Does the Number of RTAs Matter?

Empirical Analysis on the Spaghetti Bowl Phenomenon

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Abstract

This is the first study attempting to empirically measure the trade impacts of proliferation of RTAs, that is, the "spaghetti bowl" phenomenon. In this paper, we particularly focus our attention to the costs of having multiple RTAs faced by exporters. After reviewing the definition of the "spaghetti bowl" phenomenon, we investigate the relationship between the number of RTAs concluded by a country and the additional export values attributed to an RTA. Our empirical results show a negative relationship between them, indicating the existence of the spaghetti bowl phenomenon around the world. We also find some notable differences in the seriousness of the spaghetti bowl phenomenon between materials and downstream manufactured products.

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1 Introduction

There is a rising concern among economists, policy makers, and industries that the recent proliferation of regional trade agreements (RTAs) would create a so-called "spaghetti bowl" phenomenon, where crisscrossing rules of origin (ROOs) impose higher transaction costs to industries and distort trade and investment flows. This concern is expected to grow further in the future considering the current accelerating pace of RTAs negotiations around the world as well as the setback of multilateral trade negotiation in the WTO regime.

The purpose of this paper is to empirically examine the existence of the spaghetti bowl phenomenon. Despite of the rising concern, to our best knowledge and to the extent of information available to us, there have been no serious academic studies attempting to quantify the trade impact of "proliferation of RTAs" *as such*.[1] Moreover, the concepts of the spaghetti bowl phenomenon sometimes varied depending on the authors. The spaghetti bowl phenomenon was first pointed out by Bhagwati (1995) and further clarified by Bhagwati *et al.* (1998) as follows:

> *The result is what Bhagwati (1995) has called the "spaghetti bowl" phenomenon of numerous and crisscrossing PTAs and innumerable applicable tariff rates depending on arbitrarily-determined and often a multiplicity of sources of origin. In short, the systemic effect is to generate a world of preferences, with all its-well-known consequences, which increases transaction costs and facilitates protectionism.*

In this paper, we particularly focus our attention to the costs of having

[1]The literature on the theoretical aspects of rules of origin includes, among others, Krueger (1993), Krishna and Krueger (1995), Falvey and Reed (1998), Rosellón (2000), Rodriguez (2001), Ju and Krishna (2002), and Ju and Krishna (2005). Empirical studies on rules of origin include, for example, Estevadeordal (2000), Augier, Gasiorek, *et al.* (2004), Augier, Gasiorek, *et al.* (2005), Estevadeordal and Suominen (2005), and Carreère and de Melo (2006). However, none of these studies attempted to quantify the impacts of the spaghetti bowl phenomenon on trade.

a large number of RTAs, faced by exporters. More precisely, we define the core problem caused by the spaghetti bowl phenomenon as "the compliance costs for ROOs faced by exporters in a country rise as the number of RTAs concluded by the country increases." If the compliance costs increase as the number of RTAs increases, firms are more likely to choose MFN (Most Favoured Nation) tariffs instead of RTAs' preferential tariffs when exporting their products to RTA partner country. This inevitably brings about a decline in the utilization rate of RTA preferential tariffs. In short, if the spaghetti bowl phenomenon exists, additional export values attributed to an RTA conclusion decrease as the number of RTAs concluded by the exporting country increases.

We test whether this problem globally exists by estimating several gravity equations. Our results show a negative relationship between the number of RTAs concluded by a country and its additional export values attributed to an RTA conclusion, indicating the existence of the spaghetti bowl phenomenon around the world. We at the same time find some notable differences in the seriousness of the spaghetti bowl phenomenon between materials and downstream manufactured products.

The remainder of the paper is organized as follows: section 2 presents our testable hypotheses and the empirical methodology to examine them. Empirical results are reported in Section 3. A short conclusion follows in Section 4.

2 Empirical Issues

In this section, we first develop two testable hypotheses and second outline our empirical methodology for testing them. Third, data issues are reported.

2.1 Testable Hypotheses

This subsection presents two testable hypotheses to be examined in the following section.

Firms can either choose an RTA preferential tariff rate or an MFN (Most Favoured Nation) tariff rate under the WTO regime[2] in exporting their products to RTA partner country. To enjoy the RTA preferential tariffs, the firm must pay compliance costs for satisfying certain requirements under the ROO stipulated in a RTA. The costs include managerial costs for redesigning their production networks, transaction costs for searching new vendors of intermediate goods, physical costs for setting up a new facility if necessary, as well as documentation costs for obtaining a "certificate of origin."

In this paper, we set the core problem caused by the spaghetti bowl phenomenon as follows: the compliance costs for ROOs faced by exporters in the country rise as the number of RTAs concluded by the country increases. To put it another way, this implies that satisfying all the ROOs *simultaneously* is more difficult and costly when the number of RTAs is large, due to the complexity and the constraints imposed by multiple ROOs. By defining the spaghetti bowl phenomenon as described above, we obtain the following testable hypothesis.

Testable Hypothesis 1. *If the spaghetti bowl phenomenon exists, additional export values attributed to an RTA conclusion decrease as the number of RTAs concluded by the exporting country increases.*

If the spaghetti bowl phenomenon does exists, increase in RTA number

[2]In practice, firms often have a number of ways to evade or reduce tariffs in international trade. For example, firms in developing countries can sometimes use the Generalized System of Preferences (GSP) tariff rates instead of MFN tariff. Using a duty drawback system of importing countries, i.e., tariff exemption for imported intermediate goods to produce exported products, is another frequently used method to avoid tariffs.

of a country raises the compliance costs for ROOs and therefore firms are more likely to choose MFN tariffs instead of RTAs' preferential tariffs. As a result, the number of firms using RTA tariff rate (or the utilization rate decreases), and thus additional export values of the country attributed to an RTA conclusion diminish. On the other hand, in the absence of the spaghetti bowl phenomenon, the number of RTA does not affect the additional export values.

Furthermore, the compliance costs for ROOs, particularly costs for redesigning their production networks, could be lower in upstream industries such as raw material industries than downstream industries whose products consist of various intermediate goods and production processes. In an extreme case, a firm in upstream industries does not face much additional compliance costs for ROOs if its products are extracted or obtained from the natural resources in its home country. This argument results in the second hypothesis.

Testable Hypothesis 2. *The spaghetti bowl phenomenon is less likely to occur in international trade in material sectors.*

2.2 Empirical Methodology

As for the test of the first hypothesis, our goal is to examine the relationship between the number of RTA in an exporting country and additional export values realized by the conclusions of RTAs. To this end, we need to know the additional export values attributed to the RTAs. The easiest and the most conventional way to measure the additional export values would be to examine a coefficient for RTA dummy, which is a binary variable taking unity if trading partners conclude an RTA and zero otherwise, in a gravity equation.

The benchmark gravity equation is shown by:

$$\ln T_{ij} = \beta_0 + \beta_1 \ln GDP_i + \beta_2 \ln GDP_j + \beta_3 \ln Distance_{ij} + \beta_4 RTA_{ij} + \varepsilon_{ij}.$$

T_{ij} represents export values of country i to country j. GDP_i and GDP_j denote the gross domestic product in country i and j. $Distance_{ij}$ is geographical distance between countries i and j. ε_{ij} is a disturbance term. The additional export value is captured by a coefficient for RTA dummy, β_4. Gravity equations can be supported by various kinds of theoretical models, and its properties would be useful to obtain a global picture of the spaghetti bowl phenomenon because our sample includes countries with various stages of economic development.

One of the ways to examine the relationship between the number of RTA in an exporting country and additional export values attributed to RTAs is to add the product of the RTA dummy and the number of RTA as an independent variable. That is, the gravity equation is rewritten as the following.

$$\begin{aligned}\ln T_{ij} = \beta_0 + \beta_1 \ln GDP_i + \beta_2 \ln GDP_j + \beta_3 \ln Distance_{ij} \\ +\beta_4 RTA_{ij} + \beta_5 RTA_{ij} \cdot \ln EXNUM_i + \varepsilon_{ij}. \end{aligned} \tag{1}$$

$EXNUM_i$ denotes the number of RTA concluded by exporting country i. Regardless of the existence of the spaghetti bowl phenomenon, β_4 is expected to be positively estimated. On the other hand, if the spaghetti bowl phenomenon exists, β_5 is significantly negative.

We also regress the following equation to test our hypothesis by introducing a number of additional control variables, conventional in the related literature, into the gravity equation:

$$\begin{aligned}\ln T_{ij} \quad &= \beta_0 + \beta_1 \ln GDP_i + \beta_2 \ln GDP_j + \beta_3 \ln Distance_{ij} + \beta_4 RTA_{ij} \\ &+\beta_5 RTA_{ij} \cdot \ln EXNUM_i + \beta_6 Contigency_{ij} + \beta_7 Island_i + \beta_8 Island_j \\ &+\beta_9 Religion_{ij} + \beta_{10} Language_{ij} + \beta_{11} IMColonizer_{ij} + \beta_{12} EXColonizer_{ij} \\ &+\beta_{13} WTO_i + \beta_{14} WTO_j + \beta_{15} Tariff_j + \varepsilon_{ij} \end{aligned} \tag{2}$$

$Contingency_{ij}$ is a binary variable, which takes one if the two countries share a common land border and zero otherwise. $Island_i$ takes unity if the country

i is an island country. $Religion_{ij}$ takes unity if the two countries have the same representative religion and zero otherwise. $Language_{ij}$ is a linguistic dummy variable that takes one if two countries share a common official language and zero otherwise. $IMColonizer_{ij}$ ($EXColonizer_{ij}$) is a binary variable which takes one if an importer (an exporter) was ever a colonizer of an exporter (importer) and zero otherwise. WTO_i is a binary variable which takes one if the country i is a member of the World Trade Organization and zero otherwise. $Tariff_j$ is simple average MFN rate imposed by country j.

To test the second hypothesis, we regress the gravity equation for trade in each manufacturing sector.

2.3 Data Issues

The data cover 132 countries listed in Appendix 1 and 135 RTAs listed in Appendix 2.

Data on international trade values (SITC rev.3) for the year of 2003 have been obtained from the UN comtrade. Data on *GDP* for 2003 come from World Development Indicator (World Bank). *Religion* is constructed by using *World Factbook* (CIA). [3] *WTO* dummy as of 2003 is taken from WTO website and *Tariff* in 2003 is obtained from *World Trade Report* (WTO). The data on simple average MFN tariff rates are only available for manufacturing sector as a whole, since commodity classification for MFN tariffs is not provided in SITC, but in HS code. The source of *Distance* and other dummy variables is the CEPII website.

We construct *RTA* dummy and *EXNUM* so that they reflect the situation of RTAs around the world as of year 2002, one year prior to other data described above, by using a list of RTAs provided on the WTO website. This list is based on notifications from the member countries under the GATT

[3] We defined as a representative religion in each country a religion that accounts for majority of the population in a country and then classified the representative religion into Buddhist, Taoist, Hindu, Jewish, Muslim, Orthodox, Christian, and others.

Article XXIV or the Enabling Clause for developing countries, implying that RTAs not notified to GATT/WTO are not incorporated into our dataset. We also exclude some RTAs due to the lack of member countries' trade data. [4]

3 Empirical Results

This section reports regression results. First, to get an overall picture of the spaghetti bowl phenomenon, we first regress for total export values. Second, we examine the spaghetti bowl phenomenon by sectors. Table 1 presents a correlation matrix among independent variables, and Table 2 shows basic statistics.

3.1 Results for Total Exports

We first report regression results of equations (1) and (2). Second, two-step approach is proposed to avoid restrictive assumption in the previous regression, and its regression results are presented.

3.1.1 Baseline Results

The results for total exports are presented in Table 3.[5] The column [1] reports the result of equation (8), and the result of equation (9) is shown in the column [2]. There are three points to be noted.

[4] RTAs excluded from our dataset are as follows: Albania - Former Yugoslav Republic of Macedonia (FYROM), Albania - UNMIK (Kosovo), Armenia - Moldova, Armenia - Turkmenistan, Bulgaria - FYROM, Croatia - FYROM, EC - Andorra, EC - Faroe Islands, EC - FYROM, EC - OCTs, EC - Palestinian Authority, EC - Syria, EFTA - FYROM, EFTA - Palestinian Authority, Faroe Islands - Iceland, Faroe Islands - Norway, Faroe Islands - Switzerland, FYROM - Bosnia and Herzegovina, Georgia - Turkmenistan, Kyrgyz Republic - Moldova, Kyrgyz Republic - Uzbekistan, Laos - Thailand, Romania - Moldova, Turkey - FYROM.

[5] Here, exporting countries without any RTAs are excluded. The results are qualitatively unchanged even if we do not take a log of the number of RTA and if those exporting countries are included.

First, in these results, the coefficients for standard gravity variables are consistent with the expected signs and are statistically significant; trade values are positively correlated with the market size of trading countries and are adversely affected by geographic distances between the countries. Most of the dummy variables are also estimated as expected.

Second, coefficients for RTA dummy variable are positively significant, indicating that values of international trade between RTA members are larger than those between countries without any RTA, even after controlling several factors encouraging international trade. That is, RTAs surely increase export values in general.

Third, the coefficient for the product of RTA dummy and a log of exporter's RTA numbers is significantly negative. The negative coefficient implies the existence of the global spaghetti bowl phenomenon for total exports. That is, as the number of the concluded RTAs increases, the effect of RTAs on the increase in exports is weaken.

If the MFN rate in a importing country is higher, the conclusion of RTA with the country would bring about greater trade creation and trade diversion, implying increase exports to the country by its partner country to a larger extent. To incorporate this effect of MNF rate, we introduce the product of RTA dummy and MFN rate of importing country into our regression equation. The result is reported in the column [3] of the Table 3. We can see that the previous results for the variables relating to RTA are qualitatively unchanged; countries export more to their RTA partner countries, though the larger the number of RTA the countries concluded, the less the increase in exports attributed to a RTA conclusion is. In addition, as is consistent with our prediction, the product of RTA dummy and MFN rate is positively estimated. The higher the MFN rate in an RTA partner country is, the larger the benefit for an exporting country from RTA is.

Next, we also regress the abovementioned three equations with data excluding RTAs notified based on the Enabling Clause for developing

countries in which both the degree and the product coverage of tariff reduction are limited compared with those under the GATT Article XXIV. The results are shown in the columns [4], [5], [6] of the Table 3 and are qualitatively the same as the previous ones. However, it is worth noting that introducing RTA variables based on the GATT Article XXIV pushes up the coefficients for the variables relating to RTA and thus magnifies the respective effects. While we do not control the difference of restrictiveness of ROO under each RTA in our estimation due to data limitation, this result might imply that constraints imposed by the ROOs stipulated in RTAs notified under the Enabling Clause are less costly.

3.1.2 Two-step Approach

Here, we again examine the spaghetti bowl phenomenon by employing a two-step approach. In the previous regressions, we implicitly assume that all coefficients for independent variables are identical among sample countries. However, since our sample has countries with various stages of economic development, the assumption of identical coefficients may be too restrictive.

To swerve this assumption, we employ the following approach: in the first step, we obtain a coefficient for RTA dummy in each exporting country, i.e., γ_3^i, by regressing the following gravity equation by exporting country i:

$$\begin{aligned}\ln T_{ij} = \gamma_i^i + \gamma_1^i \ln GDP_j + \gamma_2^i \ln Distance_{ij} + \gamma_3^i RTA_{ij} + \gamma_4^i Contigency_{ij} \\ + \gamma_5^i Island_j + \gamma_6^i Religion_{ij} + \gamma_7^i Language_{ij} + \gamma_8^i IMColonizer_{ij} \\ + \gamma_9^i EXColonizer_{ij} + \gamma_{10}^i WTO_j + \epsilon_j^i. \quad (3)\end{aligned}$$

In the second step, we regress γ_3^i on the log of the number of RTA concluded

by exporting country i, $\ln EXNUM_i$, as the following:[6]

$$\gamma_3^i = \delta_0 + \delta_1 \ln EXNUM_i + \eta_i. \tag{4}$$

As a result, if the spaghetti bowl phenomenon exists, δ_1 should be negatively estimated.

The regression results in the second step are presented in the second and the third columns in Table 4 and are qualitatively the same as in the previous ones. That is, we can again confirm the existence of the spaghetti bowl phenomenon.

Next, we exclude from the sample in the second step the exporting countries in which the coefficient for RTA dummy is negatively estimated in the first step. This is because the negative coefficient seems to be not suited for our examination from the nature of RTA. In case the RTA preferential tariff rate is too costly to use, firms can just continue to use the MFN rate, and therefore the effect of RTA on exports is not negative but at least zero.

The regression results obtained by excluding the exporting countries with the negative coefficient are reported in the fourth and fifth columns in Table 4.[7] We can see from this table that our results on the spaghetti bowl phenomenon are not changed at all. Therefore, we conclude that the spaghetti bowl phenomenon globally occurs for total exports.

[6]The use of estimated coefficients in "dependent variable" does not induce measurement-error problem.

[7]The countries having negative coefficients in the case of all RTAs (with RTAs notified under the Enabling Clause) include: Oman, China, Central African Rep., Seychelles, Samoa, Croatia, Papua New Guinea, Guatemala, Bulgaria, Honduras, Estonia, Malta, Latvia, Burundi, Slovenia, Hungary, Ghana, Costa Rica, Nicaragua, Australia, Indonesia, Bolivia, Poland, Jordan, Saudi Arabia, Slovakia, Bahrain, El Salvador, Bangladesh, Lithuania, Trinidad and Tobago, United Rep. of Tanzania, Guyana, Greece, Pakistan, Cambodia, Czech Rep., Singapore, and Cyprus.

3.2 Results in Material and Manufacturing Sectors

In this subsection, we examine the second testable hypothesis: *The spaghetti bowl phenomenon is less likely to occur in international trade in material sectors*. We regress the gravity equation for trade in material sector and in other manufacturing sectors separately. In particular, we investigate international trade in materials (SITC 2), chemicals (SITC 5), manufactures (SITC 6), and machinery sectors (SITC 7).

The regression results by the two-step approach are reported in Table 5. Two points are worth noting. First, in all sectors, the coefficients for the log of RTA number are negatively estimated. That is, we can observe the spaghetti bowl phenomenon in each sector. Second, the absolute values of the coefficient are smaller in material sector than in the other sectors. This result implies that the spaghetti bowl phenomenon is weaker in upstream sectors because an increase in the number of RTA hardly changes the costs for redesigning their production networks in the sectors.

4 Concluding Remarks

This paper conducts an empirical analysis on the spaghetti bowl phenomenon first pointed out by Bhagwati (1995). The empirical results presented in this paper suggest a significantly negative relationship between the number of RTAs concluded by a country and the additional export volume attributed to a RTA conclusion, indicating the existence of the global spaghetti bowl phenomenon. We also find some differences in the seriousness of the spaghetti bowl phenomenon between materials and other downstream manufacturing sectors.

Although we regard this paper as an important step forward in deepening our understanding of the spaghetti bowl phenomenon, there are obviously some limitations with our analysis that could be addressed in the future. Future research agenda would be to explicitly take restrictive-

ness or type of ROOs (e.g., a change in tariff classification, a domestic content rule, and a technical requirement) in each RTA into consideration, or to investigate the trade impact of the number of RTAs concluded by importing countries. Moreover, an empirical analysis using time-series data would reveal dynamic aspects of its impacts on trade.

Appendix 1. Sample Countries

Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belarus, Belgium, Belize, Bolivia, Bosnia Herzegovina, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Rep., Chile, China, China, Hong Kong SAR, Colombia, Costa Rica, Croatia, Cyprus, Czech Rep., Cote d'Ivoire, Denmark, Dominica, Ecuador, Egypt, El Salvador, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Grenada, Guatemala, Guyana, Honduras, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Kyrgyzstan, Latvia, Lebanon, Libya, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Maldives, Malta, Mauritius, Mexico, Mongolia, Morocco, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Peru, Philippines, Poland, Portugal, Rep. of Korea, Romania, Russian Federation, Rwanda, Saint Kitts and Nevis, Saint Lucia, Vincent and the Grenadines, Samoa, Sao Tome and Principe, Saudi Arabia, Senegal, Seychelles, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, USA, Uganda, Ukraine, United Kingdom, United Rep. of Tanzania, Uruguay, Venezuela, Viet Nam, Yemen, Zambia.

Appendix 2. Sample RTAs (as of 2002)

AFTA, Armenia - Kazakhstan, Armenia - Russian Federation, Armenia - Ukraine, Bangkok Agreement, Bulgaria - Israel, Bulgaria - Turkey, CACM, CAN, Canada - Chile, Canada - Costa Rica, Canada - Israel, CARICOM, CEFTA, CEMAC, CER, Chile - Costa Rica, Chile - El Salvador, Chile - Mexico, CIS, COMESA, Croatia - Bosnia and Herzegovina, Czech - Estonia, Czech - Latvia, Czech - Lithuania, Czech - Slovakia, Czech - Israel, EAC, EAEC, EC - Croatia, EC - Jordan, EC - Algeria, EC - Bulgaria, EC - Cyprus, EC - Czech, EC - Estonia, EC - Hungary, EC - Iceland, EC - Israel, EC - Latvia, EC - Lithuania, EC - Malta, EC - Mexico, EC - Morocco, EC - Norway, EC - Poland, EC - Romania, EC - Slovakia, EC - Slovenia, EC - South Africa, EC - Switzerland and Liechtenstein, EC - Tunisia, EC - Turkey, EC (15), ECO, ECOWAS, EFTA - Croatia, EFTA - Jordan, EFTA - Bulgaria, EFTA - Czech, EFTA - Estonia, EFTA - Hungary, EFTA - Israel, EFTA - Latvia, EFTA - Lithuania, EFTA - Mexico, EFTA - Morocco, EFTA - Poland, EFTA - Romania, EFTA - Slovakia, EFTA - Slovenia, EFTA - Turkey, EFTA (Stockholm Convention), El Salvador - Mexico, Estonia - Latvia - Lithuania, GCC, Georgia - Armenia, Georgia - Azerbaijan, Georgia - Kazakhstan, Georgia - Russian Federation, Georgia - Ukraine, GSTP, Hungary - Israel, Hungary - Latvia, Hungary - Lithuania, India - Sri Lanka, Israel - Mexico, Japan - Singapore, Kyrgyz Republic - Armenia, Kyrgyz Republic - Kazakhstan, Kyrgyz Republic - Russian Federation, Kyrgyz Republic - Ukraine, LAIA, MERCOSUR, Mexico - Nicaragua, MSG, NAFTA, New Zealand - Singapore, PATCRA, Poland - Israel, Poland - Latvia, Poland - Lithuania, PTN, Romania - Israel, Romania - Turkey, SADC, SAPTA, Slovakia - Estonia, Slovakia - Israel, Slovakia - Latvia, Slovakia - Lithuania, Slovenia - Estonia, Slovenia - Israel, Slovenia - Latvia, Slovenia - Lithuania, SPARTECA, TRIPARTITE, Turkey - Czech, Turkey - Estonia, Turkey - Hungary, Turkey - Israel, Turkey - Lithuania, Turkey - Poland, Turkey - Slovakia, United States - Jordan, United States - Israel, WAEMU/UEMOA,

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Table 1: Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
RTA	(1)	1.00													
$\ln EXNUM_i$	(2)	0.82	1.00												
Tariff	(3)	0.06	-0.04	1.00											
$\ln GDP_j$	(4)	0.14	0.18	-0.22	1.00										
$\ln GDP_i$	(5)	0.15	0.25	0.00	-0.01	1.00									
$\ln Distance$	(6)	-0.39	-0.42	0.02	-0.02	-0.05	1.00								
EXColonizer	(7)	0.02	0.05	0.01	-0.02	0.14	-0.06	1.00							
IMColonizer	(8)	0.03	0.02	-0.07	0.14	-0.02	-0.05	-0.01	1.00						
Language	(9)	0.06	-0.03	0.07	-0.10	-0.11	-0.09	0.11	0.12	1.00					
Religion	(10)	0.08	0.12	-0.13	-0.01	-0.02	-0.12	0.04	0.04	0.15	1.00				
WTO_i	(11)	0.04	0.11	0.00	0.00	0.14	0.05	0.01	0.00	0.04	0.11	1.00			
WTO_j	(12)	0.04	0.06	-0.23	0.05	0.00	0.07	-0.01	0.01	0.05	0.14	-0.01	1.00		
$Island_i$	(13)	-0.09	-0.12	0.00	0.00	-0.29	0.15	-0.04	0.01	0.09	0.01	-0.01	0.00	1.00	
$Island_j$	(14)	-0.06	-0.08	-0.10	-0.23	0.00	0.11	0.01	-0.03	0.10	-0.01	0.00	0.09	-0.01	1.00
Contigency	(15)	0.22	0.17	0.01	0.04	0.05	-0.37	0.09	0.09	0.12	0.09	-0.02	-0.03	-0.07	-0.06

Table 2: Basic Statistics

	Obs	Mean	Std. Dev.	Min	Max
RTA	15,630	0.18	0.39	0	1
$\ln EXNUM_i$	15,630	0.30	0.77	0	3.22
$\ln GDP_j$	15,630	23.86	2.29	19.32	29.96
$\ln GDP_i$	15,630	23.97	2.19	19.33	29.96
$\ln Distance$	15,630	8.68	0.81	4.09	9.89
Tariff	15,630	0.10	0.07	0	0.31
EXColonizer	15,630	0.01	0.09	0	1
IMColonizer	15,630	0.01	0.09	0	1
Language	15,630	0.14	0.35	0	1
Religion	15,630	0.38	0.49	0	1
WTO_i	15,630	0.87	0.33	0	1
WTO_j	15,630	0.88	0.32	0	1
$Island_i$	15,630	0.18	0.38	0	1
$Island_j$	15,630	0.15	0.36	0	1
Contigency	15,630	0.02	0.14	0	1

Table 3: Regression Results: Total Exports

	With [1]	With [2]	With [3]	Without [4]	Without [5]	Without [6]
constant	-51.26**	-52.94**	-52.49**	-48.08**	-48.15**	-48.01**
	(0.62)	(0.63)	(0.65)	(0.78)	(0.79)	(0.79)
$\ln GDP_i$	1.85**	1.90**	1.89**	1.77**	1.81**	1.82**
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
$\ln GDP_j$	1.49**	1.48**	1.48**	1.41**	1.40**	1.41**
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
$\ln Distance_{ij}$	-1.91**	-1.98**	-2.01**	-1.83**	-2.04**	-2.06**
	(0.04)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
RTA_{ij}	1.83**	1.98**	1.27**	3.80**	2.79**	1.76**
	(0.17)	(0.16)	(0.22)	(0.24)	(0.24)	(0.24)
$RTA_{ij} \cdot \ln EXNUM_i$	-0.76**	-0.90**	-0.80**	-1.39**	-1.22**	-1.28**
	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)	(0.08)
RTA_{ij}·$Tariff_j$			4.94**			15.74**
			(1.13)			(1.60)
$Contigency_{ij}$		-0.10	-0.12		-0.55	-0.57
		(0.23)	(0.23)		(0.31)	(0.30)
$Island_i$		0.91**	0.92**		0.60**	0.60**
		(0.09)	(0.09)		(0.12)	(0.12)
$Island_j$		0.30**	0.31**		0.28*	0.27*
		(0.10)	(0.10)		(0.12)	(0.12)
$Religion_{ij}$		-0.01	0.00		-0.08	-0.03
		(0.07)	(0.07)		(0.09)	(0.09)
$Language_{ij}$		1.54**	1.54**		1.41**	1.37**
		(0.10)	(0.10)		(0.13)	(0.13)
$IMColonizer_{ij}$		0.78**	0.80**		0.21	0.18
		(0.30)	(0.30)		(0.41)	(0.40)
$EXColonizer_{ij}$		0.00	-0.01		0.17	0.11
		(0.24)	(0.24)		(0.24)	(0.24)
WTO_i		1.43**	1.44**		1.74**	1.75**
		(0.12)	(0.12)		(0.18)	(0.18)
WTO_j		0.29*	0.30**		-0.06	-0.09
		(0.12)	(0.12)		(0.14)	(0.14)
$Tariff_j$		-5.95**	-7.03**		-7.13**	-8.52**
		(0.56)	(0.65)		(0.71)	(0.76)
R-sq	0.6392	0.6571	0.6575	0.6526	0.6701	0.6721
Obs.	15,630	15,630	15,630	9,250	9,250	9,250

Notes: ** and * shows 1 % and 5 % significant, respectively. White consistent standard errors are in parentheses. "With" or "Without" mean if *RTA* dummy and *EXNUM* include RTA notified under the Enabling Clause or not.

Table 4: Regression Results: Two-step Approach

	ALL		Non-negative	
	With	Without	With	Without
$\ln EXNUM_i$	-0.601*	-0.932*	-1.238**	-1.597**
	(0.288)	(0.410)	(0.309)	(0.425)
constant	2.099**	2.961**	4.195**	5.896**
	(0.613)	(1.024)	(0.710)	(1.190)
R-sq	0.0351	0.075	0.168	0.2673
Obs	125	74	86	46

Notes: ** and * shows 1 % and 5 % significant, respectively. White consistent standard errors are in parentheses. "With" or "Without" mean if *RTA* dummy and *EXNUM* include RTAs notified under the Enabling Clause or not. "ALL" or "Non-negative" means if sample include sample countries with negative coefficients for RTA dummy or not.

Table 5: Regression Results by Sector

Sector	Materials	Chemicals	Manufactures	Machinery
$\ln EXNUM_i$	-0.328*	-0.717**	-0.672**	-0.607**
	(0.154)	(0.201)	(0.193)	(0.144)
constant	2.496**	3.629**	3.077**	3.040**
	(0.339)	(0.463)	(0.454)	(0.343)
R-sq	0.0423	0.0813	0.0965	0.092
Obs.	89	92	90	91

Notes: ** and * shows 1 % and 5 % significant, respectively. White consistent standard errors are in parentheses. Negative coefficients for RTA dummy are excluded here.