policies, structural reforms and trade liberalisation with economic growth is analysed and confirmed in many studies dealing with transition economies (Kaminski et al., 1996; Fischer and Sahay, 2000; Greenaway et al., 2002; Winters, 2004; Barlow, 2006; Wacziarg and Welch, 2008; Pjerotić, 2008; Nannicini and Billmeier, 2011; Trošt and Bojnec, 2016; Khusainov et al., 2017; Kilic and Beser, 2017). But the overall economic performance of transition countries is determined by economic policy (reforms) and initial conditions jointly, whilst the latter sometimes dominates the impact on growth (De Melo et al., 2001; Falcetti et al., 2002).

International trade also stimulates economic development and growth (Awokuse, 2007). Effects of trade liberalisation (removed export controls) on growth rates are very significant at the beginning of the transition period (Kaminski et al., 1996; Barlow, 2006). Wacziarg and Welch (2008) acknowledge that on average, transition countries with a liberalised trade regime experienced growth rates about 1.5 percentage points higher and trade to GDP ratio by 5 percentage points higher than before liberalisation, but they point out differences across individual countries. Exports from all transition countries increased since the process begun, yet by a higher rate in Central and Eastern European countries than in the Commonwealth of Independent States (Kandogan, 2006). Existing extensive analytical research includes the analysis of aggregate trade volumes between OECD and South-East European transition countries (Christie, 2002), EU trade with the Western Balkan (South-East European) countries (Montanari, 2005; Nuroglu and Kurtagic, 2012; Dragutinović-Mitrović and Bjelić, 2015; Gashi et al., 2017; Braha

et al., 2017), trade of Central and Eastern European countries with Euro area countries (Bussière et al., 2008), mutual trade among Western Balkan countries (SEE-6) and SEE-9 countries (Barlett, 2009; Pllaha et al., 2012; Gjipali et al., 2012; Sklias and Tsampra, 2013; Braha et al., 2014; Trivić and Klimczak, 2015), trade of the CIS countries with other world partners (Polyakov, 2001; Elborgh-Woytek, 2003; Freinkman et al., 2004; Shelburne and Pidufala, 2006; Shepotylo, 2009), specific conditions and intra-regional trade within the CIS (Kurmanalieva and Vinokurov, 2011; Jenish, 2013), estimation of potential of trade increase between the CIS and the EU (Babetskaia-Kukharchuk and Maurel, 2004).

The main objective of this paper is to provide a rigorous and comparative analysis of the key export determinants for two transitional regions - South East Europe (SEE-6) and Commonwealth of Independent States (CIS). This study provides estimates of baseline gravity, augmented with wide range of variables, such as border effects, cultural links, income differential, diaspora, price instability and exchange rate variability, free trade agreements, institutional distance and infrastructure. Studying trade patterns and identifying determinants of trade in transition economies are of interest to economists as well as to policy makers when designing policies aimed at trade and growth.

The paper is organized as follows. Section 2 describes methodology, estimation strategy, variables and data used in empirical estimation. Section 3 presents and discusses results. In the last section we conclude.

2 Data and Methods

2.1 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.

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 the 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 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:

$$T_{ij} = \beta_0 \frac{GDP_{i\beta} GDP_{j\beta 2}}{DIST_{ij}} \beta_3 \quad (1)$$

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; $_{\beta 0}$ is a constant, β_1, $_{\beta 2}$ and $_{\beta 3}$ 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:

$$in \bullet x_{jj} = \beta_0 + \beta_1 InGDP_j + InGDP_j + \beta_3 InDIST_{jj} + \beta_4 \delta_{ij} + \varepsilon_{ij} \quad (2)$$

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, $_{\delta ij}$ is dummy variable for the other factors influencing trade flows, and $_{\varepsilon ij}$ is error term.

We adopted the above equation to fit it to the gravity model for exports in SEE-6 and CIS countries. Further we adjusted the basic form of the gravity model equation for exports of analysed countries as follows:

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

where X_{ij} is the value of agricultural exports from country *i* (exporter) 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*. $_{\varepsilon ij}$ is a stochastic disturbance term that is assumed to be well-behaved.

In order to estimate key determinants of export in transition economies, we follow a stepwise procedure. First, we estimate the baseline gravity model, aiming to determine coefficients of aggregate export flows (Model 1). Subsequently, we augment the baseline model with controlling variables such as income effects (Model 2), effects of adjacency, linguistic similarities and cultural links (Model 3), effects of Diaspora (Model 4), effects of bilateral exchange rate, inflation and Euro area (Model 5), effects of trade openness and RTA (Model 6), institutional distance

(Model 7), and infrastructure (Model 8). Lastly, we estimate pooled effects of all variables incorporated in the model (Model 9, see equation 4). For this purpose, the baseline model is modified with supplementary variables, as follows:

$$In \bullet x_{ij} = \beta_0 + \beta_1 InGDP_j + \beta_2 InGDP_j + \beta_3 InPOP_j + \beta_4 InPOP_j + \beta_5 InDIST_{ij} + \beta_6 GDPpc_{diff\,ij} +$$

$$+ \beta_7 ADJ_{ij} + \beta_8 LANG_{ij} + \beta_9 LAND_{ij} + \beta_{10} COL_{ij} + \beta_{11} InDIASP_{ij} + \bullet + \beta_{12}$$

$$\bullet\ InEXR_{ij} + \beta_{13} INFi + \beta_{14} INFj + \beta_{15} EUROj + \beta_{16} OPEi + \beta_{17} CEFTA_{EEC_{ij}} + \beta_{18} SAA_{EAST_{eu\,ij}}$$

$$+ \beta_{19} INST_{dist_{ij}} + \beta_{20} INFRA_j + \beta_{19} INFRA_j + \varepsilon_{ij} \quad (3)$$

where $GDPpc\_diff_{ij}$ is income effect variable indicating income differential between exporter and importer. The next 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, or transaction and information costs follow. $LANG_{ij}$ shows whether country *i* and *j* have a common primary language. COL_{ij} indicates whether importer and exporter share common colonial links. $DIASP_{ij}$ is emigrants stock of Diaspora in importing countries. EXR_{ij} is real exchange rate variable measured by the units of the importing country's home currency per the exporting country's currency and INF_i and INF_j represent inflation rate (annual CPI rate) in the exporting and importing country. $EURO_j$ indicates if the importing country is a member of the Euro area. OPE_i is exporter's trade openness, $CEFTA\_EEC_{ij}$ and $SAA\_EAST\_eu_{ij}$ stand for free trade agreements with CEFTA and European Union. $INST\_dist_{ij}$ shows bilateral institutional distance between trading partners (see Linders et al., 2005). The last variables, $INFRA_i$ and $INFRA_j$ stands for World Economic Forum (WEF) exporter's and importer's infrastructure index.

For the purpose of this study we build panel database comprising export flows from SEE-6 and CIS exports to 46 import partners (EU-28, CEFTA 2006, EFTA, BRIC, USA, Japan and Turkey), time period 2005-2015.

2.2 Model variables

The dependent variable used in this study is aggregate export. In this paper, we utilize conventional income variables explaining bilateral trade flows. Exporter's GDP explains country's productive potential, while GDP of importing partner reflects absorbing potential, or purchasing power, respectively (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 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 the exporting and importing countries. Increasing distance between trading partners proxies higher transport costs and decreases 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 (see Anderson and Van Wincoop, 2001; Jansen and Piermartini, 2009).

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) and SAA with EU (in force since 2009), and openness of the economy.

Effects of exchange rate are frequently incorporated in gravity models (see Koo et al., 1994; Frankel and Wei, 1998). In our case, annual exchange rate is determined by the exporter currency units per one unit of the importing country currency. We expect that an increase in exchange rate would devaluate the exporter's currency, hence exports would be cheaper. In such a case, devaluation of the domestic currency should increase export. Therefore, as a result we expect a coefficient with a positive sign. We also expect that adopting Euro in importing countries stimulates bilateral trade. Another factor influencing trade flows is price stability. In order to capture effects of price stability here, we incorporate inflation rate (annual CPI rate) of trading partners in the model.

There is a common agreement that institutional quality has substantially positive impact on bilateral trade flows (De Groot et al., 2004) and reduces 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 country pairs as follows:

$$INST\ distij^{=1}6k\sum^{6} = j(Iki - Ikj)^2 / Vk \quad (5)$$

where $INST\_dist_{ij}$ is institutional distance, I_{ki} indicates country i score on World Governance Indicator's *k*th dimension and V_k is the variance of this dimension across all countries.

2.3 Choice of the gravity model estimator

For a discussion of the relative merits of the PPML estimator vs. other linear and non-linear estimators, the interested reader may refer to Silva and Tenreyro (2006), Silva and Tenreyro (2011), Egger and Staub (2016), and Head and Mayer (2014).

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 loglinear 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.

2.4 Data

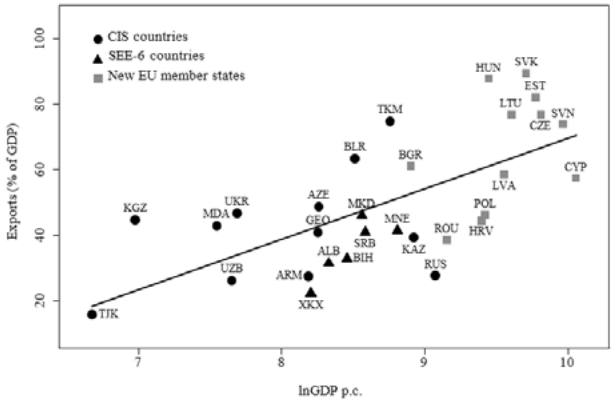
Data on export flows and selected variables included in the gravity model were utilized from several sources, such as UNCTAD, CEPII (Centre d'Etudes

Prospectives et d'Informations Internationales), WTO (World Trade Organization), World Bank and respective National Statistical Agencies. Data utilized in this study cover the period 2005-2015. Data on real Gross Domestic Product (GDP), population, exchange rate and inflation were acquired from the same sources. 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 former colonizer were obtained from the CEPII database. Data on common RTAs with trading partners were utilized from the WTO. Lastly, data for institutional distance were obtained from the World Governance Indicators (WGI) database (Kaufmann et al., 2010). Data on the stock of 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 migrants were interpolated. Definition of variables, expected coefficient signs and basic statistics of the employed variables are summarized in **Appendix Table 1 and 2**. Correlation matrix, presented in the **Appendix Table 3 and 4,** suggests that the issues related to multicollinearity are not present in the dataset. Data processing and empirical estimations were conducted on Stata 12.

3 Results and Discussion

Scatter diagram (**Figure 1**) plots relationship between exports (as percentage of GDP) and level of income (ln GDP per capita) in transition economies. As it is shown, advanced transition economies (new EU member states) reveal strong positive correlation between the level of economic prosperity and exports.

Figure 1 **Scatter plot of exports and GDP per capita across transition countries (2016)**



Source: World Bank (WDI); own processing.

3.1 Export growth in transition economies

Since the early 1990s, transition economies from the SEE-6 and CIS regions developed their productive and export potential, despite variations among different countries. As the result of successful reforms towards market economy and trade liberalization, transitional regions estimated nine-fold (SEE-6) respectively eight-fold (CIS) increase in the value of exports (**Figure 2**). As depicted in **Figure 2**, exports from transition economies were negatively affected by the recent financial crisis and recession in 2007-2008. In spite of impressive export growth, majority of transition economies remain net importers. As it is revealed from **Figure 3**, export/import coverage among SEE-6 economies is relatively low. While from the individual country perspective, trade deficit is particularly sharp in Kosovo, Albania and Bosnia and Herzegovina. Data from the **Figure 3** show that CIS region is net exporter. However, despite relatively well export performance in the regional context, majority of the CIS economies are net importers. Positive regional trade balance is mainly fuelled by Russian exports.

Figure 2: Export growth in SEE-6 and CIS 1995=100 (1995-2016)

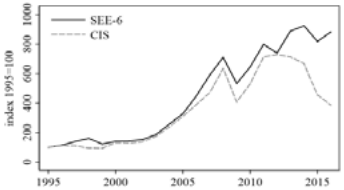
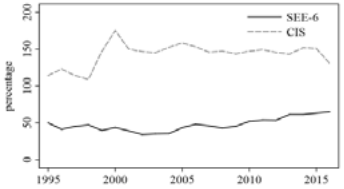


Figure 3: Export/import coverage in SEE-6 and CIS (1995-2016)



Source: UNCTAD; own processing.

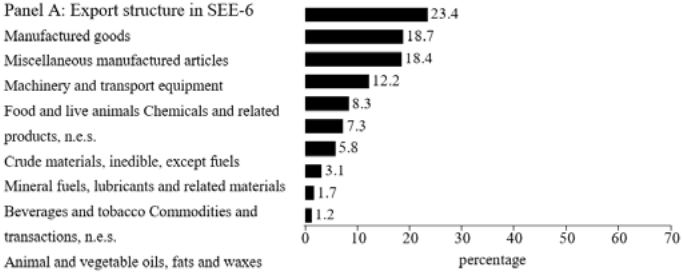
3.2 Structure of exports from SEE-6 and CIS

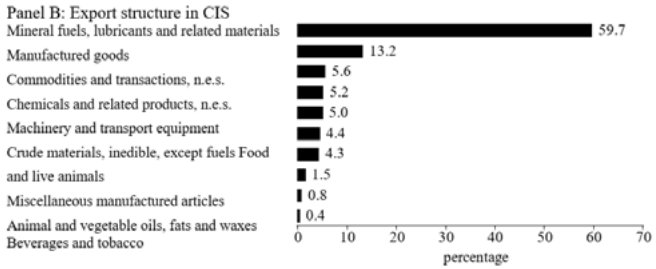
Structure of exports from SEE-6 is more diversified comparatively to CIS region (**Figure 4**). **Panel A** reveals that manufactured goods (including miscellaneous manufactured articles) constitute over 42 percent of total exports during the period 2008-2016.

On the other hand, exports from CIS region are heavily dependent on natural resources. Group of CIS countries (Azerbaijan, Kazakhstan, Russian Federation, Turkmenistan and Uzbekistan) are known as resource rich and oil-exporters. About 60 percent of the total CIS exports are based on gas and other oil production (**Figure 4, Panel B**).

Figure 4 **Export structure in SEE-6 and CIS (2008-2016)**

Figure 4: Export structure in SEE-6 and CIS (2008-2016)





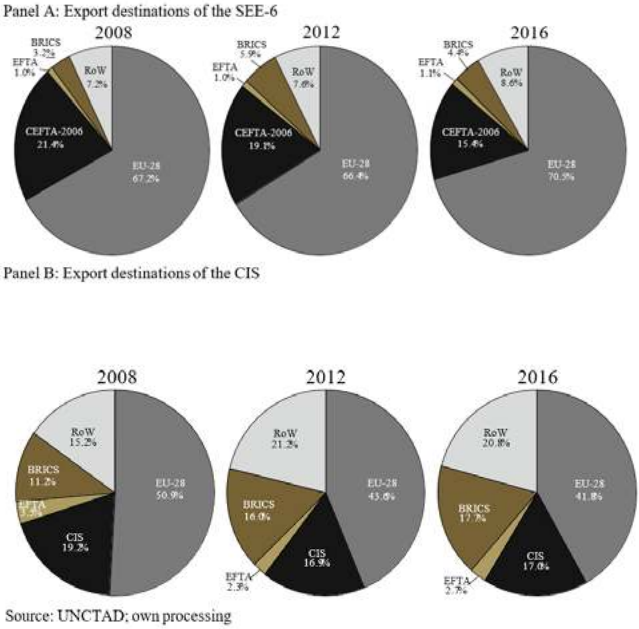
Source: UNCTAD; own processing.

3.3 Destination of exports from SEE-6 and CIS

Our analysis reveal slight changes on geographical destination of the SEE-6 exports. Exports from SEE-6 depend on two key regional markets, EU common market and intra-regional (CEFTA-2006) market. Share of exports to EU common market embark steady expansion, showing positive trends. By year 2012 the SEE-6 exports to EU reached over 66 percent and by year 2016 it absorbed more than 70 percent of the total exports. (**Figure 5**, Panel A). However, share of inter-regional exports (CEFTA-2006) marked diminishing trend since 2008. Within 4 years the exports dropped by less than 1 percent. However the decrease continues at a slightly sharp rate reaching only 15.4 percent in year 2016. Such an outcome signals increasing competitiveness of the SEE-6 products towards international markets.

In coherence with SEE-6 pattern, main export markets for CIS exports remain EU-28 and intraregional market. However, CIS exports toward EU market marked significant decrease since year 2008. From year 2008 to 2012 the exports dropped over 7 percent and making things worse for CIS the trend continued until year 2016 reaching the total EU-28 exports from CIS only 41.8 percent. (**Figure 5**, Panel B). Similarly, intra-regional CIS exports marked slight decrease from 19.2 to 17.0 percent.

Figure 5 **Export destinations of the SEE-6 and CIS exports**



Source: UNCTAD; own processing

3.4 Estimation results of gravity model

Results of this study are coherent with findings from previous studies on transition economies. Estimations of the gravity model (for both SEE-6 and CIS) show that exporter's and importer's economic size (GDP) are positive and statistically significant in all models, revealing greater impact of domestic productive potential. Results suggest positive and significant relationship of export with importer's market size (Population), while negative significance coefficient prevails on the impact of exporter's population on export performance. As expected, this study shows that export flows are strongly and negatively influenced by transportation costs – respectively distance between trading partners. Similarly, the variable of sharing common border (adjacency) is found a positive and significant determinant of exports based on low transport costs. Interestingly, when testing relevance of income differential on export performance, results reveal confronting outcomes between SEE-6 and CIS. Thus, findings support the relative strength of Heckscher-Ohlin (HO) hypothesis in the case of SEE-6 and Linder hypothesis in the case of CIS countries. Linguistic similarities (common language) is found

positive and significant in all models for both regions, while low impact is revealed when controlling for effects of colonial links on export performance. Due to high stock of migrants living in importing countries, this study reveals significant positive impact of

Table 1 **PPML estimation results of the gravity model: SEE6 export**

Table 1: PPML estimation results of the gravity model: SEE6 export

Export	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
ln_GDP_imp	0.459***	0.132*	0.693***	0.126**	0.198***	0.648***	0.607***	0.227***	0.158
	0.040	0.063	0.041	0.046	0.044	0.043	0.052	0.054	0.097
ln_GDP_exp	1.421***	1.759***	1.311***	1.539***	1.581***	0.540***	1.265***	1.355***	1.020***
	0.127	0.144	0.114	0.123	0.137	0.134	0.138	0.144	0.153
ln_POP_imp	0.190***	0.530***	0.039	0.464***	0.422***	0.095*	0.003	0.425***	0.463***
	0.039	0.081	0.047	0.033	0.047	0.045	0.076	0.033	0.101
ln_POP_exp	-0.282	-0.589***	-0.213	-0.553***	-0.361*	0.935***	-0.099	-0.195	0.347*
	0.147	0.170	0.132	0.141	0.158	0.156	0.166	0.166	0.175
ln_DIST	-1.762***	-1.838***	-1.621***	-1.407***	-1.673***	-1.676***	-1.690***	-1.814***	-1.392***
	0.059	0.068	0.062	0.079	0.052	0.058	0.065	0.061	0.083
GDPpc_diff		0.443***							0.235*
		0.104							0.100
ADJ			0.398***						0.444***
			0.089						0.081
LANG			1.042***						0.962***
			0.093						0.115
LAND			-0.259***						-0.195**
			0.068						0.068
COL			0.022						0.172
			0.125						0.118
ln_DIASP				0.130***					0.044**
				0.016					0.016
ln_ER					0.0547**				0.019
					0.019				0.018
INF_imp					0.007				0.023
					0.012				0.014
INF_exp					-0.017***				-0.015
					0.009				0.009
EURO					0.605***				0.692***
					0.070				0.074
OPE_exp						0.025***			0.024
						0.003			0.003
CEFTA						1.132***			0.226
						0.125			0.126
SAA_ex						0.260**			0.057
						0.079			0.081
INST_dist							-0.089**		-0.051
							0.028		0.029
INFRA_imp								0.248***	0.106*
								0.047	0.052
INFRA_exp								0.033	0.05
								0.058	0.057
_cons	-3.383**	-3.246**	-6.053***	-4.132***	-3.072*	-1.538	-3.701***	-1.499	-3.379**
	1.109	1.114	1.106	1.088	1.247	1.208	1.097	1.179	1.216
Observations	2,970	2,970	2,970	2,970	2,970	2,970	2,970	2,970	2,970
R-squared	0.526	0.539	0.592	0.561	0.505	0.629	0.533	0.540	0.673

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Own processing

Diaspora in the case of both transition regions. Among price stability and exchange rate variables, this study finds significant but weak negative impact of inflation on export flows, while exporting in Eurozone tend to positively increase export flows. As expected, institutional distance between trading partners has

robust negative effects on exports, suggesting constraints of institutional quality within transition economies. Regional Trade Agreements (RTA), such as CEFTA 2006 and EEC, had positive impact on export facilitation in both regions. Lastly, results of our gravity model suggest that infrastructure has relatively insignificant impact on export flows from transition economies observed in this study.

Table 2 **PPML estimation results of the gravity model: CIS export**

Table 2: PPML estimation results of the gravity model: CIS export

Export	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
ln_GDP_imp	0.401***	0.475***	0.480***	0.357***	0.387***	0.467***	0.606***	0.526***	0.498***
	0.030	0.030	0.025	0.030	0.028	0.029	0.045	0.045	0.067
ln_GDP_exp	1.011***	0.844***	0.937***	0.994***	1.014***	1.002***	1.000***	1.227***	1.038***
	0.053	0.054	0.052	0.054	0.055	0.049	0.053	0.061	0.064
ln_POP_imp	0.224***	0.155***	0.136***	0.238***	0.236***	0.157***	0.006	0.127***	0.105
	0.032	0.030	0.030	0.034	0.030	0.033	0.046	0.038	0.059
ln_POP_exp	-0.235**	-0.060	-0.159*	-0.286***	-0.24**	-0.226**	-0.212**	-0.429***	-0.294***
	0.075	0.074	0.072	0.075	0.080	0.070	0.074	0.077	0.080
ln_DIST	-0.997***	-0.959***	-0.820***	-0.843***	-0.933***	-0.933***	-1.003***	-0.998***	-0.699***
	0.043	0.042	0.038	0.045	0.045	0.034	0.039	0.040	0.049
GDPpc_diff		-0.279***							-0.230***
		0.035							0.048
ADJ			0.448***						0.493***
			0.057						0.054
LANG			0.497***						-0.029
			0.098						0.092
LAND			0.040						0.052
			0.078						0.085
COL			0.088						-0.127
			0.069						0.081
ln_DIASP				0.064***					0.018
				0.010					0.010
ln_ER					0.000				-0.020
					0.015				0.015
INF_imp					0.021***				0.010***
					0.004				0.003
INF_exp					0.005				0.008*
					0.004				0.004
EURO					0.305***				0.573***
					0.088				0.093
OPE_exp						0.000			-0.002
						0.001			0.002
EEC						0.827***			0.670***
						0.053			0.129
EAST_eu						-0.453***			-0.292**
						0.105			0.110
INST_dist							-0.119***		-0.001
							0.031		0.038
INFRA_imp								-0.140**	-0.041
								0.054	0.052
INFRA_exp								-0.340***	-0.344***
								0.073	0.080
_cons	-2.629***	-1.857**	-4.256***	-3.460***	-3.268***	-3.767***	-4.157***	-3.974***	-4.534***
	0.588	0.576	0.515	0.580	0.571	0.586	0.534	0.559	0.633
Observations	6,468	6,468	6,468	6,468	6,468	6,468	6,468	6,468	6,468
R-squared	0.503	0.516	0.537	0.499	0.513	0.537	0.523	0.526	0.584

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Own processing

Table 3 **PPML estimation results of the gravity model: SEE6 and CIS export**

Table 3: PPML estimation results of the gravity model: SEE6 and CIS export

Export	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
ln_GDP_imp	0.377***	0.459***	0.470***	0.326***	0.353***	0.449***	0.563***	0.486***	0.439***
	0.029	0.029	0.025	0.029	0.026	0.028	0.043	0.044	0.061
ln_GDP_exp	0.939***	0.770***	0.870***	0.926***	0.953***	1.021***	0.916***	1.087***	0.969***
	0.054	0.054	0.052	0.055	0.055	0.053	0.054	0.060	0.062
ln_POP_imp	0.238***	0.163***	0.135***	0.257***	0.261***	0.167***	0.038	0.152***	0.144*
	0.032	0.031	0.029	0.034	0.030	0.033	0.045	0.039	0.056
ln_POP_exp	-0.026	0.146*	0.026	-0.091	-0.044	-0.050	0.020	-0.151*	-0.038
	0.071	0.069	0.068	0.070	0.074	0.066	0.071	0.073	0.067
ln_DIST	-0.958***	-0.921***	-0.776***	-0.799***	-0.895***	-0.864***	-0.948***	-0.949***	-0.585***
	0.041	0.041	0.037	0.043	0.043	0.032	0.038	0.040	0.041
GDPpc_diff		-0.291***							-0.255***
		0.034							0.047
ADJ			0.539***						0.580***
			0.058						0.055
LANG			0.569***						0.027
			0.094						0.082
LAND			0.021						0.029
			0.073						0.078
COL			0.013						-0.178*
			0.067						0.073
ln_DIASP				0.068***					0.027**
				0.010					0.010
ln_ER					0.032*				0.003
					0.014				0.014
INF_imp					0.020***				0.009**
					0.004				0.003
INF_exp					0.008*				0.004
					0.004				0.003
EURO					0.269**				0.583***
					0.084				0.092
OPE_exp						0.006***			0.005**
						0.001			0.002
CEFTA_EEC						0.919***			0.701***
						0.050			0.117
SAA_EAST_eu						-0.34***			-0.229*
						0.093			0.100
INST_dist							-0.110***		0.014
							0.030		0.036
INFRA_imp								-0.124*	-0.037
								0.052	0.052
INFRA_exp								-0.229***	-0.243***
								0.064	0.070
_cons	-2.659***	-1.898**	-4.409***	-3.460***	-3.354***	-5.524***	-4.072***	-3.792***	-5.980***
	0.611	0.590	0.538	0.597	0.593	0.624	0.553	0.587	0.673
Observations	9,438	9,438	9,438	9,438	9,438	9,438	9,438	9,438	9,438
R-squared	0.508	0.520	0.539	0.505	0.521	0.544	0.525	0.525	0.587

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Own processing

3.5 Discussion

Our aim has been to incorporate a more complex range of determinants to the model and to estimate their influence on export flows of SEE-6 and CIS countries.

Pllaha (2012) found out that trade flows in SEE-9 countries are pulled by GDP, FTAs, colonial links and contiguity. On the other hand, trade flows are mitigated

by physical transportation distance. They are also affected by previous trade flows. Gjipali et al. (2012) confirm the importance of historical, cultural, and political ties on trade in SEE countries. Being a part of the former Yugoslav market and sharing a common border are important stimulators of international trade in SEE. The number of days spent at the border and import or export costs have negative influence on trade (Toševska-Trpčevska and Tevdovski, 2014). Trade agreements, specifically CEFTA-2006, have had a positive effect on trade in Southeast Europe, which is estimated to be larger than the effect of Stabilisation and Association Agreements

(Petreski, 2013). Trivić and Klimczak (2015) conclude that non-economic factors (ease of a direct communication and similar religious structures) play the most important role in determining trade values between countries in the region of the Western Balkans.

Although CIS countries are not as integrated into the world markets as the EU countries (Shepotylo, 2009), they highly overtrade with each other (Kurmanalieva and Vinokurov, 2011). Besides traditional trade determinants, CIS trade patterns are influenced by trade agreements in the region (Kurmanalieva and Vinokurov, 2011) and institutional quality in the countries

(Kucharčuková et al., 2012). The convergence of institutions in CIS countries to EU and WTO standards would be a source of trade intensification between CIS and the EU (BabetskaiaKukharchuk and Maurel, 2004). Moreover, many Central Asian countries are land-locked which is associated with higher transportation costs. Land-lockedness and a higher number of border-crossings lead to a reduction of trade (Raballand, 2003). Damijan et al. (2015) sum up, that the size of the economy, foreign direct investments, export unit values, and the quality of institutions and infrastructure positively impact export supply.

4 Conclusion and recommendations

Current study is focused on identifying key determinants of exports from transition economies from SEE-6 and CIS. For such purpose paper employs gravity model approach utilizing Poisson Pseudo-Maximum Likelihood (PPML) estimator.

Main findings of the baseline model suggest consistency with findings from previous studies. Indeed, economic size has positive and statistically significant impact on export flows. Study finds higher positive coefficient with importer's market size, respectively population size of importing partner. Distance between trading partners has strong negative effect on export facilitation from transition economies. Such results suggest that exports are heavily dependent on low transportation costs. This outcome is supported by the robust coefficient of sharing common border.

Results from augmented gravity model convey mixed signals in the case of SEE-6 and CIS. Coefficient of income differentiation supports Heckscher-Ohlin (HO) hypothesis in the case of SEE-6, while Linder hypothesis prevails in the case of CIS countries. Moreover, cultural and linguistic links tend to play positive influence on export performance from both transition regions. Interestingly, study reveals relatively strong role of migrant stock (Diaspora) on export flows. These findings indicate that exports from transition economies are extensively dependent on low information costs. Therefore, presence of migrants in importing countries could serve as trade agents to bridge facilitation of exports from home countries. Findings of this study suggest that price stability determinants (inflation and exchange rate) have relatively weak negative influence on exports from transition economies. While, if importing partner is a member of Euro Area has strong positive impact on exports from SEE-6 and CIS. As expected, institutional differences (distance) between transition economies and their trading partners tend to diminish export flows. This findings stress out importance of enhancing qualitative and functional market-based institutions within transition economies. Trade liberalization variables (RTAs) affirm positive influence on export performance in both transition regions. Lastly, in contradiction with findings from previous studies, results of this study non significant role of infrastructure on exports from SEE-6 and CIS.

Findings of this paper aim contribute in identifying relevant factors in designing trade policies aiming export facilitation in transition economies.

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Appendix Table 1: **Definition, expected sign and summary statistics of the model variables, Western Balkans (WB-6)**

Variable	Code	Definition	Source	Period	Expected sign	Summary statistics				
						Obs	Mean	STD.	Min	Max
Export	Export	Value of exports (in million USD)	UNCTAD	2005-2015		2970	76.0	204	0.0	2,569
GDP (importer)	ln_GDP_imp	Log of real GDP of importer (in million USD)	World Bank	2005-2015	+	2970	12.12	2.14	7.72	16.71
GDP (exporter)	ln_GDP_exp	Log of real GDP of exporter (in million USD)	World Bank	2005-2015	+	2970	9.28	0.77	7.72	10.80
Population (importer)	ln_POP_imp	Log of population size (importer)	World Bank	2005-2015	+/–	2970	2.27	2.11	-3.36	7.22
Population (exporter)	ln_POP_exp	Log of population size (exporter)	World Bank	2005-2015	+/–	2970	0.87	0.76	-0.49	2.01
Distance	ln_DIST	Log of distance between capitals of exporter and importer	CEPII	2005-2015	–	2970	7.11	0.96	4.46	9.24
GDP p.c. differential	GDPpc_diff	Log of alsolute difference in GDP per capita	World Bank	2005-2015	+/–	2970	1.64	0.92	0.00	3.92
Adjacency	ADJ	= 1 if trade partners share common border	CEPII	2005-2015	+	2970	0.10	0.30	0.00	1.00
Language	LANG	= 1 if trade partners share common language	CEPII	2005-2015	+	2970	0.08	0.27	0.00	1.00

Variable	Code	Definition	Source	Period	Expected sign	Summary statistics				
						Obs	Mean	STD.	Min	Max
Landlocked	LAND	= 1 if importer is landlocked, dummy	CEPII	2005-2015	–	2970	0.21	0.41	0.00	1.00
Colony	COL	= 1 if importer was former colonizer	CEPII	2005-2015	+	2970	0.03	0.17	0.00	1.00
Diaspora (migrant stock)	ln_ DIASP	Log of exporter Diaspora residing in importing country	UN	2010-2015	+	2970	5.38	3.96	0.00	13.01
Exchange rate	ln_ER	Log of exchange rate between exporter/importer currency	UNCTAD	2005-2015	+/–	2970	2.38	1.86	0.00	5.74
Inflation (importer)	INF_imp	Inflation rate of the importer (CPI annual rate)	World Bank	2005-2015	–	2970	3.01	3.13	-4.48	16.12
Inflation (exporter)	INF_exp	Inflation rate of the exporter (CPI annual rate)	World Bank	2005-2015	–	2970	3.43	3.58	-2.40	16.12
Eurozone member	EURO	= 1 if importer is Eurozone member	EC	2005-2015	+	2970	0.34	0.47	0.00	1.00
Trade openness (exporter)	OPE_ exp	Exporter's trade as goods as share (%) of GDP	World Bank	2005-2015	+	2970	89.69	16.54	60.45	133.48
CEFTA 2006	CEFTA	= 1 if RTA with CEFTA 2006	WTO	Since in force	+	2970	0.12	0.33	0.00	1.00
EU SAA	SAA_eu	= 1 if Stabilisation and Association Agreement (SAA)	WTO	Since in force	+	2970	0.26	0.44	0.00	1.00

Variable	Code	Definition	Source	Period	Expected sign	Summary statistics				
						Obs	Mean	STD.	Min	Max
Institutional distance	INST_ dist	Institutional distance between exporter and importer	WGI	2005-2015	+/–	2970	2.75	2.55	0.00	10.59
Infrastructure (importer)	INFRA_ imp	World Economic Forum (WEF) inftrastructure index	WEF	2005-2015	+	2970	4.71	1.10	1.82	6.65
Infrastructure (exporter)	INFRA_ exp	World Economic Forum (WEF) inftrastructure index	WEF	2005-2015	+	2970	3.20	0.64	1.82	4

Appendix Table 2: **Definition, expected sign and summary statistics of the model variables, Commonwealth of Independent States (CIS)**

Variable	Code	Definition	Source	Period	Expected sign	Summary statistics				
						Obs	Mean	STD.	Min	Max
Export	Export	Value of exports (in million USD)	UNCTAD	2005-2015		6468	847	3,548	0	76,036
GDP (importer)	ln_GDP_ imp	Log of real GDP of importer (in million USD)	World Bank	2005-2015	+	6468	12.04	2.07	7.75	16.71
GDP (exporter)	ln_GDP_ exp	Log of real GDP of exporter (in million USD)	World Bank	2005-2015	+	6468	10.35	1.67	7.75	14.62
Population (importer)	ln_POP_ imp	Log of population size (importer)	World Bank	2005-2015	+/–	6468	2.40	1.98	-3.36	7.22
Population (exporter)	ln_POP_ exp	Log of population size (exporter)	World Bank	2005-2015	+/–	6468	2.38	1.12	1.09	4.97

Variable	Code	Definition	Source	Period	Expected sign	Summary statistics				
						Obs	Mean	STD.	Min	Max
Distance	ln_DIST	Log of distance between capitals of exporter and importer	CEPII	2005-2015	–	6468	7.86	0.71	5.13	9.54
GDP p.c. differential	GDPpc_diff	Log of alsolute difference in GDP per capita	World Bank	2005-2015	+/–	6468	1.96	1.19	0.00	5.73
Adjacency	ADJ	= 1 if trade partners share common border	CEPII	2005-2015	+	6457	0.09	0.29	0.00	1.00
Language	LANG	= 1 if trade partners share common language	CEPII	2005-2015	+	6468	0.02	0.15	0.00	1.00
Landlocked	LAND	= 1 if importer is landlocked, dummy	CEPII	2005-2015	–	6468	0.27	0.45	0.00	1.00
Colony	COL	= 1 if importer was former colonizer	CEPII	2005-2015	+	6468	0.04	0.21	0.00	1.00
Diaspora (migrant stock)	ln_DIASP	Log of exporter Diaspora residing in importing country	UN	2010-2015	+	6468	6.24	3.74	0.00	15.05
Exchange rate	ln_ER	Log of exchange rate between exporter/importer currency	UNCTAD	2005-2015	+/–	6468	3.25	2.41	0.00	10.10
Inflation (importer)	INF_imp	Inflation rate of the importer (CPI annual rate)	World Bank	2005-2015	–	6468	4.18	5.42	-4.48	59.22
Inflation (exporter)	INF_exp	Inflation rate of the exporter (CPI annual rate)	World Bank	2005-2015	–	6468	9.53	8.32	-2.67	59.22

Variable	Code	Definition	Source	Period	Expected sign	Summary statistics				
						Obs	Mean	STD.	Min	Max
Eurozone member	EURO	= 1 if importer is Eurozone member	EC	2005-2015	+	6468	0.31	0.46	0.00	1.00
Trade openness (exporter)	OPE_exp	Exporter's trade as goods as share (%) of GDP	World Bank	2005-2015	+	6468	92.81	28.33	42.84	163.34
Eurasian Economic Community	EEC	= 1 if member of Eurasian Economic Community (EEC)	WTO	Since in force	+	6468	0.10	0.30	0.00	1.00
EU East Partnership	EAST_eu	= 1 if East Partnership with EU	WTO	Since in force	+	6468	0.18	0.39	0.00	1.00
Institutional distance	INST_dist	Institutional distance between exporter and importer	WGI	2005-2015	+/–	6468	3.14	2.84	0.00	12.43
Infrastructure (importer)	INFRA_imp	World Economic Forum (WEF) inftrastructure index	WEF	2005-2015	+	6468	4.60	1.13	2.20	6.65
Infrastructure (exporter)	INFRA_exp	World Economic Forum (WEF) inftrastructure index	WEF	2005-2015	+	6468	3.35	0.64	2.20	4.82

Source: Own processing

Appendix Table 3: **Correlation matrix, South East Europe (SEE6)**

	1	2	3	4	5	6	7	8
1 Export	1.00							
2 ln_GDP_imp	0.06	1.00						
3 ln_GDP_exp	0.35	0.01	1.00					
4 ln_POP_imp	0.08	0.86	-0.01	1.00				
5 ln_POP_exp	0.30	-0.01	0.93	-0.01	1.00			
6 ln_DIST	-0.27	0.60	-0.02	0.47	-0.02	1.00		
7 GDPpc_diff	-0.11	0.28	-0.05	-0.17	0.02	0.37	1.00	
8 ADJ	0.29	-0.36	0.04	-0.18	0.02	-0.54	-0.41	1.00
9 LANG	0.25	-0.34	0.04	-0.18	0.02	-0.43	-0.38	0.63
10 LAND	0.00	-0.26	-0.01	-0.31	-0.01	-0.34	0.08	0.13
11 COL	0.01	0.07	-0.01	0.12	0.01	-0.05	-0.13	0.01
12 ln_DIASP	0.34	0.21	0.24	0.02	0.24	-0.25	0.26	0.15
13 ln_ER	0.16	-0.04	0.30	-0.03	0.30	-0.04	-0.01	0.11
14 INF_imp	-0.03	-0.06	-0.03	0.18	-0.01	0.03	-0.34	0.05
15 INF_exp	0.14	-0.01	0.40	0.00	0.34	-0.01	-0.05	0.05
16 EURO	0.11	0.16	0.02	-0.06	0.00	0.01	0.38	-0.19
17 OPE_exp	0.02	0.01	-0.21	0.00	-0.43	0.00	-0.08	0.02
18 CEFTA	0.14	-0.47	0.04	-0.22	0.00	-0.49	-0.46	0.54
19 SAA_eu	0.04	0.04	-0.04	-0.05	-0.12	-0.04	0.11	-0.10
20 INST_dist	-0.13	0.18	0.03	-0.23	0.10	0.29	0.85	-0.33
21 INFRA_imp	-0.03	0.42	0.04	-0.01	0.00	0.42	0.79	-0.39
22 INFRA_exp	0.04	0.04	-0.03	0.01	-0.20	0.00	-0.06	0.01

	9	10	11	12	13	14	15	16
1 Export								
2 ln_GDP_imp								
3 ln_GDP_exp								
4 ln_POP_imp								
5 ln_POP_exp								
6 ln_DIST								
7 GDPpc_diff								
8 ADJ								

	9	10	11	12	13	14	15	16
9 LANG	1.00							
10 LAND	0.16	1.00						
11 COL	-0.05	0.02	1.00					
12 ln_DIASP	0.19	0.09	0.03	1.00				
13 ln_ER	0.09	0.05	-0.01	0.11	1.00			
14 INF_imp	0.02	-0.08	0.26	-0.20	-0.02	1.00		
15 INF_exp	0.03	0.00	-0.01	0.06	0.13	0.24	1.00	
16 EURO	-0.21	-0.06	-0.08	0.20	0.00	-0.30	-0.02	1.00
17 OPE_exp	0.04	0.01	-0.03	-0.02	-0.03	0.04	0.01	0.01
18 CEFTA	0.57	0.13	-0.01	0.02	0.05	0.09	-0.01	-0.27
19 SAA_eu	-0.14	-0.04	-0.10	0.07	0.23	-0.26	-0.20	0.31
20 INST_dist	-0.29	0.08	-0.13	0.28	-0.05	-0.34	0.01	0.29
21 INFRA_imp	-0.33	0.03	-0.09	0.28	-0.01	-0.45	-0.07	0.41
22 INFRA_exp	0.00	0.00	0.00	-0.05	-0.05	-0.23	-0.23	0.08

	17	18	19	20	21	22
1 Export						
2 ln_GDP_imp						
3 ln_GDP_exp						
4 ln_POP_imp						
5 ln_POP_exp						
6 ln_DIST						
7 GDPpc_diff						
8 ADJ						
9 LANG						
10 LAND						
11 COL						
12 ln_DIASP						
13 ln_ER						
14 INF_imp						
15 INF_exp						
16 EURO						
17 OPE_exp	1.00					

	17	18	19	20	21	22
18 CEFTA	0.02	1.00				
19 SAA_eu	0.28	-0.22	1.00			
20 INST_dist	-0.19	-0.37	-0.01	1.00		
21 INFRA_imp	0.02	-0.42	0.18	0.74	1.00	
22 INFRA_exp	0.15	0.09	0.33	-0.08	0.18	1.00

Source: Own processing.

Appendix Table 4: **Correlation matrix, Commonwealth of Independent States (CIS)**

	1	2	3	4	5	6	7	8
1 Export	1.00							
2 ln_GDP_imp	0.17	1.00						
3 ln_GDP_exp	0.42	0.00	1.00					
4 ln_POP_imp	0.16	0.80	-0.01	1.00				
5 ln_POP_exp	0.40	-0.01	0.86	-0.01	1.00			
6 ln_DIST	-0.07	0.38	-0.12	0.19	-0.07	1.00		
7 GDPpc_diff	-0.16	0.20	-0.40	-0.21	-0.17	0.37	1.00	
8 ADJ	0.20	-0.09	0.14	0.09	0.15	-0.52	-0.29	1.00
9 LANG	0.12	-0.03	0.11	0.04	0.09	-0.11	-0.08	0.23
10 LAND	-0.08	-0.37	0.01	-0.27	0.01	-0.19	-0.04	0.10
11 COL	0.17	-0.02	0.26	0.08	0.26	-0.15	-0.12	0.33
12 ln_DIASP	0.25	0.09	0.37	0.18	0.35	-0.41	-0.22	0.33
13 ln_ER	-0.01	-0.02	0.10	-0.06	0.08	-0.07	-0.03	0.01
14 INF_imp	0.02	-0.21	-0.02	0.11	-0.01	-0.20	-0.31	0.19
15 INF_exp	0.02	0.00	0.13	0.00	0.19	-0.10	0.01	0.03
16 EURO	0.04	0.18	0.02	-0.10	0.00	0.12	0.30	-0.19
17 OPE_exp	-0.23	0.01	-0.45	0.01	-0.48	-0.11	0.11	-0.07
18 EEC	0.03	-0.21	-0.01	0.06	-0.01	-0.18	-0.19	0.23
19 EAST_eu	-0.08	0.05	-0.03	-0.08	-0.15	-0.22	0.00	-0.07
20 INST_dist	-0.03	0.20	-0.01	-0.27	0.07	0.32	0.65	-0.26
21 INFRA_imp	0.05	0.47	0.04	-0.08	0.00	0.33	0.58	-0.26
22 INFRA_exp	0.23	0.03	0.65	-0.01	0.37	-0.13	-0.39	0.07

	9	10	11	12	13	14	15	16
1 Export								
2 ln_GDP_imp								
3 ln_GDP_exp								
4 ln_POP_imp								
5 ln_POP_exp								
6 ln_DIST								
7 GDPpc_diff								
8 ADJ								
9 LANG	1.00							
10 LAND	0.06	1.00						
11 COL	0.25	0.00	1.00					
12 ln_DIASP	0.22	0.00	0.35	1.00				
13 ln_ER	-0.06	0.02	-0.06	0.09	1.00			
14 INF_imp	0.16	0.07	0.17	0.20	0.01	1.00		
15 INF_exp	0.04	0.01	-0.01	0.08	0.23	0.06	1.00	
16 EURO	-0.10	-0.15	-0.12	-0.03	0.14	-0.31	0.00	1.00
17 OPE_exp	0.00	0.00	-0.19	-0.16	-0.04	0.03	0.30	0.00
18 EEC	0.37	0.26	0.32	0.31	0.00	0.44	0.00	-0.23
19 EAST_eu	-0.05	-0.10	-0.10	0.06	0.02	-0.23	0.01	0.29
20 INST_dist	-0.13	-0.09	-0.18	-0.24	0.07	-0.39	0.05	0.33
21 INFRA_imp	-0.15	-0.19	-0.14	-0.09	0.06	-0.48	-0.02	0.44
22 INFRA_exp	0.03	0.01	0.14	0.24	-0.01	-0.09	-0.05	0.05

	18	19	20	21	22
1 Export					
2 ln_GDP_imp					
3 ln_GDP_exp					
4 ln_POP_imp					
5 ln_POP_exp					
6 ln_DIST					
7 GDPpc_diff					
8 ADJ					
9 LANG					

	18	19	20	21	22
10 LAND					
11 COL					
12 ln_DIASP					
13 ln_ER					
14 INF_imp					
15 INF_exp					
16 EURO					
17 OPE_exp					
18 EEC	1.00				
19 EAST_eu	-0.15	1.00			
20 INST_dist	-0.34	-0.03	1.00		
21 INFRA_imp	-0.41	0.19	0.70	1.00	
22 INFRA_exp	-0.01	0.33	-0.12	0.13	1.00

Source: Own processing.