THE IMPACTS OF COMMON COMMERCIAL POLICY ON EXPORT PERFORMANCES OF VISEGRAD COUNTRIES

Tinatin Akhvlediani, Katarzyna Śledziewska*

Abstract
The paper aims to investigate the impact of Regional Trade Agreements (RTAs) and common commercial policy (CCP) on export performances of Visegrad group of countries (The Visegrad Four, V-4: Poland, the Czech Republic, Slovakia, Hungary) preceding and following the EU accession. The V-4, before becoming the EU members, have participated actively in regionalism, signing free trade agreements and customs unions which often also resulted in the extended economic integration. But since the EU accession in 2004, all RTAs of the new members were no longer valid as these countries became the parties of the CCP of the EU. To analyse whether CCP was beneficial on the export performances of the V-4 countries, we estimate the augmented gravity model by employing Poisson pseudo-maximum-likelihood (PPML) estimator for time periods before and after the EU accession, in 1999–2003 and 2004–2013, respectively.

Keywords: regional trade agreements, gravity model, Visegrad group
JEL Classification: F14, F15, F55

1. Introduction

The European Union (EU) is the world's largest trading entity and its Common Commercial Policy is one of the EU's oldest and most integrated common policies. It constitutes a field of EU external action subject to the same principles and objectives as well as to the same institutional rules that establish a common framework for the EU external action. The EU concludes 3 types of agreements either on bilateral or plurilateral bases: free trade agreement (FTA), customs union (CU) and economic integration agreements (EIA).

FTA is an arrangement between two or more countries under which they give preferential market access to one another. In practice, free-trade agreements tend to allow for all sorts of exceptions and many of them may temporarily cover sensitive products. This type of agreements are notified under article XXIV of the General Agreement on Tariffs and Trade (GATT). Currently, the EU holds FTAs with 19 countries, Eastern and Southern Africa States Interim (EPA) and Overseas Countries and Territories (OCT)[1].

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This project is funded by the National Science Centre of Poland on the basis of the decision No. DEC- 2013/11/B/HS4/01040.

1 See Table 4 in Appendix.

Customs union is an agreement which removes all tariffs and sometimes broader trade impediments between countries, and also implements a common external tariff. This type of agreements as they cover only goods are notified under the article XXIV of the GATT. Recently the EU has CUs with Andora, San Marino and Turkey[2].

Economic integration agreements function based on the article V of the WTO's General Agreement on Trade in Services (GATS). It covers free trade arrangements in services. This agreements need a greater degree of economic integration compare to FTAs. Currently, the EU holds EIAs with 11 countries, European Economic Area (EEA) and CARIFORUM states EPA[3].

Additionally, the conclusion of bilateral free trade agreements of the EU is apparently increasing. For instance, there is more than 10 new negotiations launched by the EU including the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the United States and the FTA with Japan. It is remarkable, that the major change in the recent trade policy comes on the scope of the agreements. In particular, new generation agreements address the trade not only in goods but in services, different legal regulations and investments, implementation of which require many complex technical and political solutions. Furthermore, according to the CCP the whole process spreads over the all EU member states. However, the implications of the CCP on the old and new EU member states may not be necessarily similar. Namely, since CCP was initiated by the core EU countries, it was created as the framework focussed on the natural trade partners of the EU-15. Yet, the natural partners of the new member states including the V-4 countries differ from the ones of the EU-15. In particular, unlikely to the EU-15, the Visegrad countries share the common Soviet background with former Soviet Union member states and therefore post-Soviet countries represent the natural partners for them. However, since the accession to the EU, due to the CCP, about 65 agreements of V-4, which focussed on their particular natural trade partners, stopped to be active. Therefore, the analyses of the implications of CCP become very important for figuring out whether in fact CCP was advantageous or disadvantageous for V-4 trade performances.

To analyse the consequences of the adoption of CCP, we estimate the augmented gravity model for export performances of the Visegrad countries before and after the EU accession separately, by employing Poisson pseudo-maximum-likelihood (PPML) estimator. Moreover, to deliver plausible outcomes, besides considering the formally adopted RTAs, our analysis controls for the natural partners of Visegrad countries.

The rest of the paper is organized as follows: Section 2 presents the literature review, Section 3 specifies the model and describes the data followed by estimation results in Section 4 and finally the last section concludes the findings of the analysis.

2. Literature Review

The most popular methodologies to study the impacts of regional trade agreements on economies of countries involved in the process of regional integration is the theoretical framework of the Gravity model (Soloaga and Winters, 2001; Ghosh and Yamarik, 2004; Carrere 2006, Silva and Tenreyro 2006; Baier and Bergstand, 2009; Magee, 2008; Acharya *et al*., 2011). The model was introduced by the crucial work of Jan Tinbergen (1962) based

2 See Table 5 in Appendix.

3 See Table 6 in Appendix.

on a law called the "gravity equation" by analogy with the Newtonian theory of gravitation reflecting the relationship between the size of economies, the amount of their trade and the distance between the trade partners, in the following form:

$$X_{ij} = GS_i M_j \varnothing_{ij} \quad (1)$$

where X_{ij} is the monetary value of exports from i to j, M_j controls for all importer-specific factors that make up the total importer's demand and S_i comprises exporter-specific factors that represent the total amount exporters are willing to supply. G is an independent variable from i and j, such as the level of world liberalization. Finally, $\varnothing_{ij}$ represents the trade costs between i and j countries. The latter is mainly represented as the country-pair-specific information such as contiguity and distance, common language, ethnic groups or borders, common memberships in regional trade agreements and tariff rates between trade partners.

Based on the gravity model, recent studies reveal some of the characteristics of trade performances of a particular Visegrad country, the role of the government export promotion system in the V-4 and the general conclusions referring to the trade pattern of the V-4 with one another and with the rest of the EU countries.

Concerning the studies showing the particular country cases, Brodzicki (2009) finds that together with the standard gravity variables standing for the market size and distance, the quality of institutions and the migration matters for the Polish bilateral trade flows. Namely, estimations of the gravity model based on the Prais-Winsten regression with Panel Corrected Standard Errors (PCSE) find that 1% increase in the size of Polish diaspora increases bilateral trade by approximately 0.2%. Janda (2014) discusses the case of the Czech Republic by putting an emphasis on the role of Czech export credit support system. Namely, the author outlines the strongest impact of the Czech Export Bank (CEB) which ensures the direct financing of Czech exports as compared to the much weaker position of Czech commercial banks.

Furthermore, the role of the government export promotion for all Visegrad countries is analysed by Janda, Michalíková amd Psenakova (2013). Authors provide the qualitative and quantitative analysis of the impacts of export credit agencies (ECAs) in the V-4. They examine which one of export credit agencies (a bank, represented by CEB; an insurance company represented by Polish KUKE; or their combination, represented by Slovak Eximbanka) has the highest impacts on export performances. Namely, in the gravity framework they introduce an additional variable – "export promotion" standing for the different types of ECA in the V-4. Estimations of the random effects, fixed effects and least square dummy variable find export credit agency in the form of the insurance company to be the most effective.

Besides, it is considerable, that as the most recent studies demonstrate, the EU accession has increased the intra Visegrad trade flows relatively more than the trade between the Visegrad and the other EU members. In an attempt to explain this remarkable upward bilateral trade tendencies, the literature outlines the impacts of improved economic performances reflected in the higher GDP growth rates, the increased FDI inflows from the EU-15 and other advanced countries and the elimination of non-tariff barriers to trade.

Hornok (2010) highlights that the elimination of non-tariff barriers as a consequence of the EU accession might further increase the trade flows between the V-4 countries. Namely, the author outlines elimination of the following non-tariff barriers: customs procedures, border waiting times, technical barriers to trade (TBT) through completion of harmonization, lower legal and information costs for exporters and reduced political risk.

However, Hunya and Richter (2011) mention that free trade for industrial commodities as well as most of the restrictions on agricultural and food industry products had been already removed before the EU accession of the Visegrad countries (by 1 May, 2004). Therefore, authors state that the sudden acceleration of trade expansion among the four countries can only partially be explained by the removal of the above mentioned trade barriers.

Furthermore, Hunya and Richter (2011) analyse FDI flows based on the statistics provided by Eurostat together with the trade flows based on the WITS data to figure out the reasons for the increased intra trade between the four countries since the EU accession. However, while the overall FDI inflows have been playing a decisive role in the economic growth, both inward and outward bilateral FDI in most cases is negligible. Thus authors conclude that it is not bilateral FDI, but the FDI in general from the EU-15 and other advanced countries that boosted the intra Visegrad trade. Additionally, the paper indicates that the division of the period 2000–2007 into a pre-accession and a post-accession segments does not reveal outstanding changes in the composition of intra-V-4 trade by factor inputs since the integration process had been started long before the official accession date in 2004.

The impact of improved economic performances on the enlarged trade flows is also outlined in the paper of Foster (2011). Namely, the author studies the gravity determinants in intra-Visegrad trade after these countries' accession to the EU. The analyses shows that this is higher GDP growth rates of the V-4 after their EU accession coupled with an increased GDP growth differential relative to the EU-15 which yields the significant positive impact on the bilateral trade. Therefore, the author concludes that EU accession is associated with the improved economic performances reflected in the increased GDP which in its turn causes the upward trend in bilateral trade flows between the V-4 countries.

Brodzicki (2011) furthermore studies the structural changes in the trade flows of the V-4 and finds that the number of product groups with revealed comparative advantage is decreasing. Although, the paper outlines that the V-4 are improving their positions in extra-EU partners but loosing it with intra-EU partners and in particular with the EU-15, with the only exception of Slovakia, which boosts its comparative potential not only with other states of the V-4 but also with the EU-8 states.

However, while looking for further reasons why just intra Visegrad trade flows and not the trade flows with the EU-15 have increased remarkably, we might consider the similarities between the V-4 countries. Cheong, Kwak and Tang (2015) put the research focus on the latter and study how similarity of partner country characteristics affects the change in trade flows under a preferential trade agreement (PTA). Authors construct the augmented gravity equation for data set covering 216 countries from 1980 to 2009. Estimation results of the pooled OLS estimator show that the more similar the partner countries are, the larger the increase in intra-bloc trade is under a PTA. Furthermore, the stratification of PTA-s highlights that the trade creation effect of a PTA is monotonically decreasing as partner countries become geographically farther apart.

Once taking into account that the V-4 countries are neighbouring countries and moreover share the common Soviet background, their economies are obviously more similar to one another than to the EU-15 countries' economies. Consequently based on the conclusions of Cheong, Kwak and Tang (2015), similarities between the Visegrad countries might explain why mainly intra the V-4 trade flows are increasing relatively more than the one with the other EU countries.

Based on the empirical evidences reviewed above, we would like to contribute to the literature by providing more detailed and more precise analyses of regionalism export performances of the V-4 preceding and following the EU accession. Namely, we elaborate the impacts of all the three: RTAs, CCP and natural trade partners presented as the Post-Soviet countries in our sample. To exhibit the consequences of CCP explicitly, we split the time period into two parts: the first period before the EU accession from 1999 to 2003 and the second period after the EU accession from 2004 to 2013.

3. Model Specification and Data Description

Although the gravity model is already a commonly accepted and a standard tool to study the trade flows, the specification of the equation for estimation purposes differs according to the approaches of different authors. The most remarkably, Silva and Tenreyro (2006) in their seminal paper have raised a problem that has been ignored so far by both the theoretical and applied studies. In particular, they argued, that the logarithmic transformation of the original model is not relevant approach to estimate elasticities. Namely, the multiplicative trade models with multiplicative error do not satisfy the assumption of the homoscedasticity of the error term since there is dependency between the error term of transformed log-linear model and the regressors, which finally causes inconsistency of the ordinary least squares estimator or the random and fixed effects estimator.

As an alternative, authors propose the estimation of the gravity model in levels using the Poisson pseudo-maximum likelihood estimator[4]. Besides tackling with the problem of heteroscedasticity of the error term, the estimator deals with the zero value observations in trade flows. Additionally, unlike to the standard Poison approach, PPML does not require the data to be Poison type, in other words, that it does not require the dependent variable to be an integer. Finally, PPML allows to identify effects of time invariant factors. The latter is very important feature for our analyses, since we aim to test the effects of several dummy variables indicating memberships in different regional agreements together with the time dummy controlling for the occurrence of crisis during the estimation period[5].

Following the contribution of Silva and Tenreyro (2006) we analyse the trade of the all EU members with the rest of the world based on the following estimation equation:

$$X_{ijt} = \beta_0 + \beta_1 \ln(Y_{it}) + \beta_2 \ln\left(Y_{tj}\right) + \beta_3 \ln |\, Y'_{it} - Y'_{tj} \,| + \beta_4 \ln\left(Z_{ij}\right) + + \beta_5 D_{ijt} + \beta_6 D'_{ij} + \varepsilon_{ijt} \quad (2)$$

where X_{ijt} is the export flows from i to j, Y_{it} and Y_{jt} represents the current GDPs of the trade partners, $|\, Y'_{it} - Y'_{tj} \,|$ stands for the absolute value of the difference between the real GDP *per capita* of the importer and exporter countries respectively, Z_{ij} is the non-binary but time invariant information such as distance between the trade partners, D_{ijt} and D'_{ij} are the time-varying and time invariant dummy variables. Namely, as time invariant dummy variable we include contiguity which equals one when the trade partners share the common border and zero otherwise. As for time-varying dummies we introduce the time dummy for the financial crisis which equals 1 if the year is 2009 and zero otherwise; several dummies standing for

4 For detailed discussion of PPML estimation of gravity equation together with using several other alternative estimation approaches, please, see Janda, Michalikova and Skuhrovec (2013).

5 Another possible solution to the problems identified by Silva and Tenreyro (2006) could be non-linear least squares (NLS).

the RTAs which equal one if both trade partners are sides of a particular RTA and zero otherwise (FTA, CU, EIA); a dummy for membership in the EU which equals one if both trade partners belong to the EU and a dummy for the former membership in the Soviet-Union that equals one if a trade partner is the former state of the Soviet Union. Exporter countries are all 28 EU members, while as importers together with the EU countries, we take the rest of the world consisting of 234 countries in our sample.

The data for the export flows in millions of euros come from the Eurostat. The data of the current GDP levels in millions and real *per capita* GDPs are included from the World Development Indicators database complied by the World Bank. The data for the other variables such as distance and contiguity are taken from the CEPII database and the data for the regional agreement memberships come from the World Trade Organization (WTO). According to the data availability, the sample covers the period from 1999 to 2013.

Table 1 | Variables Employed in the Model

Variable Name	Description	Source	
exports	Natural logarith of exports in millions of Euros	Eurostat	Expected sign
lXGDP	Natural logarith of GDP in current US dollars of a reporter country	WDI	+
lMGDP	Natural logarithm of GDP in current US dollars of a partner country	WDI	+
ldiffGDP	Natural logarith of the absolute value of difference of GDP *per capita* in purchasing power parity (PPP) of reporting and partner countries	WDI	–
ldistance	Natural logarithm of geographical distance between the capital of the trading partners	CEPII	–
contig	Dummy variable standing for the neighbouring countries	CEPII	+
intraEU	Dummy variable denoting the EU members	WTO	+
Post_Sov	Dummy variable denoting the former Soviet states	WTO	+
RTAs	Dummy variable standing for all three types of signed RTA	WTO	+
CU	Dummy variable denoting formation of the customs union	WTO	+
EIA	Dummy variable denoting signed EIAs	WTO	+
FTA	Dummy variable denoting signed FTAs	WTO	+
crisis	Dummy variable indicating year 2009	–	–

Source: Own calculations, Stata (2013).

Some descriptive statistics of the variables of interest together with correlation matrix are provided by Table 4 and Table 5 in Appendix. It is remarkable that correlation matrix does not report the problem of the collinearity between the independent variables.

4. Estimation Results

As discussed in the previous section, we estimate the augmented gravity model by PPML estimator, where all the variables except for the dependent variable and dummies are taken in logarithms, the latter two are taken in levels. We split the time period and estimate the model for the time before the EU accession in 1999–2003 and after the EU accession in 2004–2013. Additionally, we run regressions separately for the EU-15 countries, the Visegrad countries, new member states (NMS) and for the all the EU members (EU-28).

Table 2 | Estimation Results, 1999–2003

	EU-15	NMS	VIS	EU-15	NMS	VIS
lXGDP	0.756*** (43.78)	0.785*** (39.33)	0.684*** (20.10)	0.756*** (43.81)	0.789*** (39.09)	0.700*** (21.32)
lMGDP	0.754*** (60.70)	0.816*** (28.82)	0.873*** (21.02)	0.754*** (60.78)	0.810*** (29.33)	0.858*** (20.71)
ldiffGDP	−0.0120 (−0.66)	−0.109*** (−3.73)	−0.129*** (−3.38)	−0.0120 (−0.66)	−0.0757** (−2.92)	−0.0748* (−2.21)
ldistance	−0.637*** (−20.60)	−1.074*** (−14.02)	−1.044*** (−9.34)	−0.638*** (−20.50)	−1.038*** (−13.55)	−1.043*** (−9.26)
contig	0.634*** (12.71)	0.231 (1.85)	0.0718 (0.42)	0.635*** (12.71)	0.212 (1.72)	0.00106 (0.01)
intraEU	0.280*** (4.36)	–	–	0.277*** (4.29)	–	–
Post_Sov	−0.170* (−2.45)	0.809*** (8.98)	0.963*** (8.09)	−0.170* (−2.46)	0.948*** (11.87)	1.024*** (9.06)
RTAs	0.0518 (0.88)	0.706*** (6.31)	0.769*** (4.63)	–	–	–
CU	–	–	–	0.154* (2.04)	1.211*** (9.74)	1.569*** (11.22)
EIA	–	–	–	0.0436 (0.68)	0.859*** (7.72)	0.764*** (4.55)
FTA	–	–	–	0.0339 (0.47)	0.565*** (4.47)	0.346 (1.83)
constant	−13.99*** (−33.32)	−11.91*** (−21.13)	−11.54*** (−15.43)	−13.98*** (−33.29)	−12.58*** (−23.20)	−12.02*** (−16.24)
N	13,578	9,636	3,555	13,578	9,636	3,555

Note: t statistics in parentheses; significance at the 10%*, 5%** and 1%*** levels.

Source: Own calculations, Stata (2013).

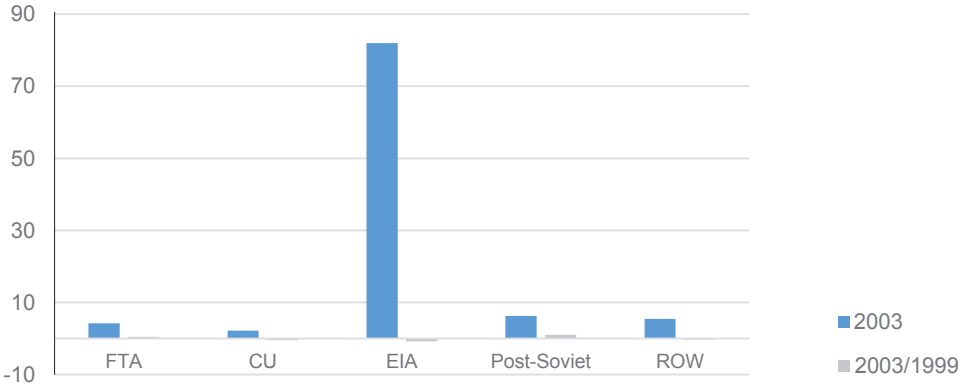
Table 2 provides the estimation results for the time before the EU accession for the EU-15, NMS and the Visegrad countries for time period 1999–2003. While the first three columns report the estimation results for the aggregated effect of all the RTA-s, the last three columns provide estimations for the disaggregated effects of FTA, CU and EIA separately.

As Table 2 shows, GDP for both the exporter and importer countries yield the positive and statistically significant impacts on the exports already at the 1% significance level. GDP difference between the exporter and importer countries enters with the negative sign as expected and is statistically significant for the V-4 and NMS. This implies that for the Visegrad and new member states the similarity with the trade partner is considerable. Distance yields the negative and statistically significant coefficient at the 1% significance level, however, the magnitude for the V-4 and NMS is higher, meaning that these two groups of countries stay relatively more sensitive to the transportation costs than the core EU members. The dummy variable standing for the neighbouring countries gets the positive coefficients and is statistically significant only for the EU-15 countries.

As for the dummy variables denoting regionalism, the dummy variable indicating the intra trade between the EU members is positive and statistically significant at the 1% significance level implying the importance of the intra EU trade for the EU-15 countries. This finding is in line with above discussed impact of the dummy variable standing for the neighbouring countries which was found significant only for the EU-15. Another dummy standing for the trade partners that formerly were the members of the Soviet-Union yields the negative and statistically significant coefficient for the EU-15 countries and positive and statistically significant coefficient for the NMS and the Visegrad four. Additionally, the magnitude is remarkably high for the latter two. This implies that before the EU accession, for all the countries which became the EU members in 2004 including the V-4, trade with the post-Soviet countries was crucially important.

Afterwards, the dummy for the aggregated effects of all three types of agreements is positive and statistically significant at the 1% significance level for both NMS and the Visegrad countries, implying the necessity of elaboration of the disaggregated impacts of different types of RTAs. The separate dummies for CU, FTA and EIA show the positive and statistically significant impact for the NMS at the 1% significance level. However, for the V-4 only CU and EIA are found to have positive and statistically significant impacts and for the EU-15 only the formation of CU is positive and statistically significant. Additionally, we may notice, that the high magnitude of the coefficient of the CU dummy is a logical consequence once remarking that EU-15 had the CU with Malta, and the Czech Republic – with Slovakia. As for the insignificance of the FTA formation for the Visegrad countries, this confirms the special role of the EU according to the scheme of "hub and spokes" where the cooperation was dominated by relations with "spoke". On the other hand, we can explain this finding by noticing that as Figure 1 illustrates more than 80% of total exports of the Visegrad countries was directed to the partners which were members of the EIA. These trade partners in fact mainly were the EU-15 countries with whom the V-4 had EIA agreements before the EU accession. Therefore, the estimation results indicate that before becoming the EU members, the impact of the trade with the EU countries was widely significant.

Figure 1 | The Shares of Exports to Analysed Groups of Countries in the Total Exports of V-4 Countries and Changes in percentage points in 1999–2003



Source: Eurostat.

Table 3 provides the estimation results for the time after the EU accession for the all EU members, the EU-15, the NMS and the Visegrad countries. As in the previous case, the first three columns report the estimation results for the aggregated effect of all the RTA-s and the last three columns provide estimations for the disaggregated effects of FTA, CU and EIA separately.

As Table 3 shows, likewise the previously obtained estimations, GDP for both the exporter and importer countries, GDP difference between them and the distance yield expected signs already at the 1% significance level. However, as before, relatively to the EU-15 the magnitudes of the coefficients of GDP difference and distance are higher for the NMS and the Visegrad countries. The later implies that after the EU accession, the V-4 and NMS still stay sensitive to the similarity with the trade partner and to the transportation costs. Additionally, it is remarkable, that unlike the previous case the dummy variable standing for the neighbouring countries gets the positive coefficients and is statistically significant at the 1% significance level for all group of countries. However, the magnitude of the coefficient is obviously higher for the EU-15, stating that even after the EU enlargement the trade between the core neighbour EU countries is considerable.

As for the dummy variables denoting regionalism, the dummy variable indicating the intra trade between the EU members is positive and statistically significant already at the 1% significance level in all 8 specifications. The latter implies that for all the EU members including the core EU-15, NMS and V-4, the trade with other EU members has considerable positive impacts. Additionally, the magnitude of the coefficients for the NMS and the Visegrad countries is higher, meaning that for these groups of countries the trade with another EU members is even more important. The dummy standing for the trade partners that formerly were the members of the Soviet-Union yields the negative and statistically insignificant coefficients for the EU-15 countries, while is positive and statistically significant for the NMS and the Visegrad four countries. This finding implies that the common Soviet background is still considerable for the trade of NMS and V-4 even after the EU accession. It is remarkable that although the coefficient is decreased compared to the time period before the EU accession, it is still higher than the one of the aggregated

effects of all three types of RTAs. However, the latter is positive and statistically significant for the NMS, V-4 and EU-28 countries and apparently indicates the positive impacts of the common commercial policy on trade performances of the new member states.

Table 3 | Estimation Results, 2004–2013

	EU-28	EU-15	NMS	VIS	EU-28	EU-15	NMS	VIS
lXGDP	0.790*** (84.71)	0.778*** (58.41)	0.833*** (76.70)	0.722*** (42.93)	0.790*** (85.05)	0.778*** (58.54)	0.832*** (76.82)	0.724*** (43.55)
lMGDP	0.761*** (93.29)	0.764*** (82.13)	0.780*** (65.78)	0.834*** (49.03)	0.760*** (92.86)	0.763*** (81.71)	0.781*** (64.03)	0.837*** (47.74)
ldiffGDP	−0.0646*** (−6.74)	−0.0668*** (−5.72)	−0.160*** (−9.93)	−0.200*** (−10.81)	−0.0644*** (−6.73)	−0.0674*** (−5.77)	−0.159*** (−9.59)	−0.201*** (−10.49)
ldistance	−0.685*** (−30.11)	−0.652*** (−26.16)	−1.026*** (−28.30)	−0.962*** (−16.66)	−0.683*** (−29.71)	−0.648*** (−25.59)	−1.033*** (−28.34)	−0.974*** (−16.91)
contig	0.692*** (17.73)	0.701*** (17.05)	0.314*** (6.06)	0.208** (2.80)	0.693*** (17.77)	0.700*** (17.05)	0.303*** (5.81)	0.191* (2.57)
intraEU	0.224*** (5.32)	0.176*** (3.69)	0.752*** (14.20)	0.837*** (9.20)	0.228*** (5.37)	0.185*** (3.81)	0.745*** (14.14)	0.823*** (9.13)
Post_Sov	−0.00675 (−0.16)	−0.110* (−1.96)	0.506*** (8.59)	0.472*** (6.46)	−0.00633 (−0.15)	−0.107 (−1.90)	0.507*** (8.64)	0.471*** (6.47)
crisis	−0.191*** (−4.71)	−0.192*** (−4.34)	−0.188*** (−3.72)	−0.140* (−2.02)	−0.191*** (−4.73)	−0.192*** (−4.36)	−0.188*** (−3.70)	−0.139* (−1.99)
RTAs	0.0884* (2.22)	0.0858 (1.95)	0.229*** (4.54)	0.340*** (4.57)	–	–	–	–
CU	–	–	–	–	0.270*** (4.50)	0.272*** (4.05)	0.280*** (4.03)	0.204* (2.35)
EIA	–	–	–	–	−0.00496 (−0.11)	−0.0425 (−0.90)	0.490*** (8.54)	0.656*** (7.42)
FTA	–	–	–	–	0.0940 (1.76)	0.117* (2.00)	0.0138 (0.22)	0.0976 (1.14)
constant	−14.28*** (−56.25)	−14.34*** (−41.96)	−12.10*** (−37.98)	−11.54*** (−26.64)	−14.29*** (−55.90)	−14.35*** (−41.49)	−12.06*** (−37.94)	−11.49*** (−26.61)
N	48,975	27,078	21,897	6,892	48,975	27,078	21,897	6,892

Note: t statistics in parentheses; significance at the 10%*, 5%** and 1%*** levels.

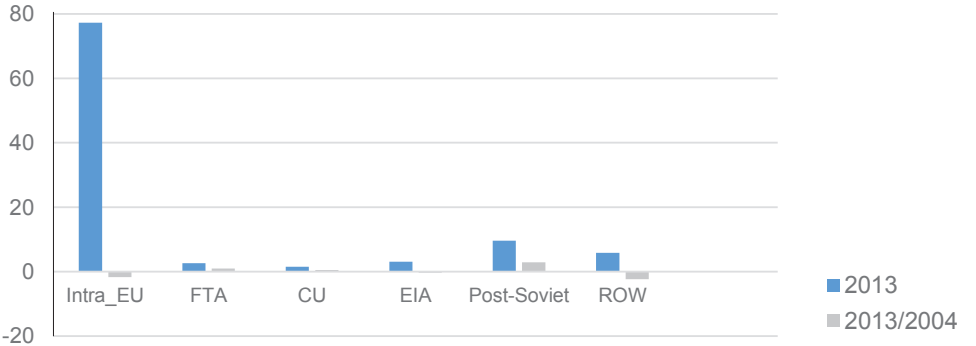
Source: Own calculations, Stata (2013).

As for the disaggregated impacts of regional agreements, CU yields the positive and statistically significant coefficients for all groups of countries, however the magnitude of the coefficients decrease compared to the estimations conducted for the time period before the EU accession. This finding confirms our statement that the high coefficients of CU

in the previous case was indeed due to the existence of the customs union between the EU-15 and Malta and the Czech Republic and Slovakia. FTA yields the positive and statistically significant coefficient at the 10% significance level only for the EU-15 indicating that the old generation agreements yield positive implications only on the trade of the EU-15. However, EIA gets the positive and significant coefficients already at the 1% significance level for the NMS and V-4 countries. The magnitudes of the coefficients are similar to the dummy for the former members of the Soviet-Union, implying that for the new and Visegrad member states the new directions of CCP embodied in the new generation comprehensive EIAs is as important as the historical links with the past trade partners.

To explain this phenomenon we further analyse the data of exports of the V-4 countries after the EU accession.

Figure 2 | The Shares of Exports of Analysed Groups of Countries in the Total Exports of V-4 Countries and Changes in percentage points in 2004–2013



Source: Eurostat.

As Figure 2 indicates, the share of intra-EU trade is highest in the exports of the Visegrad countries. The second biggest share of exports comes on the trade with post-Soviet countries followed by the rest of the world (ROW), EIA, FTA and CU members. So the data also confirms our estimation results indicating that common Soviet history is still influential for the trade of the Visegrad countries. As for the dynamics, from 2003 to 2014, the share of the intra-EU trade is actually decreasing on an expense of an increase in shares of the trade with post-Soviet countries, FTA and CU members. This implies that on the one hand, the V-4 countries benefitted from the CCP in the framework of the new generation EIAs, but on the other hand, they also increased the trade with the past post-Soviet trade partners.

Finally, the dummy standing for the crisis yields the negative and statistically significant coefficients in all 8 specifications, although the coefficient for the EU-15 is remarkably higher than the one of the Visegrad countries. This might be explained by the fact that Poland, the Czech Republic and Hungary are not the members of the Eurozone, and Slovakia has become the member only since 2009. Therefore, due to the little integration in the Eurozone, pass-through of the negative impacts of the EU on these economies might be smaller and less persistent relatively to the EU-15.

5. Conclusions

The paper aimed to investigate the impact of regional trade agreements and common commercial policy on export performances of the Visegrad group of countries preceding and following the EU accession. To derive plausible estimations, we followed the recent findings of Silva and Tenreyro (2006), and estimated the augmented gravity model by PPML approach.

Estimation results indicated that before the EU accession, RTAs did play the crucial role for the trade performances of the Visegrad countries. Namely, the exports of the V-4 were mainly increasing due to the EIAs with the EU-15 countries. Besides, the impact of the trade with the post-Soviet countries was also found positive and statistically significant with remarkably high magnitude. After the EU accession, the trade with the other EU members yielded positive and significant coefficients, however trade with the former Soviet members still remained considerable though with the lower magnitudes. Regionalism was also found to have positive and statistically significant impact again mainly through EIAs, however, in this case already in the framework of the CCP. Therefore, our estimations underlined that the V-4 countries do benefit, on the one hand, from the eased trade with the other EU members and, on the other hand, from CCP. But since the trade with the post-Soviet countries is influential for both periods, before and after EU accession, we may conclude that the V-4 additionally benefit from to trade with the natural trade partners.

Moreover, all new member states stay more sensitive to the similarity with the trade partners and transportation costs than the core EU countries. Additionally, crisis was found to have distortionary effects on the exports of all the EU-28 including the EU-15 and the V-4 countries. However, the magnitude of the coefficient was lower for the Visegrad countries indicating the smaller and less persistent pass-through of negative impacts on their economies, logically due to the slow integration in the Eurozone.

To sum up, our analysis contributed to the literature by showing that CCP and the EU enlargement had clearly positive impact on the V-4 export performances. Moreover, compared to the FTA and CU, our estimations exhibited that the positive impacts of CCP is mainly generated by the new generation, comprehensive EIAs. Furthermore, we found that besides the officially signed agreements, there is the apparent positive impact from the trade with the natural partners. Namely, trade with the post-Soviet countries remains highly considerable even after the EU accession. Therefore, we may reasonably state that the analyses of the trade of the Visegrad countries should explicitly account for the countries which share the common Soviet background with the V-4 countries. Finally, we may suggest that since the employed empirical framework using PPML estimation provides consistent and plausible results, further analyses might be done to examine the trade performances in a more detailed way on the sectoral level.

Appendix

Table 4 | FTA-s of the EU

Partner	Date of Notification	Date of Entry into Force
Algeria	24-Jul-2006	01-Sep-2005
Bosnia and Herzegovina	11-Jul-2008	01-Jul-2008
Cameroon	24-Sep-2009	04-Aug-2014
Côte d'Ivoire	11-Dec-2008	01-Jan-2009
Eastern and Southern Africa States Interim EPA	09-Feb-2012	14-May-2012
Egypt	03-Sep-2004	01-Jun-2004
Faroe Islands	17-Feb-1997	01-Jan-1997
Iceland	24-Nov-1972	01-Apr-1973
Israel	20-Sep-2000	01-Jun-2000
Jordan	17-Dec-2002	01-May-2002
Lebanon	26-May-2003	01-Mar-2003
Morocco	13-Oct-2000	01-Mar-2000
Norway	13-Jul-1973	01-Jul-1973
Overseas Countries and Territories (OCT)	14-Dec-1970	01-Jan-1971
Palestinian Authority	29-May-1997	01-Jul-1997
Papua New Guinea / Fiji	18-Oct-2011	20-Dec-2009
South Africa	02-Nov-2000	01-Jan-2000
Switzerland and Liechtenstein	27-Oct-1972	01-Jan-1973
Syria	15-Jul-1977	01-Jul-1977
Tunisia	15-Jan-1999	01-Mar-1998

Source: World Trade Organization (WTO).

Table 5 | CU-s of the EU

Partner	Date of Notification	Date of Entry into Force
Andorra	23-Feb-1998	01-Jul-1991
San Marino	24-Feb-2010	01-Apr-2002
Turkey	22-Dec-1995	01-Jan-1996

Source: World Trade Organization (WTO).

Table 6 | EIA-s of the EU

Partner	Date of Notification	Date of Entry into Force
European Economic Area (EEA)	13-Sep-1996	01-Jan-1994
Albania	07-Mar-2007(G) / 07-Oct-2009(S)	01-Dec-2006(G) / 01-Apr-2009(S)
CARIFORUM States EPA	16-Oct-2008	01-Nov-2008
Central America	26-Feb-2013	01-Aug-2013
Chile	03-Feb-2004(G) / 28-Oct-2005(S)	01-Feb-2003(G) / 01-Mar-2005(S)
Colombia and Peru	26-Feb-2013	01-Mar-13
Former Yugoslav Republic of Macedonia	23-Oct-2001(G) / 02-Oct-2009(S)	01-Jun-2001(G) / 01-Apr-2004(S)
Georgia	02-Jul-2014	01-Sep-2014
Korea, Republic of	07-Jul-2011	01-Jul-2011
Mexico	25-Jul-2000(G) / 21-Jun-2002(S)	01-Jul-2000(G) / 01-Oct-2000(S)
Montenegro	16-Jan-2008(G) / 18-Jun-2010(S)	01-Jan-2008(G) / 01-May-2010(S)
Republic of Moldova	30-Jun-2014	01-Sep-2014
Serbia	31-May-2010(G) / 20-Dec-2013(S)	01-Feb-2010(G) / 01-Sep-2013(S)
Ukraine	01-Jul-2014	01-Sep-2014

Source: World Trade Organization (WTO).

Table 7 | Summary Statistics

Variable	Mean	Standard Deviation	Min	Max	Observations
exports	0.568914	3.476226	0	115.1134	110,273
XGDP	584,229.6	813,911.2	3,907.948	3,752,110	110,273
MGDP	254,013.4	1,090,882	8.824746	1.68E+07	95,624
diffGDP	22,735.49	15,958.7	2.033132	112,786.2	93,877
distcap	6,325.129	4,021.082	59.61723	19,586.18	105,764
contig	0.01735	0.130572	0	1	105,764
intraEU	0.082269	0.274775	0	1	110,273
crisis	0.052941	0.223917	0	1	110,273
CU	0.013049	0.113487	0	1	110,273
EIA	0.069963	0.255085	0	1	110,273
FTA	0.116801	0.321185	0	1	110,273
RTAs	0.199723	0.399794	0	1	110,273
Post_Sov	0.066698	0.2495	0	1	110,273

Source: Own calculations, Stata (2013).

Table 8 | Correlation Matrix

Variable	*exports*	*XGDP*	*MGDP*	*diffGDP*	*distcap*	*contig*	*intraEU*	*crisis*	*RTAs*	*FTA*	*CU*	*EIA*	*Post_ Sov*
exports	1												
XGDP	0.214	1											
MGDP	0.3022	−0.004	1										
diffGDP	−0.1185	0.1592	−0.0582	1									
distcap	−0.1642	0.0274	−0.0194	0.0432	1								
contig	0.3952	0.0264	0.0485	−0.1043	−0.2015	1							
intraEU	0.3211	0.0268	0.1103	−0.1075	−0.3945	0.2184	1						
crisis	−0.001	0.0197	0.0154	0.0026	−0.0077	0.0024	0.0368	1					
RTAs	−0.0201	−0.0017	−0.045	0.0012	−0.2617	0.0481	−0.1448	0.0186	1				
FTA	−0.0082	0.0072	−0.0407	0.0085	−0.1917	0.011	−0.0927	0.0073	0.6399	1			
CU	0.0007	−0.003	−0.001	−0.0312	−0.125	0.0211	−0.0374	−0.015	0.2582	−0.0319	1		
EIA	−0.02	−0.0085	−0.0222	0.0059	−0.123	0.05	−0.0945	0.025	0.6525	−0.0806	−0.0289	1	
Post_Sov	−0.0317	−0.0051	−0.0459	0.0206	−0.2481	0.0384	0.0063	0.0054	−0.0649	−0.0784	−0.0333	0.0009	1

Source: Own calculations, Stata (2013).

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