Economics Bulletin

Volume 32, Issue 1

The impacts of Regional Trade Agreements in force in Europe on trade in services

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Abstract

Most of countries in the European continent are related to each other by a Regional Trade Agreement (RTA) that includes services. The aim of this study is to analyze the pattern of trade in services in Europe. In considering the three main important RTAs in force in Europe, I find that all the RTAs do not have similar impacts on trade in services. Indeed, European Union and European Economic Area are trade creating while European Free Trade Association (EFTA) does not have a significant impact on intra-members trade and is more trade diverting than the other RTAs. Moreover, new entrants have a positive propensity to trade services with the members of the EFTA. Trade impacts of a given RTA vary substantially across signatories.

This paper is produced as part of the project "Globalization, Investment and Services Trade (GIST) Marie Curie Initial Training Network (ITN)" funded by the European Commission under its Seventh Framework Programme - Contract No. FP7-PEOPLE-ITN-2008-211429. I am very grateful to the editor Rodney Falvey and one anonymous referee for their insightful suggestions. All remaining errors are mine.
Citation: Amélie Guillin, (2012) "The impacts of Regional Trade Agreements in force in Europe on trade in services", *Economics Bulletin*, Vol. 32 No. 1 pp. 685-697.
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Submitted: October 11, 2011. **Published:** February 20, 2012.

1. Introduction

The tradability of services undoubtedly took off in the 1980s due to technological improvements, particularly in information, telecommunications and transportation. Services represent around 20% of global trade (Bensidoun and Ünal-Kesenci, 2008). At the same time as its increasing importance in international trade, services have become the focus of attention in the context of multilateral and bilateral/plurilateral negotiations since the end of the 1990s.[1] Different types of Regional Trade Agreements (RTAs) exist. Some like Preferential Trade Agreement (PTA), Free Trade Agreement (FTA) and Custom Union (CU) cover goods; while an Economic Integration Agreement (EIA) covers services.[2] Some countries had launched into negotiations on services earlier than others, particularly when a bilateral or plurilateral trade agreement on goods was already in force. Most of the well-established trade agreements such as Nafta, Anzcerta and the European Union introduced services in the 1990s.

In the literature, there is no consensus on the effect of RTAs on trade flows. Some studies conclude that trade agreements have no impact on intra-members trade (see Bergstrand (1985); Frankel et al. (1995)), or some fragile effects (see Gosh and Yamarik (2004)). Urata and Okabe (2007) observe a weak impact of the different FTAs overtime. In contrast to these non-significant results, Baier and Bergstrand (2007) find a positive impact of FTAs on trade. Countries that sign a trade agreement are already good trading partners. Thus, a further liberalization can only lead to a large trade creation amongst these countries. Besides, they note that the specification of the gravity equation commonly used under-estimates the RTA coefficient: roughly by 75% with OLS (see Trefler, 1993). To handle the endogeneity problem, several methodologies have been proposed by the literature (see Section 2). Using panel data with bilateral-pair fixed effects and accounting for multilateral resistance terms, Baier and Bergstrand (2007) conclude that FTAs increase trade by 58% on average, and by 86% after fifteen years. Similarly, Baier et al. (2008) carry out an ex-post analysis on the role of EIAs on trade; and find large and positive impacts of EIAs on the intra-signatories trade.[3] Carrere (2006).find evidence of trade diversion and trade creation for seven RTAs.

Concerning the effect of specific RTAs, Frankel (1997) highlights the positive and significant impact of Mercosur on intra-members trade. The economic impacts of the European Union have been widely investigated also.[4] Baier et al. (2008) estimate a gravity equation introducing different dummies to assess the role of different RTAs: the European Union (EU), the European Free Trade Association (EFTA), the European Economic Area (EEA)

[1] The General Agreement on Trade in Services (GATS),created in 1995, is the first multilateral set of rules to liberalize international trade in services amongst WTO members.

[2] Note that the Economic Integration Agreement is generally a part (one or several chapters) of the whole legal text.

[3] The literature also treats questions related to anticipation effect, trade diversion, currency unions impacts; depth of RTAs and phase-in issues. See Glick and Rose (2002); Frankel and Rose (2002); Baier et al. (2008); Vicard (2009) among others.

[4] See Aitken (1973), and Brada and Mendez (1985) for previous studies.

and all other EIAs (OEIA). On average, the trade effects are relatively similar in terms of magnitude across trade agreements. The impacts of the European Treaty on intra-members trade are lower using cross-sectional analyses (Bayoumi and Eichengreen, 1997) compared to panel analyses (Baier et al. 2008).

Turning to services, few studies examine the role of RTAs on trade in services. Estimating a gravity equation on trade in services between 1999 and 2000, Ceglowski (2006) finds evidence of a positive relationship between RTAs (CEFTA; EEA; EFTA; EU; NAFTA) and trade in services; and also between trade in goods and trade in services. Marchetti (2009) includes country-and-time fixed effects and finds a similar impact of PTAs and European Union membership on trade in services. Nevertheless, Guillin (2011) highlights that only deep EIAs have a positive and significant impact on trade in services.[5]

Most of the papers relating RTAs and services consider different kinds of RTAs without clearly distinguishing amongst RTAs except in Ceglowski (2006). Nevertheless, Baier et al. (2008) show that the effects of trade agreements on trade in goods can differ across trade agreements. The aim of this paper is to examine the distinct economic impacts of prominent RTAs in force in the European continent on trade in services using a longer time horizon and considering trade creation/trade diversion issues. Because most European countries are related to each other by a RTA that covers services, it is interesting to investigate the pattern of trade in services in Europe.

My findings highlight that the main RTAs in force in Europe do not have a similar impact on trade in services. Moreover, countries belonging to the same RTA do not experience analogous effects of the RTA in their intra-bloc and extra-bloc trade.

The paper is structured as follows. In the next section, I describe the empirical strategy and the data. Section 3 presents the results and Section 4 concludes.

2. Empirical strategy

2.1. Gravity equation

In Tinbergen (1962), gravity allows us to explain bilateral trade by the size of each partner (GDP is generally the proxy used for the economic size) and inversely by the distance. More explanatory variables, like contiguity, common language, common history but also trade agreements, have been introduced over time as determinants of bilateral trade. Anderson and van Wincoop (2003) and Feenstra (2004) highlight the importance to account for prices through multilateral resistance terms (MRT); otherwise estimates will suffer from omitted variable bias. Countries can select into trade agreements for non-observable reasons, generating a source of correlation between the error term ϵ_{ij} and RTA_{ij}. Because of this self-selection issue and endogeneity bias, analyses in cross-section lead to inconsistent coefficients (see Baier and Bergstrand (2007); Baier et al. (2008)).

According to Anderson and van Wincoop (2003) and Baldwin and Taglioni (2006), MRTs in the case of panel data have to be time-varying and can be taken into consideration using country-and-time fixed effects. Thus, the literature recommends analyzing the impacts of

[5] See Adlung and Roy (2005) and Egger and Lanz (2008) for studies on the GATS coverage.

RTAs on trade by considering panel data with country-and-time and bilateral fixed effects or by first differencing data. Moreover, Baldwin and Taglioni (2006) suggest the use of nominal trade and nominal GDPs instead of real trade and GDPs to avoid the conversion factors between US dollars in different years.

The following equation is estimated using panel data with bilateral and country-and-time fixed effects:

$$\begin{aligned} \ln X_{ijt} &= \beta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(Dist_{ij}) + \beta_4(Lang_{ij}) \\ &\quad + \beta_5(Border_{ij}) + \beta_6(RTA_{ijt}) - \ln P_{it}^{1-\sigma} - \ln P_{jt}^{1-\sigma} + \epsilon_{ijt} \end{aligned} \tag{1}$$

where X_{ijt} is the non-null nominal bilateral trade in services between country i and country j at year t. The explanatory variables in Equation 1 are: GDP of exporting country i and of importing country j; $Dist_{ij}$, the geographic distance between both partners; $Lang_{ij}$, the common language dummy; $Border_{ij}$, the contiguity dummy; RTA_{ijt}, a dummy to account for common regional trade agreement; P_{it} and P_{jt} the MRTs of country i and j are accounted for in introducing country-and-time fixed effects as the literature suggests. Nevetheless, by including country-and-time fixed effects, the effects of GDPs will be captured. Similarly, using bilateral fixed effects, all the time-invariant bilateral variables, like $Dist_{ij}$, $Lang_{ij}$ and $Border_{ij}$, will be captured. In a panel with country-and-time and bilateral fixed effects, the remaining bilateral and time-variant explanatory variable is RTA_{ijt}. Note that in controlling for bilateral and country-and-time characteristics, the estimated coefficient β_6 can be interpreted as the direct effect of bilateral trade agreement on bilateral trade in services. The impact of RTA_{ijt} in year t is evaluated using the following formula: $(e^{\beta_6} - 1) * 100$.

Using first differenced panel, Equation 1 can be rewritten as follows:

$$\begin{aligned} dlnX_{ij,t} &= \beta_6 dRTA_{ij,t} + \beta_{i,t-(t-1)} Dummy_{i,t-(t-1)} + \\ &\quad \beta_{j,t-(t-1)} Dummy_{j,t-(t-1)} + (\epsilon_{ijt} - \epsilon_{ij,t-1}) \end{aligned} \tag{2}$$

wherein the white noise is the difference between ϵ_{ijt} and $\epsilon_{ij,t-1}$. $Dummy_{i,t-(t-1)}$ represents the lagged MRT for the exporting country i, and $Dummy_{j,t-(t-1)}$ for the importing country j. With the earlier notation of Equation 1, these variables correspond to $\mathrm{dln}\, P_{it}^{1-\sigma}$ and $\mathrm{dln}\, P_{jt}^{1-\sigma}$. $dlnX_{ij,t}$ is the first differenced natural logarithm of the nominal bilateral trade between i and j, obtained from $lnX_{ijt} - lnX_{ij,t-1}$. Similarly, $dRTA_{ij,t}$ is the difference between RTA_{ijt} and $\mathrm{RTA}_{ij,t-1}$. Note that time-invariant bilateral fixed effects cancel out in the case of first differenced panel.

Wooldridge (2002) points out that "*In many cases, truth is likely to lie somewhere in between.*", because the first difference estimator is more efficient than the fixed effects estimate if the error term follows a random walk, while the fixed effects estimator is more efficient when the error term is not serially correlated when the number of periods is greater than two. Consequently, results using panel data with country-and-time and bilateral fixed effects and first differenced panel with country-and-time fixed effects are reported.

2.2. Trade creation and trade diversion

Trade is created if trade between signatories of a common agreement increases while trade is diverted if signatories favor preferential partners over the rest of the world. Trade diversion is generally examined by including more dummies in the specifications. Carrere (2006) considers trade diversion by introducing dummies to capture the changes in imports from the rest of the world and in exports to the rest of the world. To analyze intra-bloc trade (trade creation), a binary variable is equal to one if both countries are involved in a common agreement; while to analyze trade diversion, $RTA_{ijt}^{\exp}$ is equal to one if the exporter belongs to a RTA but the importer belongs to the rest of the world and RTA_{ijt}^{imp} is equal to one if the importer belongs to a RTA but the exporter belongs to the rest of the world. Nevertheless, country-and-time fixed effects capture the changes in total imports and exports of a given country in panel. Thus, trade diversion and trade creation effects cannot be direclty estimated by including dummy variables. Magee (2008) proposes to compare actual and predicted trade within and outside the blocs. Trade creation is computed as the difference between intra and extra-bloc trade, noted IT_{jt} and ET_{jt}, as following:

$$IT_{jt} = \sum_{i \in RTA} (import_{ijt}^{actual} - import_{ijt}^{predicted}) \tag{3}$$

and

$$ET_{jt} = \sum_{i \notin RTA} (import_{ijt}^{actual} - import_{ijt}^{predicted}) \tag{4}$$

More precisely,

$$IT_{jt} = \begin{cases} \sum\limits_{i \in RTA} import_{ijt}^{actual} - \sum\limits_{i \in RTA} import_{ijt}^{predicted} & if \sum\limits_{i \in RTA} import_{ijt}^{actual} \geq \sum\limits_{i \in RTA} import_{ijt}^{predicted} \\ 0 & if \sum\limits_{i \in RTA} import_{ijt}^{actual} < \sum\limits_{i \in RTA} import_{ijt}^{predicted} \end{cases}$$

$$ET_{jt} = \begin{cases} IT_{jt} & if \sum\limits_{i \notin RTA} import_{ijt}^{predicted} - \sum\limits_{i \notin RTA} import_{ijt}^{actual} \geq IT_{jt} \\ \sum\limits_{i \notin RTA} import_{ijt}^{predicted} - \sum\limits_{i \notin RTA} import_{ijt}^{actual} & if\ IT_{jt} > \sum\limits_{i \notin RTA} import_{ijt}^{predicted} - \sum\limits_{i \notin RTA} import_{ijt}^{actual} > 0 \\ 0 & if \sum\limits_{i \notin RTA} import_{ijt}^{predicted} - \sum\limits_{i \notin RTA} import_{ijt}^{actual} \leq 0 \end{cases}$$

2.3. Data

The dependent variable is nominal bilateral trade in total services. I use Eurostat data combined with OECD data on trade in total services for the period 1999-2008. Data are available for 37 exporters with their 165 commercial partners. Due to problems of memory caused by the large number of dummies that I have to create to deal with country-and-time

and bilateral fixed effects, I construct a panel for every two years from the period 1999-2008. I present the results for the panel 1999-2001-2003-2005-2007.

I use information provided by the Regional Trade Agreement database provided by the World Trade Organization (WTO) on the date of entry into force, the signatories and the accessions.[6] The signatories of RTAs considered are displayed in Table 1. The different dummy variables are equal to one if both countries i and j are involved in a given trade agreement at time t; and zero otherwise. Thus, three dummies are generated: EC_{ijt}; $EFTA_{ijt}$ and EEA_{ijt}.

I use Cepii data on distance between capital cities in kilometers, common language and common border as well; and Penn World Tables for GDPs.

3. Results

In Table 2 column (1), the explanatory variables commonly used in gravity estimations perform well in the case of trade in services. Indeed, trade in services depends positively on economic sizes of both countries. Bilateral characteristics such as common border and sharing a common language increase significantly bilateral trade, while distance affects negatively the bilateral trade in services. Concerning RTAs, only European Union and EEA have a large, positive and significant impact on intra-bloc trade. In including time and bilateral fixed effects, the coefficients decrease. In column (3), I account for endogeneity issues by including bilateral and country-and-time fixed effects. Intra-members trade is increased by 35% due to the European Treaty, while EEA enhances trade in services by 44%. Similarly to column (1), the impact of EFTA on trade is not significant. The EFTA signatories that are involved in the European Economic Area are more likely to trade services with European partners than to trade with EFTA partners over the period considered. According to the Wald test in column (4), both EC_{ijt} and EEA_{ijt} coefficients are equal indicating both trade agreements have analogous impacts on bilateral trade in services. One of the two RTAs is not more trade creating than the other.

Using first differenced panel, only the effects of changes over the period considered are captured; while the estimations based on panel data with country-and-time and bilateral fixed effects permit to capture the average impact of a given agreement over the period considered. For example, Belgium and Germany are under European Treaty for the whole period, as both countries are original signatories. Because no change is recorded in this case, the lagged variable $dEC_{ij,t-(t-1)}$, corresponding to $EC_{ijt} - EC_{ij,t-1}$, is 0 for the whole sample. In difference in differences, column (4) shows that for the new entrants in the European Union, the intra-trade is negative indicating that trade creation does not occur between these commercial partners. One explanation consists in the phased-in feature of RTAs. Indeed, including the year of entry into force only may be not sufficient to capture the full economic impact (see Baier et al. (2008)). However, the countries that joined Europe during enlargement waves trade substantially with EEA members: the coefficient $dEEA_{ij,t-(t-1)}$ is largely positive and significant.

[6] See http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx.

Turning to trade diversion issue in Table 3, EEA and European Union induce positive intra-trade while the impact of EFTA on intra-trade in services is negative. According to column (2), EEA is associated with an inclination to export to the rest of the world but also to import from the rest of the world. On average, the impacts of European Treaty on trade in services are contained in trade creation more than trade diversion. Interestingly, EFTA members have a positive propensity to trade with European countries, but to import from the rest of the world as well. Nevertheless, one can observe a trade diversion from the export side as the obtained coefficient for $EFTA_{\exp orter}$ is negative and significant.

Table 4 shows the estimated measurements of trade effects of EFTA, EEA and EU for the year 2005 on the ten countries that entered the European Union in 2004, based on Equations 3 and 4. As a general result, the trade impacts of EEA and European Treaty are not homogenous within a given trade agreement across new entrants. On average, the increase in imports from the countries belonging to the same trade agreement is more important in case of EU compare to EEA. This result confirms the results found in Table 3. The average trade diversion induced by EU is 0% for Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovak Republic. Imports to Malta, Latvia and Lithuania from EU countries increase less compare to other new entrants. Poland seems to have weak gains from both trade agreements. Table 4 highlights the importance of distinguishing across members to analyze the impacts of RTAs on intra-bloc and extra-bloc trade. In addition, I find results in line with Magee (2008) that analyzes the impacts of different RTAs on trade in goods. The overall effects of the three RTAs considered show that trade creation prevails over trade diversion, at least for the year 2005. Although the effects of a given RTA can be null for a given signatory, this is offset by the aggregate effects of this RTA.

4. **Concluding remarks**

As a conclusion, I find that the main RTAs in force in Europe do not have a similar impact on trade in services. Indeed, European Union and European Economic Area are trade creating while European Free Trade Association does not have a significant impact on intra-members trade. Moreover, in examining trade creation and trade diversion more specifically, the results point out the importance to differentiate trading partners as the trade impacts vary significantly across countries.

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Table 1: Regional Trade Agreements considered in the analysis

RTA name	Date of entry into force	Current signatories
European Economic Area	1994	Austria*; Belgium; Bulgaria*; Cyprus*; Czech Republic*; Denmark; Estonia*; Finland*; France; Germany; Greece; Hungary*; Iceland; Ireland; Italy; Latvia*; Liechtenstein; Lithuania*; Luxembourg; Malta*;Netherlands; Norway; Poland*; Portugal; Romania*; Slovak Republic*; Slovenia*; Spain; Sweden*; United Kingdom.
European Union	1995	Austria*; Belgium; Bulgaria*; Cyprus*; Czech Republic*; Denmark; Estonia*; Finland*; France; Germany; Greece; Hungary*; Ireland; Italy; Latvia*; Lithuania*; Luxembourg; Malta*; Netherlands; Poland*; Portugal; Romania*; Slovak Republic*; Slovenia*; Spain; Sweden*; United Kingdom.
European Free Trade Association	2002	Iceland; Liechtenstein; Norway; Switzerland.

* indicates that this country is a current member but not an original signatory.

Table 2: Determinants of trade in services: role played by RTAs

	(1)	(2)	(3)	(4)
GDP_{it} (exporter)	0.851^a(0.01)	1.021^a(0.10)		
GDP_{jt} (importer)	0.886^a(0.01)	1.082^a(0.10)		
$Distance_{ij}$	-0.636^a(0.04)			
$Language_{ij}$	1.720^a(0.09)			
$Border_{ij}$	0.627^a(0.19)			
EC_{ijt}	0.691^a(0.03)	0.368^a(0.04)	0.302^a(0.04)	
EEA_{ijt}	0.650^a(0.11)	0.178 (0.14)	0.368^a(0.10)	
$EFTA_{ijt}$	0.569 (0.36)	-0.158^a(0.02)	-0.048 (0.16)	
$dEC_{ij,t-(t-1)}$				-0.367^b(0.15)
$dEEA_{ij,t-(t-1)}$				1.380^a(0.44)
$dEFTA_{ij,t-(t-1)}$				-0.489 (2.50)
Wald test: $\beta^{EC} = \beta^{EEA}$			0.44	
Overall R^2				0.0024
Within R^2	0.421	0.445	0.123	
No. Observations	9987	9987	9987	7411
Fixed effects:				
Time		Yes		
Bilateral		Yes	Yes	
Country-and-time			Yes	Yes
First difference				Yes

Dependent variable is the log of total bilateral trade in services Value of standard-errors in parentheses; ^{a} significant at 1%; ^{b} significant at 5%; ^{c} significant at 10%. Wald tests : Null hypothesis of equality of coefficients is rejected at 1% (^{a}); 5% (^{b}) and 10% (^{c}). The time, bilateral and country-and-time dummy variables and the constant are not reported for brevity.

Table 3: Trade diversion/trade creation

	(1)	(2)
GDP_{it} (exporter)	0.775^a(0.01)	0.952^a(0.11)
GDP_{jt} (importer)	0.816^a(0.01)	1.019^a(0.11)
$Distance_{ij}$	-0.599^a(0.03)	
$Language_{ij}$	1.724^a(0.09)	
$Border_{ij}$	0.774^a(0.18)	
EC_{intra}	0.935^a(0.04)	0.489^a(0.08)
$EC_{\exp orter}$	0.103^b(0.04)	0.057 (0.07)
$EC_{importer}$	0.150^a(0.05)	0.032 (0.08)
EEA_{intra}	0.544^a(0.11)	0.228 (0.15)
$EEA_{\exp orter}$	0.239^a(0.02)	0.078^a(0.02)
$EEA_{importer}$	0.194^a(0.04)	0.106^b(0.05)
$EFTA_{intra}$	0.751^c(0.39)	-0.080^a(0.03)
$EFTA_{\exp orter}$	0.077 (0.08)	-0.236^b(0.09)
$EFTA_{importer}$	0.503^a(0.06)	0.142^c(0.08)
Within R^2	0.424	0.449
No. Observations	9987	9987
Fixed effects:		
Time		Yes
Bilateral		Yes

Dependent variable is the log of total bilateral trade in services Value of standard-errors in parentheses; ^{a} significant at 1%; ^{b} significant at 5%; ^{c} significant at 10%. The time, bilateral and country-and-time dummy variables and the constant are not reported for brevity.

Table 4: Trade diversion/trade creation measurements for the new entrants (EC25) in 2005

Importing countries	Partner	Intra-bloc trade (in million)	Extra-bloc trade (in million)
European Union			
Cyprus	EU	3090	1310
Czech Republic	EU	3500	-3210
Estonia	EU	1120	-82
Hungary	EU	4390	-629
Malta	EU	647	62
Latvia	EU	769	-164
Lithuania	EU	657	-558
Poland	EU	-60	-9980
Slovenia	EU	1420	371
Slovak Republic	EU	2340	-1260
European Economic Area			
Cyprus	EEA	44	4360
Czech Republic	EEA	-30	326
Estonia	EEA	27	1020
Hungary	EEA	-22	3780
Malta	EEA	17	693
Latvia	EEA	15	590
Lithuania	EEA	7	92
Poland	EEA	-87	-9950
Slovenia	EEA	1	1790
Slovak Republic	EEA	-7	1080
European Economic Area (all members)	*total*	3020	34700
European Union (all members)	*total*	427000	-6470
European Free Trade Association	*total*	681	2090

Based on estimation column (2) in Table 2.