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Do environmental provisions in regional trade agreements affect trade in services?

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Abstract

Liberalization of services trade through regional trade agreements (RTAs) represent a significant environmental concern where more and more RTAs include environmental provisions. Do environmental provisions in RTAs improve or undermine trade between member countries? I investigate the unexplored relationship between the number of environmental provisions concluded by trading partners and RTAs on services trade. I focus on three main European trade agreements concerning services: the European Economic Area (1994), the European Union (1995) and the European Free Trade Association (2002). A theory-based and robust gravity model specification including lagged terms is used with sectoral disaggregation for services trade on the 1981-2010 period. The results underline the statistically significant effect of environmental provisions in RTAs covering services on trade with a higher magnitude for deeper environmental provisions. Different trade impacts also appear between these European RTAs across sector-specific services trade and according to the depth of the environmental provisions.

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1. Introduction

The rapid growth of trade in services since the last decades has been sustained by the increasing trend of regional trade agreements (RTAs) covering services. Actually, 151 trade agreements in services exist under the GATS (Article V) against more than 300 agreements concerning goods. The complexity of trade barriers in services due to the importance of non-tariff barriers such as domestic regulations has led to a lack of attention about the environmental dimension in this type of trade. For instance, environmental provisions in trade policy are a way of preserving efficiency and competitiveness but also making cleaner practices more accessible and widespread with technology transfers. This aspect has been sometimes overshadowed despite the presence of possible spillover effects of environmental commitments, particularly in RTAs. This paper tries to connect two strands of the literature about services trade and environment through trade liberalization of services.

First, the relationships between RTAs and trade in services. Roberts (2000) shows that liberalization of service sectors produce important welfare gains due to higher trade barriers relative to goods. Kimura and Lee (2006), Blyde and Sinyavskaya (2007), Park and Park (2011) find a complementarity between trade in goods and services because of spillover effects of RTAs through more transportation services, notably for the two former papers. Guillin (2012) examines the effects of European RTAs covering services. She finds a positive influence of these RTAs on trade in services for European Union (EU) and European Economic Area (EEA) without take into account the sector level. van der Marel and Shepherd (2013) underline the importance of the heterogeneity of services by employing sector-specific analysis. They find that RTAs have the greatest positive impact on finance and business services whereas Lee and Cho (2017) find significant results for transport service trade. Guillin (2013) investigates the effects of depth trade agreements in services. She shows that more sectors are incorporated in RTAs, higher the impact on trade in services will be. Miroudot and Shepherd (2014) find that RTAs in services lead to slightly decrease trading costs relative to trade agreements in goods.

Second, the linkages between trade liberalization and environment. Grossman and Krueger (1991) are the first to explore the relations between trade and environment. They establish three main channels about the environmental impact of trade liberalization: scale effect (economic expansion lead to increase in pollution), technique effect (increased trade lead to more technology transfers), composition effect (comparative advantages in pollution-intensive goods). Harris et *al.* (2002) show

that stricter environmental regulations on trade in goods are insignificant, that is say that environmental costs do not have any influence. Baghdadi et *al.* (2013) find that the emissions are lower for trading partners having signed RTAs with environmental provisions than for the other countries. De Santis (2012) finds positive effect of environmental regulations on trade through multilateral environmental agreements (MEAs) for EU bilateral exports flows. Saucier and Rana (2017) investigates the impact of WTO^{+} commitments such as environmental standards in RTAs on trade. They highlight that environmental provisions significantly enhance trade flows in goods. What about for trade in services?

Less attention has been paid by most of the papers to the effects of environmental provisions within RTAs covering services. Moreover, few studies take into account the sector-specific dimension of trade in services along with the heterogeneity of trade agreements (Behar and Cirera-i-Crivillé, 2013 ; Gil-Pareja et *al.*, 2014 ; Kohl and Trojanowska, 2015). Therefore, I examine the possible effects of environmental provisions in RTAs on trade in services at aggregated and disaggregated level. I fill the gap by using the recent Trade and Environment Database (TREND) about environmental provisions for three RTAs covering services: the European Economic Area (1994), the European Union (1995) and the European Free Trade Association (2002). I also take into account the depth of the environmental provisions included in the RTAs in order to disentangle both effects. I employ a theory-based and robust gravity model for the period 1981-2010 with Poisson Pseudo-Maximum Likelihood (PPML)-fixed effects estimator with lagged terms.

The paper is structured as follows. Section 2 addresses the main motivations. Section 3 presents the empirical approach used. Section 4 analyzes the results and Section 5 concludes.

2. Motivations

Trade agreements on services extend more and more their scope to cover environmental protection and sustainable development. Indeed, services have the potential to contribute to achieve environmental objectives. The environmental provisions implemented through trade agreements (Table 1) include regulatory implications affecting services trade. For instance, market access rules could limit the number of services suppliers in a country or region based on environmental concerns. The most-favoured-nation treatment prevents countries from discriminating against foreign trading partners and this might have important implications for sustainable development concerns on services. Domestic regulation is the main trade barriers in services where the establishment of tests might undermine the effectiveness of the

precautionary principle in environmental law.

As suggested by Baier et *al.* (2008), Behar and Cirera-i-Crivillé (2013), Gil-Pareja et *al.* (2014), Kohl and Trojanowska (2015), the effects of trade agreements on trade in goods differ across RTAs due to different forms and commitments. This heterogeneity could affect international trade in services differently. Because European countries represent less than the half[1] of the world services exports and most European countries have deeper environmental policy relative to the other countries, I decided to focus on the main European trade agreements on services (Table 2).

Regarding the choice of sectors investigated in this paper, I use four services sectors (Table 3) for which environmental provisions could play a significant role from a trade perspective. Environmental regulation can significantly stimulate demand for "green services" in finance sector by promoting sustainable development through lending, investment and social responsibility. Insurance sector also provides services on the basis of environmental characteristics tailored for clean technologies, climate damages and emissions reducing activities, particularly in the European context[2]. Travel and transportation services have significant environmental implications which are regulated by environmental provisions (relative to environmental protection) due to their energy consumption (water, raw material) and the use of fossil fuels generating waste (ecosystem alteration, impact on wildlife).

The depth of environmental provisions vary across RTAs, it would be important to disentangle both effects to account the possible dissimilar impact of the different types of environmental provisions. Based on the annual OECD updates on RTAs and the environment[3] and the TREND project (Table 1), depth can be defined as the extent to which the legals texts bind the parties to implement their environmental provisions. More precisely, these provisions must provide a binding commitment through enforceable actions. According to this definition, I include the following provisions as deeper environmental provisions: environmental protection (obligations on the sustainable use and conservation of natural resources), implementation (the use of binding cooperation), enforcement (improve domestic environmental measures), level playing field (obligations to harmonize and not lower environmental standards) and multilateral environmental agreements (reinforce and expand international environmental commitments).

[1]The EFTA countries and the EU represent almost 48.5% of the world services exports between 2000-2013.

[2]Due to the European CO_2 Emissions Trading Scheme and the particular environmental awareness of the public opinion.

[3]http://www.oecd.org/env/environment-and-regional-trade-agreements.htm

3. Empirical approach

3.1. A structural gravity model

I will follow the usual practice by estimating expected bilateral trade flows using specifications based on the gravity model. I perform then a theory-consistent structural gravity model by taking into account multilateral resistance terms (Anderson and van Wincoop, 2003 ; Head and Mayer, 2014). Equations 1-2 are based on Anderson and van Wincoop (2003) who refined the work of Anderson (1979) by delivering the following structural gravity system of trade:

$$X_{ijt} = \frac{Y_{it}}{\Omega_{it}} \frac{X_{jt}}{\Phi_{jt}} \phi_{ijt}, \tag{1}$$

where $Y_i = \sum_j X_{ij}$ is the value of total production, $X_j = \sum_i X_{ij}$ is the value of expenditure, and Ω_{it} and Φ_{jt} the multilateral resistance terms defined as

$$\Phi_{jt} = \sum_l \frac{\phi_{jtl} Y_l}{\Omega_{lt}} \qquad \text{and} \qquad \Omega_{it} = \sum_l \frac{\phi_{lit} X_l}{\Phi_{lt}}. \tag{2}$$

Here, bilateral trade X_{ijt} is a function of supply, demand, and bilateral frictions. The supplier term in the structural gravity equation $S_{it} = \frac{Y_{it}}{\Omega_{it}}$ weights total production Y_{it} by the exporter's multilateral resistance Ω_{it}, and the demand term $M_{jt} = \frac{X_{jt}}{\Phi_{jt}}$ weights total expenditure X_j by the importer's multilateral resistance Φ_{jt}. More precisely, Ω_{it} and Φ_{jt} are structural terms developed by Anderson and van Wincoop (2003) as the inward and the outward multilateral resistances, respectively. One of the important application of the gravity model is to estimate the effect of bilateral trade determinants. Most trade models express bilateral accessibility through $0 < \phi_{ij} = \tau_{ij}^{\theta} < 1$, in which θ is the elasticity of trade flows to trade costs, and trade costs τ_{ij} contain the bilateral elements[4] defining the level of frictions to trade between the two partners.

I employ PPML with fixed effects developed by Santos Silva and Tenreyro (2006) and Fally (2015). The log-linear form is unable to handle zero trade flows because the logarithm of zero is undefined. In this respect, PPML is the empirical method

[4]Among which geographical distance, common language, shared border, currency, and common history.

most often employed because of its robustness[5] compared with the other estimators which have large biases (Santos Silva and Tenreyro, 2011). Indeed, according to their Monte Carlo simulation, they show that the PPML-estimator is well-behaved and performs well when the data can exhibit over-dispersion and also have excess zeros. The estimation equation is

$$X_{ijt} = exp(\beta_1 RTAs_{ijt} + \beta_2 EP_{ijt} + \beta_3 EP_{ijt} \times RTAs_{ijt} + F_{it} + F_{jt} + F_{ij})\eta_{ijt} \quad (3)$$

where X_{ijt} is value of trade in services between country i and country j at year t. Following Baldwin and Taglioni (2006), Baier and Bergstrand (2007), Head and Mayer (2014), I include three sets of fixed effects commonly practiced in the economic literature to have robust[6] results. Unilateral time-variant (GDP, population, GDP per capita) and bilateral time-invariant (distance, common language, contiguity) determinants of trade are absorbed in specifications using these fixed effects due to the collinearity issue between them. Indeed, exporter-time and importer-time fixed effects (F_{it} and F_{jt}) take into account changes in multilateral resistance over time (Equation 2). This approach captures other trade costs across other export and import markets through relative price effects. The exclusion of these terms leads to an omission bias with more unobserved trade barriers. Country-pair fixed effects (F_{ij}) correct the omitted variable bias because the unobserved variables could be correlated with the bilateral characteristics of the dyadic variables.

In order to better assess the impact of environmental provisions (EP) in RTAs on trade in services, I also include lagged terms (5 and 8 years after the entry into force) for each variables to capture the effects on trade over time, i.e. the phasing-in process (Baier and Bergstrand, 2007). EP_{ijt} is the total number of environmental provisions (in log) in RTAs between i and j at the year t. This variable captures the effect of signing RTAs with environmental provisions in the sample. The variable $EP_{ijt} \times RTAs_{ijt}$ denotes the product of the total number of environmental provisions (EP) within RTAs in force concluded by member countries at year t with specific RTAs membership (EFTA, EEA, EU) dummies[7]. This variable means that when two trading partners have a RTA in common (EFTA, EEA, EU), an additional environmental provision affects intra-trade flows. More precisely, this variable tests if

[5] "... when there is evidence of heteroskedasticity, the Poisson pseudo-maximum-likelihood estimator should be used as a substitute for the standard log linear model (Santos Silva and Tenreyro, 2006).

[6] I also use a Huber-White estimator to avoid any heteroscedasticity issue and thus to have robust standard errors clustered by country-pair.

[7] $RTAs_{ijt}$ equals 1 when country i and country j belong to the same trade agreement since year t, 0 otherwise.

the exports of these European countries are more or less sensitive to environmental provisions than other countries. I use the same approach to investigate the depth[8] of environmental provisions as defined in the Section 2. A positive effect can appear through the Porter (1991) effect whether strict environmental provisions in RTAs encourage efficency and stimulate innovation with an improvement of competitiveness improving trade creation effect. A negative effect is present whether environmental provisions lead to increase trade barriers in the service sector such as discriminatory regulations, quotas, licensing and certification requirements undermining trade creation effect.

3.2. Data

The dependent variable comes from François and Pindyuk (2013) with aggregated and disaggregated data. The dataset covers bilateral services flows at the worldwide level coming from the OECD, Eurostat, UN and IMF using mirroring techniques to have the most complete data for the period 1981-2010 (Table 4). I use the total value of services trade in million dollars but also for five specific-sectors, namely finance, insurance, travel and transportation. The model includes data from the WTO[9] about RTAs where I focus on four main trade agreements covering services. The number of environmental provisions within RTAs has been obtained from TREND[10] developed by the German Development Institute/ Deutsches Institut fr Entwicklungspolitik (DIE) and the Canada Research Chair in International Political Economy at Laval University. This database has almost 300 environmental provisions concerning trade agreements in goods but also in services based on WTO data (Berger et *al.*, 2017).

4. Results

4.1. Environmental provisions effects on trade in services

Table 5 provides results from PPML-fixed effects with 5-years lagged terms. The column (1) shows a significant effect of environmental provisions within RTAs on total trade in services (20.9%)[11]. A dissimilar impact appears between the European trade agreements, with a positive relationship between the EEA and an additional

[8]For instance, $EP(Depth)_{ijt}$ is the total number of deeper environmental provisions (in log) in RTAs between i and j at the year t.

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

[10]https://klimalog.die-gdi.de/trend/index.html

[11]The impact of the variable of interest is interpreted as follows: (exp(coefficient)-1)×100.

trade value attributed to environmental provisions (30.9%) but a negative effect in the case of the EFTA (-10.4%). With 8-years lagged terms (Table 6, column 1), the results confirm the improvement of trade creation effect on trade in services only for the EEA (13.8% on average), eight years after its entry into force, even if the magnitude of coefficients decrease.

At the disaggregated level (columns 2-5) in the Table 5, the results show different effects of environmental provisions within RTAs across sectors in the sample. The presence of environmental provisions in RTA enhances trade creation between EU countries on finance (44.7%) and insurance (59.9%) services. I suppose that the implementation of environmental standards in RTAs lead to promote "green finance" services in renewable energy, resource efficiency and waste management for instance. Environmental provisions in the EEA improve intra-bloc exports on finance (63.2%) and transportation services (41.9%). For the EFTA, I observe that environmental provisions lead to decrease trade on insurance (-39.9%) and transportation (-13.9%) services, probably due to binding commitments. With 8-years lagged terms (Table 6, columns 2-5), an additionnal environmental provisions in the EFTA has not significant effect on all the studied sectors. The results are confirmed for the EU on finance (40.5%) and insurance (32.3%) services with a downward trend. I find a statistically significant effect of environmental provisions only for the EEA on travel services (19.7%) because of a sustainable tourism strategy adopted in these countries.

4.2. Deeper environmental provisions effects on trade in services

To test the hypothesis that all the environmental provisions have not the same impact on trade in services, I decided to focus on deeper environmental provisions (environmental protection, level playing field, implementation, enforcement and multilateral environmental agreement). Based on the Table 7 (column 1), deeper environmental provisions have statistically significant effect in the sample (29.7%) with higher magnitude of the coefficient relative to the previous results. The findings underline a heterogeneous effect of deeper environmental provisions across RTAs with a trade-promoting effect for the EEA (27.1%) and the EU (5.1%) against a trade-deteriorating effect for the EFTA (-25.9%) on total services. With 8-years lagged terms (Table 8, column 1), an additional environmental provisions improve the trade creation effect only for the EEA (16.2%) where the other coefficients are insignificant.

The results at the sectoral level from the columns 2-5 (Table 7) confirm some findings. Deeper environmental provisions in RTAs encourage trade creation effect for the EU on finance and insurance services (53.7% and 66.5%) and for the EEA

on finance and transportation services (66.5% and 40.5%), five years after their entry into force. A reverse effect appears for the EFTA on insurance (-58.1%), travel (-32.3%) and transportation (-29.5%) services. In this specification, I observe a downward trend of deeper environmental commitments with more insignificant coefficients (Table 8, columns 2-5). For instance, deeper environmental provisions lead to increase intra-bloc exports on travel services for the EEA (20.9%). The same effect is present on finance, insurance and travel services for the EU (44.7%, 36.3%, 4.1%, respectively).

5. Conclusion

The aim of this paper is to know whether environmental provisions in RTAs are beneficial or detrimental to trade in services. I find evidence that environmental provisions in RTAs have dissimilar significant effects across agreements and sectors. These preliminary findings also underline the importance to take into account the phasing-in process of RTAs on trade in the estimation. First, without investigate individual RTAs, environmental provisions in RTAs have globally a positive effect on trade in services in the sample with higher magnitude for deeper environmental provisions. Second, the presence of environmental provisions leads to improve trade creation effect for the EU and the EEA member countries on finance, insurance and travel services with a downward trend over time. Third, the results highlight the relevance to disentangle the environmental provisions because deeeper environmental provisions have greater effects on trade in services across sectors than the total number of environmental provisions, particularly on finance and insurance services.

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Table 1: Categories of environmental provisions included in RTAs

Environmental provisions	**Description**
Environmental protection **EEA: 20, EU: 21, EFTA: 10**	General principles related to environmental protection (sustainability and conservation of natural resources)
Regulatory space **EEA: 4, EU: 1, EFTA: 8**	Exclusions of specific issue areas as well as the sovereign right to adopt environmental measures
Level playing field **EEA: 2, EU: 1, EFTA: 3**	Obligations to harmonize and not lower environmental standards
Coherence **EEA: 5, EU: 5, EFTA: 2**	Coherence between environmental regulation and other policy areas
Development **EEA: 2, EU: 2, EFTA: 1**	Provisions acknowledging different development levels of the Parties and establishing means to support capacity building, technology transfers, disaster relief
Multilateral environmental agreements **EEA: 3, EU: 1, EFTA: 2**	Oblige the parties to ratify or implement a certain MEA
Implementation **EEA: 6, EU: 3, EFTA: 4**	How the agreement will be implemented through cooperation mechanisms
Enforcement **EEA: 1, EU: 0, EFTA: 0**	Regulate the enforcement of environmental regulations as well as domestic environmental measures

Source: TREND. Note: number of provisions for each category for European RTAs in bold.

Table 2: Regional trade agreements studied

RTAs	*Member countries*	*Total number of EP*
European Economic Area (1994)	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 Iceland, Liechtenstein, Norway	43 (32)
EU (1995)	EU countries	34 (26)
European Free Trade Association (2002)	Iceland, Liechtenstein Norway, Switzerland	30 (19)

Sources: WTO, TREND. Notes: EP = environmental provisions ; deeper environmental provisions in parentheses (column "Total number of EP").

Table 3: Service sector classification by BOP categories

Finance
Insurance
Life insurance and pension funding
Freigh insurance
Other direct insurance
Reinsurance
Auxilary services
Travel
Business travel (seasonal and border workers)
Personal travel (health, education, others)
Transportation
Sea transport
Air transport
Space transport
Rail transport
Inland waterway transport
Pippeline transport and electricity transmission
Other supporting and auxiliary transport services
Other transport

Source: IMF.

Table 4: Descriptive statistics

	Observation	Mean	Std. Dev.	Min	Max
EFTA	136437	0.0006	0.025	0	1
EEA	136437	0.062	0.242	0	1
EU	136437	0.051	0.220	0	1
Total services	136437	231.1	1523.7	0	62765.48
Environmental provisions (EP)	136437	0.225	0.868	0	3.761
*EP*EFTA*	136437	0.002	0.089	0	3.761
*EP*EEA*	136437	0.223	0.865	0	3.761
*EP*EU*	136437	0.180	0.776	0	3.526
Finance services	79841	14.604	169.232	0	12169.84
Environmental provisions (EP)	79841	0.378	1.099	0	3.761
*EP*EFTA*	79841	0.003	0.116	0	3.761
*EP*EEA*	79841	0.375	1.095	0	3.761
*EP*EU*	79841	0.301	0.986	0	3.526
Insurance services	79121	9.438	174.729	0	14331
Environmental provisions (EP)	79121	0.385	1.105	0	3.761
*EP*EFTA*	79121	0.003	0.117	0	3.761
*EP*EEA*	79121	0.380	1.101	0	3.761
*EP*EU*	79121	0.305	0.991	0	3.526
Travel services	81257	77.806	493.712	0	17353.68
Environmental provisions (EP)	81257	0.378	1.099	0	3.761
*EP*EFTA*	81257	0.003	0.115	0	3.761
*EP*EEA*	81257	0.375	1.095	0	3.761
*EP*EU*	81257	0.302	0.988	0	3.526
Transportations services	84120	68.182	358.25	0	9309.722
Environmental provisions (EP)	84120	0.366	1.083	0	3.761
*EP*EFTA*	84120	0.003	0.113	0	3.761
*EP*EEA*	84120	0.363	1.079	0	3.761
*EP*EU*	84120	0.292	0.972	0	3.526

Table 5: Results for environmental provisions in RTAs (5-years lagged)

	Total (1)	Finance (2)	Insurance (3)	Travel (4)	Transportation (5)
EFTA	-0.38^a	0.31	-1.73^a	-0.30	-0.53^a
	(0.12)	(0.19)	(0.40)	(0.24)	(0.13)
EEA	1.04^a	1.84^a	-0.03	0.29	1.33^a
	(0.16)	(0.47)	(0.48)	(0.27)	(0.20)
EU	0.10	1.31^a	1.67^a	0.17	-0.02
	(0.07)	(0.30)	(0.31)	(0.11)	(0.12)
Environmental_Provisions	0.19^a	0.14^b	0.42^a	0.52^a	0.21^a
	(0.03)	(0.21)	(0.16)	(0.05)	(0.03)
*Environmental_Provisions*EFTA*	-0.11^a	0.09	-0.51^a	-0.09	-0.15^a
	(0.03)	(0.05)	(0.11)	(0.07)	(0.04)
*Environmental_Provisions*EEA*	0.27^a	0.49^a	-0.01	0.07	0.35^a
	(0.04)	(0.12)	(0.12)	(0.07)	(0.05)
*Environmental_Provisions*EU*	0.03	0.37^a	0.47^a	0.05	-0.007
	(0.01)	(0.08)	(0.08)	(0.03)	(0.03)
Observations	58252	29387	26594	41604	41877
R^2	0.97	0.95	0.97	0.95	0.95

Robust standard errors clustered by country-pair in parentheses with ^{a}, ^{b} and ^{c} respectively significance at the 1%, 5% and 10% levels. PPML estimations including exporter-time, importer-time and country-pair fixed effects. 5-years lagged mean 5 years after the entry into force of RTAs (all independent variables).

Table 6: Results for environmental provisions in RTAs (8-years lagged)

	Total (1)	Finance (2)	Insurance (3)	Travel (4)	Transportation (5)
EFTA	-1.07	0.009	-0.46	-0.01	-0.96
	(0.81)	(0.27)	(0.87)	(0.57)	(0.84)
EEA	0.52[a]	0.60	0.43	0.68[a]	0.22
	(0.13)	(0.38)	(0.41)	(0.17)	(0.17)
EU	-0.03	1.20[a]	1.01[a]	0.11	-0.04
	(0.05)	(0.20)	(0.29)	(0.07)	(0.08)
Environmental_Provisions	0.10[a]	0.23[a]	0.26[a]	0.13[a]	0.16[a]
	(0.02)	(0.20)	(0.05)	(0.03)	(0.03)
*Environmental_Provisions*EFTA*	-0.31	0.002	-0.13	-0.05	-0.28
	(0.23)	(0.08)	(0.25)	(0.16)	(0.24)
*Environmental_Provisions*EEA*	0.13[a]	0.16	0.11	0.18[a]	0.05
	(0.03)	(0.10)	(0.11)	(0.04)	(0.04)
*Environmental_Provisions*EU*	-0.01	0.34[a]	0.28[a]	0.03	-0.01
	(0.01)	(0.05)	(0.08)	(0.02)	(0.02)
Observations	50497	28176	25488	39199	39377
R^2	0.96	0.95	0.95	0.96	0.94

Robust standard errors clustered by country-pair in parentheses with [a], [b] and [c] respectively significance at the 1%, 5% and 10% levels. PPML estimations including exporter-time, importer-time and country-pair fixed effects. 8-years lagged mean 8 years after the entry into force of RTAs (all independent variables).

Table 7: Results for deeper environmental provisions in RTAs (5-years lagged)

	Total (1)	Finance (2)	Insurance (3)	Travel (4)	Transportation (5)
EFTA	-0.92^{a}	-0.009	-2.70^{a}	-1.28^{a}	-1.08^{a}
	(0.17)	(0.25)	(0.53)	(0.34)	(0.18)
EEA	0.85^{a}	1.79^{a}	-0.22	0.16	1.20^{a}
	(0.18)	(0.47)	(0.49)	(0.29)	(0.21)
EU	0.11	1.32^{a}	1.68^{a}	0.17	-0.02
	(0.07)	(0.30)	(0.31)	(0.11)	(0.12)
Environmental_Provisions(Depth)	0.26^{a}	0.16^{b}	0.50^{a}	0.59^{a}	0.26^{a}
	(0.04)	(0.06)	(0.07)	(0.06)	(0.04)
*Environmental_Provisions(Depth)*EFTA*	-0.30^{a}	-0.003	-0.87^{a}	-0.39^{a}	-0.35^{a}
	(0.05)	(0.08)	(0.20)	(0.12)	(0.06)
*Environmental_Provisions(Depth)*EEA*	0.24^{a}	0.51^{a}	-0.06	0.04	0.34^{a}
	(0.05)	(0.13)	(0.14)	(0.08)	(0.06)
*Environmental_Provisions(Depth)*EU*	0.05^{b}	0.43^{a}	0.51^{a}	0.05	0.01
	(0.02)	(0.08)	(0.09)	(0.03)	(0.03)
Observations	58252	29387	26594	41604	41877
R^2	0.97	0.95	0.97	0.96	0.95

Robust standard errors clustered by country-pair in parentheses with ^{a}, ^{b} and ^{c} respectively significance at the 1%, 5% and 10% levels. PPML estimations including exporter-time, importer-time and country-pair fixed effects. 5-years lagged mean 5 years after the entry into force of RTAs (all independent variables).

Table 8: Results for deeper environmental provisions in RTAs (8-years lagged)

	Total (1)	Finance (2)	Insurance (3)	Travel (4)	Transportation (5)
EFTA	-1.29	-0.58^{c}	-0.91	-0.21	-1.31
	(0.83)	(0.33)	(0.98)	(0.62)	(0.87)
EEA	0.52^{a}	0.54	0.42	0.69^{a}	0.21
	(0.14)	(0.38)	(0.41)	(0.17)	(0.18)
EU	-0.03	1.20^{a}	1.01^{a}	0.11	-0.04
	(0.05)	(0.20)	(0.29)	(0.07)	(0.08)
Environmental_Provisions(Depth)	0.11^{a}	0.26^{a}	0.28^{a}	0.14^{a}	0.18^{a}
	(0.03)	(0.06)	(0.06)	(0.03)	(0.04)
*Environmental_Provisions(Depth)*EFTA*	-0.39	-0.19^{c}	-0.25	-0.04	-0.39
	(0.28)	(0.11)	(0.32)	(0.19)	(0.29)
*Environmental_Provisions(Depth)*EEA*	0.15^{a}	0.14	0.12	0.19^{a}	0.06
	(0.04)	(0.10)	(0.11)	(0.05)	(0.05)
*Environmental_Provisions(Depth)*EU*	-0.001	0.37^{a}	0.31^{a}	0.04^{b}	-0.01
	(0.01)	(0.06)	(0.08)	(0.02)	(0.02)
Observations	50497	28176	25488	39199	39377
R^2	0.96	0.95	0.95	0.96	0.94

Robust standard errors clustered by country-pair in parentheses with ^{a}, ^{b} and ^{c} respectively significance at the 1%, 5% and 10% levels. PPML estimations including exporter-time, importer-time and country-pair fixed effects. 8-years lagged mean 8 years after the entry into force of RTAs (all independent variables).