No Nation Was Ever Ruined by Trade: South-Eastern European Trade Analysis

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Abstract

The objective of the paper is to analyse the Central European Free Trade Agreement 2006 (CEFTA-2006) impact on trade and provide quantitative comparison with the original CEFTA and with the trade liberalisation under the EU integration process. The paper belongs to the strand of the literature analysing a free trade agreement in a gravity framework, but treating it as being potentially endogenous. We argue that, for the case of CEFTA-2006, not only the economic similarity and geographical proximity forced countries to self-select into a free trade agreement, but also that their will to join EU as soon as possible and, in that way, to prevent further conflicts in the Balkans, acted as a crucial spiritus movens to engage into a free trade agreement. The empirical evidence suggests that CEFTA-2006 exerted positive, significant and large effect on trade in South-East Europe. This finding can be largely attributed to the distracted trade flows in the region over the 1990s, given it was a decade of wars, embargoes, hyperinflation and social unrest. The effect of CEFTA-2006 has been estimated to be larger than the effect of the Stabilisation and Association Agreements, which counteracts the concern that the European Union and the South-Eastern European countries formed a 'hub-and-spoke' structure in terms of trade. Findings also suggest that CEFTA-2006 in South-East Europe exerted considerably larger influence on trade than the original CEFTA in Central Europe.

Keywords: CEFTA-2006; Stabilisation and Association Agreements, trade agreements' endogeneity
JEL classification: F10, J51, P33

1   Introduction

In 2006, eight South-East European countries (SEE) joined the Central European Free Trade Agreement (CEFTA): Albania, Bosnia and Herzegovina, Croatia, Kosovo, Macedonia, Moldova, Montenegro and Serbia. Given that the original CEFTA members (mainly Central European countries) left the agreement due to their joining of the EU, what in 2006 left to be CEFTA, entirely differed from the original CEFTA formed in 1992, and became known as CEFTA-2006. Similarly as the original CEFTA, CEFTA-2006 aimed to increase the intra-regional trade of the South-East European (SEE) countries, so that they will be able to cope with the competitive pressure once they become a part of the EU single market. However, CEFTA-2006 has been still a response to some fears (Baldwin, 1994) that the EU accession will divert SEE's export to the EU and render SEE countries more vulnerable to shocks coming from the EU. Hence, CEFTA-2006 started operating with two basic objectives: i) it had to test the SEE's capacity to work together within a regional agreement and build their competitiveness; and ii) it had to oppose the growing dependence of these countries on the trade with the EU by re-establishing the regional market. However, bringing SEE countries under single umbrella has likely political side also: working together would enable those countries to join the EU faster and hence prevent further political tensions and conflicts in the Balkan, which earmarked the last decade of the XX century.

The objective of the paper is to analyse CEFTA-2006 impact on trade and provide quantitative comparison with the original CEFTA and with the trade liberalisation under the EU integration process. The paper belongs to the strand of the literature analysing a free trade agreement in a gravity framework, but treating it as being potentially endogenous. We argue that, for the case of CEFTA-2006, not only the economic similarity and geographical proximity forced countries to self-select into a free trade agreement, but also that their will to join EU as soon as possible and, in that way, to prevent further conflicts in the Balkans, acted as a crucial spiritus movens to engage into a free trade agreement. In econometric terms, the former causes CEFTA-2006 endogeneity due to observables, while the latter due to unobservables, and both require comprehensive treatment in an empirical analysis. Quantifying and comparing CEFTA-2006 impact on trade and treating it as endogenous creation has not been done so far and this is the main contribution to knowledge the present paper makes.

How effective has CEFTA-2006 been so far? Findings suggest that, having controlled for countries' income and other characteristics, the agreement exerted a large effect on trade in the magnitude of about seven to eight times higher trade due to the agreement compared to the period over the 1990s and to the countries outside of it. This finding can be largely attributed to the distracted trade flows of the SEEs over the 1990s, given it was a decade of wars, embargoes, hyperinflation and social unrest. The effect of CEFTA-2006 has been estimated to be larger than the effect of the Stabilisation and Association

Agreements (SAA), which counteracts the concern that EU and SEEs formed a 'hub-and-spoke' structure in terms of trade. The original CEFTA effect has been found significant and positive, while EUROPA Agreements likely did not exert influence on CEEs trade. Hence, EU's trade approach has not been in favour of a 'hub-and-spoke' structure in the CEE as well.

The paper is organized as follows. The next section gives some intuition and motivation for the investigated issue. Section 3 sets the model and reviews the literature. Section 4 explains the data issues and the methodology used, with special attention to how potential endogeneity is addressed. Section 5 presents the results and offers discussion. Section 6 concludes.

2 Trade Developments in the CEFTA-2006 Countries at the 20th Anniversary (1991-2011)

The Central-European Free Trade Agreement (CEFTA) 2006 is a comprehensive free trade agreement (FTA) between South-Eastern-European (SEE) countries: Albania, Bosnia and Herzegovina, Croatia, Kosovo, Macedonia, Montenegro, Moldova and Serbia (hereafter the CEFTA-2006 bloc). Six of those countries emerged after the dissolution of Yugoslavia whereby they shared similar languages and culture and were a part of the same economic and monetary union (of the then Yugoslav dinar). Although not part of Yugoslavia, Albania is a neighbour of Macedonia, Montenegro and Kosovo (the then Serbia) and has close ethnic ties with the citizens in those countries. In the whole group, only Moldova is distant from all countries, both physically and in terms of cultural similarity.

Yugoslavia dissolved in 1990 and its republics begun the stiff road toward political pluralism and market economy. The first years of transition were marked by many political shocks: the military conflict in Croatia, the war in Bosnia, the UN embargo and NATO intervention in Serbia and the subsequent refugees' crisis, the internal conflict in Macedonia, all these coupled with hard structural reforms, including the long process of privatisation of the state capital. In economic terms, this resulted in a loss of the traditional markets, in erecting physical borders and trade barriers among the republics and halting the trade with the eastern bloc, which was then traditional trading partner. Many firms, in the hands of the new owners, had difficulties to reorient their export, which reflected into further deterioration of product competitiveness and ultimately resulted in declining production and firms' bankruptcy. As Figure 1 suggests, the 1990s mark a timid period for the foreign trade of the CEFTA-2006 bloc. Apparently, total foreign trade of the CEFTA-2006 bloc rapidly increased after 2002 and especially after 2006; when these figures are scaled to GDP, the trend fades out after 2000, but increasing share is apparent after 2006.

Given the political developments in the region during the 1990s, the European Union raised an initiative in 1999 to form the Stability Pact for South
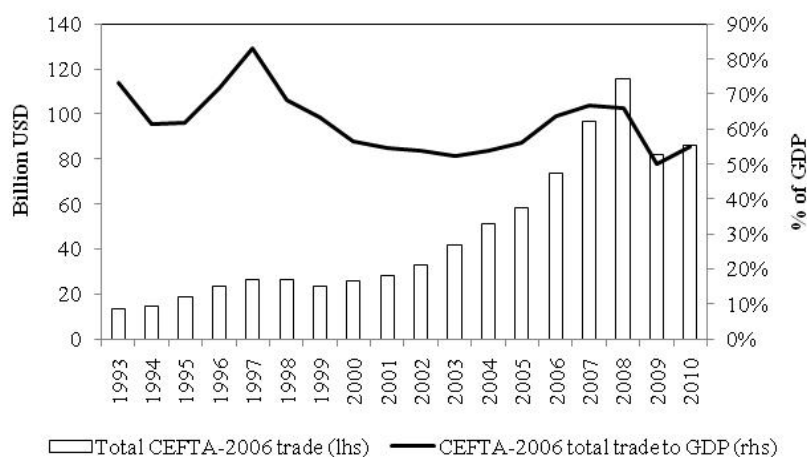
Figure 1: Total CEFTA-2006 Foreign Trade (Source: IMF DOTS)

Eastern Europe, as an institution aimed at strengthening peace, democracy, human rights and economy in SEE. In the economic area, the Pact was promoting, inter alia, the intensified trade cooperation among the SEE countries, which led to the signing of several bilateral free trade agreements and the Stabilisation and Association Agreements (SAA) of those countries with the EU (see Table 1).

Table 1 – Matrix of the Bilateral FTAs in the CEFTA-2006 Bloc

| | Bilateral FTAs | | | | | | | | |
	CRO	MKD	ALB	BIH	SRB	KOS	MLD		SAA
CRO		2002	2003	2005	2004	2006	2004		01.03.2002
MKD	2002		2002	2002	2006	2006	2005		01.06.2001
ALB	2003	2002		2004	2004	2003	2004		01.12.2006
BIH	2005	2002	2004		2002	2006	2004		01.07.2008
SRB	2004	2006	2004	2002			2004		01.02.2010
MGR									
KOS	2006	2006	2003	2006					
MLD	2004	2005	2004	2004	2004				

Source: CEFTA-2006 Secretariat

SAA envisaged, inter alia, a gradual reduction of tariffs between those countries and the EU in an asymmetric manner, hence contributing to expanding the trade between these countries and the EU. Hence, while the bilateral FTAs were aimed to spur the bilateral (and, indirectly, the intraregional) trade, the SAA process was designed to support the trade between SEE countries and the EU.
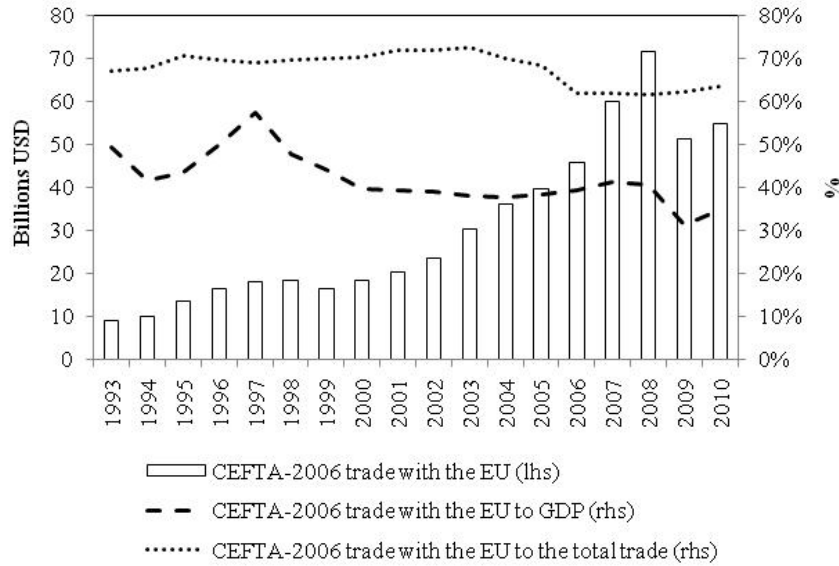
Figure 2: CEFTA-2006 Trade with the EU (Source: IMF DOTS)

In absolute merit CEFTA-2006 bloc's trade with the EU expanded past 2001; in relative terms – to GDP, some increase is apparent before 2007, while to the total trade, the trend has been declining (see Figure 2). Although far from clear, still some relationships of this trend with the SAA can be established: the rising trend of the absolute trade starts around 2001 and then intensifies around 2007-08 (see Table 1), but the relative importance of the EU trade for the bloc has not changed.

Almost in parallel to the Stabilisation and Association process, CEFTA 2006 was established in 2006 (taking effect in 2007) to replace the existing bilateral FTAs (Table 1), hence supporting the multilateral trade cooperation in SEE. CEFTA 2006 is the successor of CEFTA which was formed in 1992 by Hungary, Poland and Czechoslovakia, and later enlarged by Bulgaria, Romania and Slovenia. The original CEFTA ceased to exist when these countries joined the EU in 2004. Similarly, Bulgaria and Romania, that were signatory parties of CEFTA 2006 also, left the agreement when they joined the EU in 2007. CEFTA 2006 provides fully liberalised trade in manufactured goods and largely free trade of agricultural goods, aiming at supporting trade and investment among member countries. Apparently, the trade volume of CEFTA-2006 bloc increased after the agreement entered into force (see Figure 3): the trade volume plummets; moreover, when the effect of the favourable global economy in this period is excluded (i.e. when the ratio of trade/GDP for CEFTA-2006 is considered), still figures suggest a possible positive effect of CEFTA 2006 on the intraregional
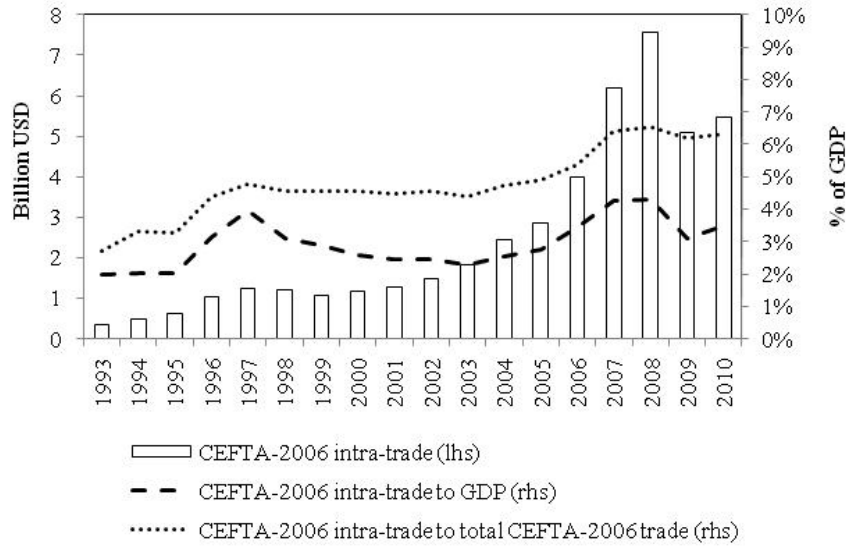
Figure 3: CEFTA-2006 Intra-Regional Trade (Source: IMF DOTS)

trade.

To put all these notions together, we finally draft Figure 4, whereby the relative importance of the different trading blocs for CEFTA-2006 are given, as well the intra-regional trade. A clear message emerges: the importance of the intraregional trade increased in the first half of the 2000s (the period of the bilateral trade agreements) and further increased in the second half of the decade (the period of CEFTA-2006). Having considered this time aggregation (Table 2), under the bilateral trade agreements, the intraregional trade increased by nearly three times, while under CEFTA-2006 nearly six times than the period of the 1990s. This can be reconciled with the reality in these countries: in the 1990s they all faced political, military and economic instability; the dissolution of Yugoslavia meant a loss of the single Yugoslav and eastern markets. If CEFTA-2006 can be thought as reestablishments of this market, then the large factors of trade increase might be attributed to this trade agreement.
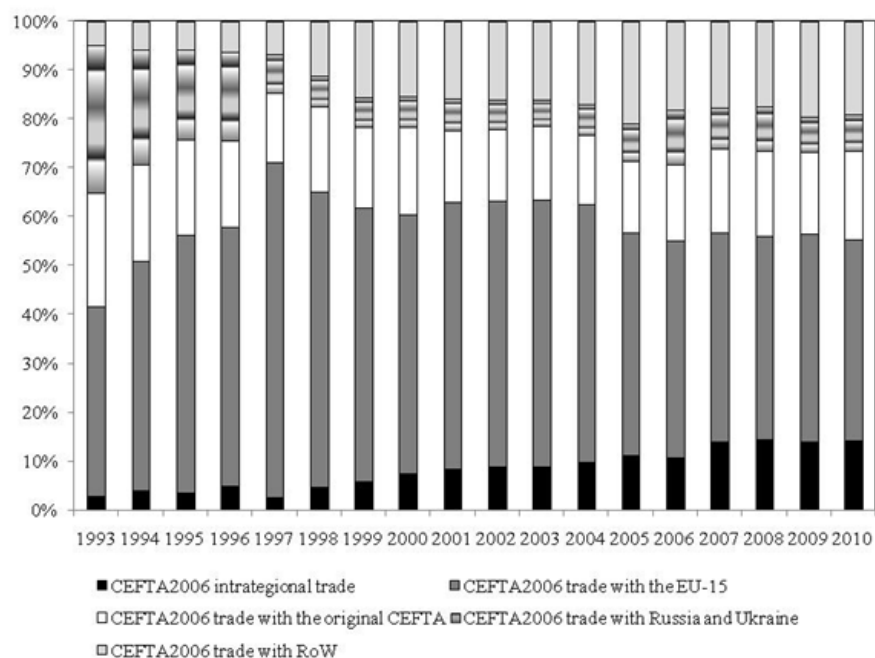
Figure 4: Relative Importance of Different Trading Blocs for CEFTA-2006 (Source: IMF DOTS)

Table 2 – Trade increase of CEFTA-2006 in two time periods

	Intra-regional trade	With the EU-15	With CEFTA	With Russia and Ukraine
Factor of average trade increase 2002-2006 versus 1993-2001	2.8	1.2	1.1	0.7
Factor of average trade increase 2007-2010 versus 1993-2001	5.9	1.5	1.9	1.2

Source: Author's calculations based on IMF DOTS

On the other hand, over the same period of time, trade with the EU-15 and the original CEFTA increased, but more moderately. In the last column of Table 2, the factor increases with Ukraine and Russia are given (two large neighbouring countries of the CEFTA-2006 bloc). Majority of the CEFTA-2006 countries do not have a FTA with these two countries. As we will explain later, these will mainly serve for cross-section comparability. The trade increase there

is poor, which might suggest that indeed CEFTA-2006 played a market unifying role and that results are likely not driven by a general economic trend.

3   Literature Review

3.1   The Research on CEFTA 2006

In spite of the trade-related developments in South-Eastern Europe over the past decade (Section 2), to our knowledge, no credible empirical investigation of trade potential for the region has been done. Many of the studies are descriptive and narrative, often with significantly biased discussions therein. Only two studies depart: Christie (2002) and Bussiere et al. (2005). Christie (2002) finds that there is no clear economic block in South Eastern Europe, which suggests that trade relationships in SEE have been weaker (at the time when the study was conducted) than the potential. However, this study faces the problem of missing data, which is resolved by "guessing", which can be compromised. Bussiere et al. (2005) pursues a more complete empirical work, providing an assessment of the trade integration of SEE. They use a country-pair fixed effect models to account for unobservable factors. As the inclusion of fixed effects does not allow estimation of the time-invariant variables, like distance, they apply the two-step procedure of Cheng and Wall (2005). Their predictions from the gravity model are in line with the expectations. However, the study has been conducted before the establishment of CEFTA-2006, so that SEE countries are investigated only from the viewpoint of their potential. Findings suggest that actual trade of those countries has been considerably distant from the potential, ranging between 0.6 times to 1.2 times below the potential.

In addition to the state with the research related to trade potential and effects in SEE, the academic interest in CEFTA 2006 has been even weaker. This could be ascribed to, at least, three reasons: i) the agreement is relatively new, now dating back only four years ago; ii) the weaker research capacity of these countries compared to the that of the original-CEFTA countries; and iii) the perception and possibly the evidence based on descriptive data that these countries are more oriented to make trade relationships with the EU than among themselves, due to their will to join the EU, as has been envisaged with the SAA process. Some studies discuss CEFTA 2006 in a descriptive manner, without identifying quantitative causal relationships and frequently in academically unbalanced manner; these include, but are not limited to: Krizmanic (2007); Pere (2008); Kostovska (2009); Družić et al. (2009); Jelisavac et al. (2009); Kikerkova (2009).

To our knowledge, only two studies (Mojsoska and Petreski, 2010; Handjiski et al. 2010) deal with CEFTA 2006 in a more serious way, but providing some insights of its effect on Macedonian trade only. Mojsoska and Petreski (2010) explore CEFTA 2006 in a quantitative gravity framework, while Handjiski et al. (2010) in a policy-oriented manner, but both provide some evidence in favour of an insignificant additional quantitative effect of CEFTA 2006 on trade, which

is in contrast to what we observe on Figure 1 above.

On the contrary, the academic interest in the trade potential of Central and Eastern Europe (CEE) and the original CEFTA has been more emphasized. Some studies analysing CEE trade include: Hamilton and Winters (1992); Baldwin (1994); Kaminski et al. (1996); Jakab et al. (2001); Egger (2003); Fidrmuc and Fidrmuc (2003) and others. Some examples of studies investigating CEFTA's effect on trade specifically, include: Adam et al. (2003); Damijan and Masten (2002); De Benedictis et al. (2005). In terms of the above-identified reasons, these countries have obviously taken advantage of the longevity of the agreement and the larger research capacity. Part of the studies also consider the effect of the EUROPA Agreements (the counterpart of the SAAs; e.g. Adam et al. 2003). The empirical results, at least partly, cannot reject the claim that these countries formed a type of "hub-and-spoke" structure (De Benedictis et al. 2005), i.e. they retained the primacy of the EU as their most important engine for their trade, similarly to what we observe on Figure 2 in the context of CEFTA 2006. Still, contrary to the case of Mojsoska and Petreski (2010), in the empirical specifications, these studies largely find a significant role of CEFTA for the trade. However, to the best of our knowledge, none of the studies treats CEFTA as an endogenous creation, i.e. a creation largely selecting neighbouring and not random countries. Hence, while the gravity equation remains a robust framework for measuring FTA's impact on trade, its estimation should be augmented by considering the potential endogeneity of the FTA variable. These notions are explained next.

3.2 The Gravity model and an Indicative Review of the Effect of FTAs on Trade

The Gravity model used in social sciences is a modified version of the Isaac Newton Law of Gravitation. It has been consistently used in modelling bilateral international trade flows and is usually referred to as a "workhorse for empirical studies" (Baier and Bergstrand, 2007), although it can be used to predict other flows, as well, such as flows of migration and foreign direct investment, people, information and so on (Martinoz-Zarzoso, 2003). The renewed attention to the theoretical foundations of gravity equations has resulted in formulations of the gravity equations that derive from general equilibrium modelling of bilateral trade patterns (Feenstra, 2002; Anderson and van Wincoop, 2003). In its simplest and conventional form, the gravity model estimates bilateral trade flows as a function of the income levels (GDP expressed in nominal terms) and the distance between the two trading partners. Domestic income level approximates supply and is assumed to push export, while the foreign income approximates demand and is assumed to pull export. Distance between the capital cities is used as a proxy for transportation costs and hence is considered as trade resisting factor (Clark et al. 2004).

Besides the above variables, the empirical specifications of the gravity model typically include (dummy) variables that support or reduce trade between two countries, such as common border, common language, land areas, cultural sim-

ilarity, geographical position, historical links, and preferential trade arrangements. These variables tend to affect the transaction costs relevant for bilateral trade and have proven to be statistically significant determinants of trade in various empirical applications (Anderson, 1979; Helpman and Krugman, 1985). The Linder effect might also be incorporated in the model, meaning that countries on a similar development level (GDPs per capita) will trade more. This effect is usually captured through a dummy variable that measures absolute difference between per capita incomes of the trading partners. The special consideration of all these variables will provide important insights on the various aspects contributing to the decision to join an FTA as CEFTA 2006 is. In addition to such conventional gravity models, generalised gravity models include price and exchange rate variables (Pugh and Tyrrall, 2000; Micco et al. 2003; Graham et al. 2004).

The omitted variable of great concern is termed "multilateral resistance" and is emphasized in the theoretical foundation of the gravity model (Anderson and van Wincoop, 2003; Frankel, 2008; Feenstra, 2002). These effects are defined as a function of unobservable equilibrium price indices, and depend on bilateral trade barriers and income shares of all the trading partners. In other words, the term "multilateral resistance" effects summarizes the effects on a given bilateral trade from differential, possibly unobserved, trade costs between this country pair and all other trading partners. The gravity equation can then be interpreted as indicating that bilateral trade depends on the bilateral trade barrier between the two countries in question, relative to the multilateral resistance indices of the two countries: for a given bilateral trade barrier between the two countries, higher barriers between them and their other trading partners would reduce the relative price of goods traded between them, raising bilateral trade. In empirical applications, the multilateral resistance indices can be conveniently proxied by individual country effects. Since we use opt to use panel approach (at least partially), these aspects are accordingly included into the country-specific effect. Finally, time effects should be included in the model to control for time-specific factors such as world business cycles, global shocks and so on, as always suggested strategy in the recent panel literature (see, for instance, Sarafidis et al. 2006).

The gravity model, as a framework for estimating bilateral trade flows, has been extensively used to measure the impact of the preferential trade agreements on bilateral trade, in particular. Nobel laureate Jan Tinbergen (1962) was the first to publish an econometric study using the gravity equation for international trade flows, which included evaluating the effect of FTA dummy variables on trade. His results suggested economically insignificant "average treatment effects" of FTAs on trade flows. Tinbergen found that membership in the British Commonwealth (Benelux FTA) was associated with only 5% higher trade flows. Since then, results have been mixed, at best. Aitken (1973), Abrams (1980), and Brada and Mendez (1983) found the European Community (EC) having an economically and statistically significant effect on trade flows among members, whereas Bergstrand (1985) and Frankel, Stein and Wei (1995) found insignificant effects. Frankel (1997) found positive significant effects from Mercosur,

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insignificant effects from the Andean Pact, and significant negative effects from membership in the EC. Other studies have had similar seemingly implausible results; Frankel (1997) and Oguledo and MacPhee (1994) provide summaries of FTA coefficient estimates across studies.

3.3 "Endogenising" the Trade Agreement in a Gravity Equation

One of the main critiques of the studies using gravity model to predict the effect of FTAs on international trade flows is related to causality, i.e. the endogeneity of the choice over the trading partner(s) with whom a country signs an FTA, which is usually (and 'naturally') biased towards the neighbours. Hence, if FTA dummy is not treated as endogenous; biased and inconsistent results arise from the unobservable heterogeneity and/or omitted variables (Caporale et al. 2008; Baier and Bergstrand, 2007). Above reviewed studies all treat the FTA variable as exogenous. A strand of the literature emerged in the gravity analysis, treating the FTA variable as potentially endogenous.

Controlling for the endogeneity through using differentiated panel data, Baier and Bergstrand (2007), for instance, found that traditional estimates of the effect of FTAs on trade flows underestimated the effect by 75-85%; results are biased downwards which explains the rather weak empirical support or low estimates of the effect. Trefler (1993) addressed systematically the simultaneous determination of U.S. multilateral imports and U.S. multilateral nontariff barriers in a cross-industry analysis. Using instrumental variables, Trefler (1993) found that after accounting for the endogeneity of trade policies, the effect of these policies on U.S. imports increased tenfold. Lee and Swagel (1997) also showed using instrumental variables that previous estimates of the impact of trade liberalization on imports had been considerably underestimated. In addition, Frankel (2008) argues that FTA's endogeneity might be more important for developing countries.

Having considered all important aspects of an FTA effects analysis, we proceed by defining the estimable model and propose a strategy to resolve the raised estimation issues.

4 Methodology and Data

4.1 Methodological Issues

Given the issues discussed in section 3, we employ the following model:

$$T_{ijt} =$$
$$\alpha_{ij} + \delta_t + \beta_1 y_{ijt} + \beta_2 d_{ij} + \beta_3 q_{ijt} + \beta_4 \sigma_{ijt} + \beta_5 rely_{ijt} + \beta_6 SAA_{ijt} + \beta_7 EUROPA_{ijt} + \beta_8 CEFTA_{ijt} + \beta_9 CEFTA2006_{ijt} + \beta_{10} FTA_{ijt} + \beta_{11} EU_{ijt} + \Sigma \gamma_k M_{ijk} + u_{ijt}$$
$$(1)$$

Whereby: T_{ijt} is the size of the real bilateral trade (export plus import divided by two) between i and j at time t; y_{ijt} is the sum of the real GDP per head in country i and country j at time t; d_{ij} is the distance between i and j; M_{ijk} reflects the cultural, historical and political factors affecting bilateral trade between the two countries. This vector includes the following three dummy variables: common language; common border; and being a part of same state in the past.

q_{ijt} is the real bilateral exchange rate between i and j (obtained as the log of the nominal exchange rate plus the log of foreign price level minus the log of the domestic price level). σ_{ijt} is the within-quarter standard deviation of the log changes of the bilateral nominal exchange rate. The real bilateral exchange rate reflects competitiveness, while the standard deviation of the nominal rate reflects the uncertainty in the economy imposed from the exchange rate. Higher variability is expected to deter traders, in general, although some papers (Pugh and Tyrrall, 2000) use the low risk aversion as argument to trade more when the rate is more volatile. $rely_{ijt}$ is the country i's GDP divided by county j's GDP, to capture Linder's (1961) hypothesis that countries with similar demand patterns are likely to trade more.

SAA_{ijt} and $EUROPA_{ijt}$ are dummy variables that take value of 1 for all pairs in the years after country i signed the Stabilisation and Association/EUROPA Agreement with country j (whereby country j belongs to the EU). $CEFTA_{ijt}$ is a dummy variable that takes value of 1 if the pair (i, j) belongs to CEFTA, while $CEFTA2006_{ijt}$ if it belongs to CEFTA-2006. FTA_{ijt} would stands for any other free-trade agreement between country i and j; however, this would mainly stand for the bilateral agreements that existed between the CEFTA-2006 countries before they entered CEFTA 2006. The latter is impossible to do for the original CEFTA, given that the dataset starts in 1993, the same year when CEFTA started its operation. EU_{ijt} is a dummy variable that takes value of 1 when the pair of countries belongs to the European Union. δ_t is the time-specific fixed effects which control for global trends and shocks, but also global changes in transportation and communication costs. u_{ijt} is an $i.i.d$ error term which is assumed to be well-behaved.

Estimating (1) faces some econometric challenges. Firstly, many studies employ either a cross-section or a pooled OLS specification and they often ignore country heterogeneity altogether. However, the failure to account for this might lead biased results (see, for instance, Serlenga and Shin, 2004, and Cheng and Wall, 2005, for a documentation of this). This has been addressed in the recent literature, by the inclusion of the multilateral trade resistance term, covered by fixed effects (see section 3.2). In addition, later research suggested that instead of using simple fixed effects, individual country-pair dummies should be included to get efficient estimators (see, e.g. Egger and Pfaffermayr, 2003). Hence, in (1), α_{ij} is the country-pair individual effects covering all unobservable factors related to trade resistance, including tariff and non-tariff barriers, geographical position, trade openness and so on.

Secondly, a problem that arises from the first one is that we will not be able to obtain separate estimates for the coefficients of d_{ij} and M_{ijk} in (1), given these,

as time-invariant variables, are collinear with the country-pair fixed effects. To resolve this issue, we will follow and approach present in the literature (Cheng and Wall, 2005; Bussiere et al. 2005) and estimate an additional regression of the country-pair fixed effects on the time-invariant variables in order to filter out the importance of these variables in the fixed effect:

$$\hat{\alpha}_{ij} = \rho_1 + \rho_2 d_{ij} + \Sigma \omega_k M_{ijk} + \mu_{ijt} \quad (2)$$

Thirdly and mostly importantly for this investigation, as argued in section 3.3, a FTA likely suffers endogeneity; in addition, other right-hand variables cannot be said to be exogenous. For instance, domestic GDP and trade are endogenously determined (simply because export and import are a part of the GDP calculation) and GDP lags are used as instruments. What is more important here, CEFTA 2006 may also be an endogenous process. Namely, the formation of FTAs is usually (and 'naturally') biased towards the neighbours (Baier and Bergstrand, 2007) and/or among countries that have already had strong trade relationships before. Some papers (Micco et al. 2003; Cheng and Wall, 2005; Bussiere et al. 2005) argue that the inclusion of the country-pair fixed effects will resolve this issue also. The intuition is that fixed effects take into account whether the pair of countries has had higher trade in the past. However, this will not capture endogeneity emulating from another source – forming an FTA between neighbours which have not necessarily traded a lot in the past, but they share some common vision for entering some larger market or union. This is indeed the case of CEFTA 2006: there are countries inside which have not traded a lot between each other. For instance, all countries inside trade little with Moldova; Serbia trades little with Albania; Macedonia trades little with Bosnia; and so on. Inter alia, this might stem out from their orientation to trade more with the EU than among themselves (for instance, see in Mojsoska and Petreski, 2010), but also from the interrupted trade flows due to the many political unrests in some of those countries over the 1990s and the still persistent interethnic intolerance. However, all these countries share the same vision to join the EU and hence formed CEFTA 2006 which should strengthen their economic relations and product competitiveness before they join the single market. This source of endogeneity should not be overlooked.

To approach the endogeneity issue in a comprehensive manner, we will design a treatment regression, whereby we would like to measure the impact of the treatment variable on the economic outcome of a continuous variable:

$$T_{ijt} = \alpha_{ij} + \delta_t + \beta_1 X_{ijt} + \beta_5 TREATMENT_{ijt} + u_{ijt} \quad (3)$$

Whereby: T_{ijt} is the outcome variable for the pair of countries and in period t; $TREATMENT_{ijt}$ takes the value of 1 if the pair of countries (i, j) has been treated in period t, i.e if the pair belongs to a free trade agreement, and grasps $SAA_{ijt}; EUROPA_{ijt}; CEFTA_{ijt}; CEFTA2006_{ijt}; FTA_{ijt}$, and 0 otherwise; X_{ijt} is a vector of explanatory variables (composed of the sum of the incomes, the real exchange rate, the volatility of the nominal exchange rate, and the relative income); α_{ij} is the country-pair fixed effects; and the other notations

are as in (1). Note that since $SAA_{ijt}; EUROPA_{ijt}; CEFTA_{ijt}; CEFTA2006_{ijt}; FTA_{ijt}$ capture all possible FTAs existing in the countries of the CEFTA-2006 bloc, the base category is a situation where no FTA exists. Hence, the estimated coefficients in front of those variables will isolate the effects of each type of FTA on bilateral trade. This means that in order to potentially calculate the contribution of CEFTA-2006 in excess of SAA on trade, we will need to take the difference between the coefficients. This is returned to in section 5.

Given that the X_{ijt} variables are exogenous, (3) can be consistently estimated by the fixed-effects estimator, given that some underlying assumptions are satisfied. Namely, as Cameron and Trivedi (2005) and Meyer (1995) explain, the extent to which a treatment regression, as (3) is, can give credible econometric evidence crucially depends on:

- The mean of the non-treatment group conditional on X_{ijt} does not depend on the value of $TREATMENT_{ijt}$ (the so called conditional-mean independence assumption); and

- The decision to sign a free trade agreement (SSA, CEFTA 2006 or other) does not depend on the outcomes, after controlling for the variation in them induced by the differences in X_{ijt} variables (the so called exogeneity assumption).

However, we argued in sections 3.3 and 4.1 that FTAs might be endogenous creations. Hence, the exogeneity assumption might be violated. Meyer (1995), however, argues that good natural experiments are those where there is a transparent exogenous source of variation in the explanatory variables that determine the treatment assignment. This can be achieved by selecting a random sample. However,

> Randomization of treatment is often infeasible... In most cases, individuals [countries, n.b] at least partly determine whether they receive treatment [whether they sign FTA, n.b], and their decisions may be related to the benefits of the treatment... In other words, there is self-selection into treatment (Wooldridge, 2002, p.606).

We argued that countries might be prone to sign FTAs with their neighbours, i.e. it is more likely that FTAs will be signed among countries with geographical and economic proximity. Certainly, this is a likely assumption for all CEFTA, CEFTA 2006, EUROPA and SAA. In econometric terms, the selection bias arises when $TREATMENT_{ijt}$ is correlated with the error in the outcome equation (3). According to Cameron and Trivedi (2005), this can be induced by omitted variables that determine both $TREATMENT_{ijt}$ and T_{ijt}, or by some unobserved factors. To examine the former, (3) can be rewritten as follows:

$$E[T_{ijt}|X_{ijt}, TREATMENT_{ijt}, z_{ijt}] =$$
$$\alpha_{ij} + \delta_t + \beta X_{ijt} + \varphi TREATMENT_{ijt} + E[u_{ijt}|X_{ijt}, z_{ijt}] \quad (4)$$

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Whereby z_{ijt} denotes a set of observable variables that determine $TREATMENT_{ijt}$ and may be correlated to the outcome and $E[u_{ijt}|z_{ijt}] \neq 0$. Hence, to overcome this potential endogenous treatment (endogenous FTA), we need to introduce in the equation all observable variables that could be possibly correlated with u_{ijt}, but also determine T_{ijt} i.e.:

$$T_{ijt} = \alpha_{ij} + \delta_t + \beta C_{ijt} + \varphi TREATMENT_{ijt} + u_{ijt} \quad (5)$$

whereby C_{ijt} includes all exogenous (X_{ijt}) and variables related to the treatment (z_{ijt}). By doing so, the observed information contained in C_{ijt} that determines the treatment, will remove any correlation between T_{ijt} and $TREATMENT_{ijt}$. This so-called *selection by observables* will eliminate any endogeneity of the treatment coming from observable information (see further in Barnow et al. 1980; Heckman and Hotz, 1989; and Moffitt, 1996). The variables about the income of the pair of countries, as well as the dummies like distance, common language, common border and so on, are variables that 'endogenize' the FTA variable and they enter the equation.

However, $E[u_{ijt}|X_{ijt}, TREATMENT_{ijt}] \neq 0$ may still be different from zero if there are common unobservable factors that affect both $TREATMENT_{ijt}$ and u_{ijt}, in which case $TREATMENT_{ijt}$ is still endogenous. If there exists only a component of the z_{ijt} vector to determine $TREATMENT_{ijt}$, then it may be used as an instrumental variable to correct the endogeneity of $TREATMENT_{ijt}$ (because it is correlated with $TREATMENT_{ijt}$ but not with the outcome T_{ijt}, except through $TREATMENT_{ijt}$). According to Wooldridge (2002, pp.621), this means that this component of z_{ijt} will not appear in (4), because it affects T_{ijt} only indirectly; this is the part of the identification to overcome endogeneity stemming from the *selection of unobservables* and it can be tested only indirectly through an over-identification test. Note that it is reasonable to believe that the endogeneity of SSA and EUROPA will be captured by the selection of observables, given that the engine of these creations is the dependence of the emerging markets from the EU demand, as well they being in the EU neighbourhood. Both incomes and distance already enter the regression.

However, in the case of CEFTA and CEFTA-2006, there has been another engine of the regional integration. Namely, these countries are undeniably willing to join the EU. In order to be prepared to face the competitive pressure on the single market, EU favours that they form a regional trade bloc before entering the common market. "More recently, the prospect of the EU membership might have given a new impetus to these dynamics." (Bussiere et al. 2005, p.11). Hence, we need some instrument to capture this source of endogeneity. The optimal instrumental variable would be the one which best mimics these countries' will to join the EU as soon as possible. However, such variable can be hardly approximated. Hence, we will use a variable that reflects the political approximation – the indices of civil liberties and political rights provided by Freedom House. Intuitively CEFTA-2006 has been initiated once all political unrests have been subdued in the SEE region and once a process of economic convergence has been argued to have begun. Moreover, this argumentation is

in line with the findings in Liu and Ornelas (2011) who find that entering an FTA strengthens democracy and that less democratic societies have, hence, an incentive to form a FTA. To join the EU, CEE and SEE countries needed to be more democratic. This justifies the inclusion of these variables in the instrument list. Hence, we argue that the democracy indicators affect trade only through CEFTA and CEFTA 2006 and not directly. This can be certainly opposed with the argument that under greater democracy, traders may be encouraged to conclude more business relations and, hence, to contribute to greater trade, but at present no other instrument is readily available. The treatment of CEFTA and CEFTA 2006 in this manner has not been done in the literature so far and constitutes the main contribution to knowledge of this paper.

4.2 Data

Annual data over the period 1993-2010 are used in this paper. Dataset comprises of 36 countries. Countries were chosen based on their share in CEFTA-2006 countries trade. To pursue an illustration: the share of those countries in the trade of Macedonia in 2010 is 95%; in the trade of Croatia is 93% (i.e. only 5% and 3%, respectively, of the total trade of those countries has been conducted with countries not included in the sample) and so on. This amounts to more than 23.000 potential observations and nearly 1.300 bilateral trade relationships. Data are collected from IMF: World Economic Outlook; Direction of Trade Statistics; and International Financial Statistics. Distance is obtained from http://www.distancefromto.net. Data for the FTAs are compiled from previous studies as well the CEFTA-2006 Secretariat. Further details are available in Appendix 1.

5 Results and Discussion

Table 3 presents the results. Column (1) presents FE exstimates of a very bacis gravity equation (incomes and distance), to which we add CEFTA-2006 and SAA dummies. Column (2) presents the full model (1) with the FE estimator. Hence, both columns address only FTAs endogeneity stemming from observables. Results are plausible, but CEFTA-2006 effect is found insignificant, as in Mojsoska and Petreski (2010). Hence, downplaying FTA's endogeneity may indeed underestimate FTA's effect on trade.

All remaining estimates are obtained with the GMM estimator (Staiger and Stock, 1997), by using heteroskedasticity and autocorrelation corrected (h.a.c) standard errors. Therein, the GDP variable is treated as potentially endogenous and is instrumented by its own lags. In column (3), CEFTA and CEFTA-2006 are instrumented by the indices of political rights and civil liberties, to address the potential endogeneity stemming from unobservables (as argued in the methodological section). However, despite the argumentation that the original CEFTA is also an endogenous creation, the appropriate test does not reject the null of its exogeneity (last row in Table 3). This might be due to the fact

that at least the core members of CEFTA (Czech Republic, Hungary, Poland, Slovakia) signed this agreement subsequently to the dissolution of the CMEA whereby they exercised considerable economic cooperation under the umbrella of the Soviet Union. Hence, it is likely that geographical proximity and the established trade ties governed the creation of CEFTA, and not, like in the case of CEFTA-2006, the will to join the EU. "While the transition [from CMEA to CEFTA] led to a sharp fall in regional trade, it had also opened up the possibility of EU accession. However, the EU member states were wary of the idea of an eastern enlargement." (Adam et al. 2003, p.5). So, the optimism of those countries at this stage has been likely subdued. Moreover, a couple of years after the establishment, CEFTA's proliferation was steered by the EU insistence to counteract forming a hub-and-spoke structure with the EUROPA Agreements, and not the opposite, which further argues in favour of CEFTA being less endogenous creation than CEFTA-2006 (Adam et al. 2003).

The subsequent columns in Table 3 include the real bilateral exchange rate, the nominal exchange rate volatility and the relative GDP of the countries i and j, and all intend to serve as robustness checks. In all of them, CEFTA is treated as being exogenous. All specifications are correctly specified, according to the relevant tests for model's and instruments' identification. In all cases, the exogeneity of the income and CEFTA-2006 has been rejected. This is in line with the discussion that in the case of CEFTA-2006, an important engine of its creation has also been the will of these countries to join the EU as soon as possible and hence eliminate the risk of falling into political and military problems again.

Table 3 – Results

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FE (robust)		GMM (h.a.c. errors)					
Log of real bilateral trade	Basic gravity	Full model	No CEFTA	CEFTA endog.	CEFTA exog.	Inc. RER	Inc. volat.	Inc. Lin-der
Log of summed real GDPs p/c	0.623***	0.682***	1.024***	0.937***	0.946***	1.025***	1.024***	0.862***
Log of distance	-0.024***	-0.045***	-0.204***	-0.204***	-0.204***	-0.204***	-0.204***	-0.204***
Common border		0.013***	0.052***	0.052***	0.052***	0.052***	0.052***	0.052***
Common language		0.226	0.022	0.022	0.022	0.022	0.022	0.022
Former common state		0.171***	0.028***	0.028***	0.028***	0.028***	0.028***	0.028***
European Union		0.224***	0.008	0.008	0.304***	0.296***	0.297***	0.351***
CEFTA		-0.300	-0.888	0.119***	0.119***	0.119***	0.118***	0.130***
EUROPA Agreements		-0.033	-0.209	0.057	0.057	0.054	0.055	0.058
CEFTA-2006	0.248	0.359	3.120**	2.689**	3.357***	3.025***	3.037***	3.240***
SAA	0.113**	0.155***	0.124***	0.177***	0.185***	0.180***	0.180***	0.201***
Other FTAs	0.247	0.366	1.432**	1.225**	1.552**	1.385**	1.391**	2.002**
Real bilateral exchange rate						-0.024***	-0.024***	-0.020***
Volatility of the nominal ER							-0.001	-0.001
Relative GDPs per capita								-0.115***
No. of observations	18708	16726	14200	14200	14200	14199	14199	14199
Hansen test (p-val)			0.8336	0.1305	0.6444	0.8249	0.8243	0.5535
Under-identification test (p-val)			0.0000	0.0014	0.0000	0.0000	0.0000	0.0000
Weak identification test (F-stat)			10.728‡	3.372	9.973‡	9.769‡	9.753‡	8.982‡
Endog. test of GDP (p-val)			0.0002	0.0000	0.0002	0.0002	0.0003	0.0001
Endog. test of CEFTA-2006 (p-val)			0.0162	0.0000	0.0151	0.0270	0.0264	0.0027
Endog. test of CEFTA (p-val)				0.4901				

*, ** and *** refer to statistical significance at the 10, 5 and 1%, respectively. ‡ and † refer to the test statistic being below 5 and 10%, respectively, the maximal IV relative bias.

Countries' income positively and significantly affects trade in about proportional manner. The variables in italic are obtained in the second step (see equation [2] in Section 4.1), and they have plausible coefficients, suggesting a trade decline by about 0.2% with an additional 1% increase of distance and a trade increase by 5.2% and 2.8% when countries i and j share a border or a state in the past, respectively. Sharing the language does not affect bilateral trade significantly. Depreciation of the real bilateral exchange rate, i.e. improving competitiveness by 1%, increases trade, on average, by 2%, while nominal rate volatility is found insignificant. The latter could be due to the dominance of rigid forms of the exchange rate across the sample. The more countries are similar, the more they trade (the Linder effect): if the relative GDP coefficient increases by 1 unit (i.e. country i is double the size of country j), then trade is predicted to be lower by about 11.5%.

All trade agreements' effects have been captured by dummy variables – bolded in Table 3 for visibility. These account for the deviation of the normal trade patterns. We should be cautious with the interpretation of their coefficients, given that they are in front of a dummy variable in a semi-log regression. Kennedy (1981) suggests that in such cases, the correct estimate is not $100 \cdot \hat{\beta}_{DUMMY}$, but $exp(\hat{\beta}_{DUMMY} - var(\hat{\beta}_{DUMMY})/2) - 1$.

The variable of our main interest, CEFTA-2006, is positive and significant. The calculation of the correct coefficient suggests that CEFTA-2006 increased trade in SEE by 7 to 8 times, on average. At first glance, this is implausibly large magnitude of the effect. Given that we also control for any bilateral agreements that existed before, this coefficient compares with the period before these agreements, i.e. over 1990s. Indeed, when one looks in the actual factor increase in Table 2, then the large magnitudes of increase become reasonable and can be largely attributed to the very low level of intra-regional trade in the 1990, due to the many conflicts, embargos and inter-ethnic intolerance. Our finding suggests that a major part of this increase can be attributed to the CEFTA-2006. Also, the variable for other FTAs (bilateral agreements before CEFTA-2006) is significant and with large coefficient, suggesting that these agreements increased trade in SEE by about 2.5 times. The results are supported by the findings of an earlier study on trade in SEE (Christie, 2002) that there has been no clear economic block in SEE over the 1990s. However, note that the estimates are larger than the actual average increases in Table 2. This is due to the both time and cross-section comparability of our estimates - they compare to the period before, but also to countries with which the CEFTA-2006 countries have no trade agreements, like Russia and Ukraine. Indeed, Table 2 suggests that CEFTA-2006 bloc's trade with Russia and Ukraine has only limitedly increased over the observed periods.

In parallel to this process, the SAA process has been found to have played role in SEE, increasing trade by about 20%, on average. This increase is considerably lower than the one attained by CEFTA-2006, counteracting EU's concerns that SEEs would form a 'hub-and-spoke' structure with the EU in terms of trade. Results suggest quite the contrary - these countries were capable of

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forming a strong hub among themselves, but preserving the significance of the EU as a trading partner. In this respect, CEFTA-2006 has been a necessary condition for a welfare gains from the SAA.

The trade effect of the original CEFTA has been estimated to be significant, but with considerably lower magnitude than that of CEFTA-2006. Results suggest that the original CEFTA increased trade in CEE by about 12%, on average. The coefficient is in line with the findings of other studies (e.g., Bussiere et al. 2005; De Benedictis et al. 2005). The coefficient on the EUROPA Agreements is found insignificant, as in De Benedictis et al. (2005). The latter can be explained by the fact that starting from the 1980s, trade between CEEs and EU15 was already intense because reduction of the trade barriers had already taken place. This view is in line with the many contributions that emphasized the erosion in the unrealized trade potential of the CEEs with the EU15 already in the early 1990s. Hence, the significance of CEFTA and the insignificance of the EUROPA Agreements also counteracts the concern that CEEs formed a 'hub-and-spoke' structure with the EU in terms of trade. Finally, belonging to the EU spurs trade by less than half, as expected.

6   Conclusion and Policy Recommendations

The idea to form the CEFTA-2006 can be now cherished. The empirical evidence suggests that CEFTA-2006 exerted positive, significant and large effect on trade in SEE. The effect of CEFTA-2006 has been estimated to be larger than the effect of the Stabilisation and Association Agreements (SAA), which counteracts the concern that EU and SEEs formed a hub-and-spoke structure in terms of trade. Quite the opposite, findings suggest that SEEs were capable, through CEFTA-2006, to form a kind of hub among them. The CEFTA effect has been found significant and positive, while EUROPA Agreements likely did not exert influence on CEEs trade. Hence, EU's trade approach has not been in favour of a 'hub-and-spoke' structure in the CEE as well. The overall finding of large positive trade effect of CEFTA-2006 as compared to SAA and CEFTA, as well as the significant effect of SAA compared to that of the EUROPA Agreements can be also attributed to the distracted trade flows of the SEEs over the 1990s, given it was a decade of wars, embargoes, hyperinflation and social unrest.

The success of CEFTA-2006, no matter the comparative context, brings an important lesson for the SEEs. It suggests that if they want to work together with a big light-motive – joining the European family – they can achieve a lot. On this road, increasing the further cooperation – reducing the non-tariff barriers to trade, coordination in the process of attraction of foreign direct investment, harmonising the rules for public procurement and so on – will likely bring significant benefits to the region and will further boost its integration into the EU and the world economy, in general.

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7   Appendix 1 − Data

Countries included:

Austria, Albania, Belgium, Bosnia and Herzegovina, Bulgaria, China, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Kosovo, Luxembourg, Macedonia, Moldova, Montenegro, Netherlands, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Serbia, Switzerland, Sweden, Spain, Turkey, Ukraine, UK, US.

Data specifics

Variable	Notation	Definition	Source
Real bilateral trade	T_{ijt}	The sum of the export and import, both deflated by the CPI index, between country i and j at time t, divided by two.	DOTS, IFS
Real GDPs per capita	y_{ijt}	The sum of the real GDPs per capita of countries i and j at year t.	WEO, IFS
Distance	d_{ij}	The log of the distance in kilometers between the capitals of countries i and j.	www.distancefromto.net
Common language	$lang_{ij}$	1 = all pairs that share same or similar language (*see description below*)	Previous studies
Shared border	$bord_{ij}$	1 = all pairs that share a border	Google maps
Shared state in the past	fst_{ij}	1 = all pairs that belonged to the same state in the past (*see description below*)	Previous studies
Real bilateral exchange rate	q_{ijt}	Log of the nominal exchange rate + log of foreign price level - log of the domestic price level	IFS
Volatility of the nominal exchange rate	σ_{ijt}	Within-quarter standard deviation of the log changes of the bilateral nominal exchange rate	IFS
Relative GDPs (Linder effect)	$rely_{ijt}$	Country i's GDP divided by country j's GDP	WEO

Data specifics (cont.)

Variable	Notation	Definition	Source
Stabilisation and Association Agreement	SAA_{ijt}	1 = all pairs in the years after country i signed the Stabilisation and Association Agreement with country j (whereby country j belongs to the EU)	EU web
EUROPA Agreement	$EUROPA_{ijt}$	1 = all pairs in the years after country i signed the EUROPA Agreement with country j (whereby country j belongs to the EU)	EU web
CEFTA	$CEFTA_{ijt}$	1 = the pair (i,j) belongs to CEFTA *(see description below)*	CEFTA web
CEFTA 2006	$CEFTA2006_{ijt}$	1 = the pair (i,j) belongs to CEFTA-2006 *(see description below)*	CEFTA 2006 web
Other FTAs	FTA_{ijt}	1= other free-trade agreement between country i and j: bilateral FTAs before CEFTA-2006	Previous studies
EU	EU_{ijt}	1 = pair of countries belongs to the European Union *(see description below)*	EU web

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Country aggregates:

CEFTA-2006: Croatia (2003) Albania, Bosnia and Herzegovina, Macedonia, Moldova, Montenegro and Serbia (all 2007), Kosovo (2008), Romania (2004-2006), Bulgaria (2004-2006).

CEFTA: Czech Republic, Hungary, Poland, Slovakia (all 1992-2003), Slovenia (1996-2003), Romania (1997-2003), Bulgaria (1999-2003).

EU: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Sweden, Spain, UK (1993-2010), Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia (2004-2010).

Common language: Serbo-Croatian and Macedonian (Bosnia, Croatia, Macedonia, Montenegro, Slovenia, Kosovo); Albanian (Albania, Kosovo, Macedonia); English (UK and US); French (Belgium, France, Luxembourg, Switzerland); German (Austria, Germany, Luxembourg, Switzerland); Dutch (Belgium, Netherlands); Swedish (Sweden, Finland); Russian (Russia, Moldova, Ukraine).

Common state in the past: Yugoslavia (Macedonia, Kosovo, Serbia, Croatia, Bosnia, Monenegro, Slovenia); USSR (Russia, Ukraine, Moldova); Czechoslovakia (Czech; Slovakia).