Consolidation and Harmonization of Regional Trade Agreements (RTAs): A Path Toward Global Free Trade

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Consolidation and Harmonization of Regional Trade Agreements (RTAs): A Path Toward Global Free Trade [*]

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Abstract

Some economists worry about the 'spaghetti bowl phenomenon' expected from proliferating regional trade agreements (RTAs). In particular, the complicated web of hub-and-spoke type of overlapping free trade agreements (FTAs) can result in high costs for verifying rules of origin (RoO) and trade diversion or suppression effects. This explains why almost half of the RTAs notified to the General Agreement on Tariffs and Trade (GATT)/World Trade Organization (WTO) are currently inactive. This research attempts to provide best practices for RTAs to enhance global free trade by mitigating these negative effects. More specifically, we quantitatively estimate the trade creation and diversion effects of harmonized and cumulated RoO (bilateral, diagonal, and full cumulation) for RTAs established under GATT Article XXIV and under the Enabling Clause by adopting a Gravity regression analysis. We find that (i) RTAs in general create trade among members and divert trade from nonmembers; (ii) RTAs should be established under the comprehensive GATT Article XXIV, rather than the piecemeal Enabling Clause; and (iii) full cumulation is the most optimal provision in terms of creating the most intra-bloc trade and diverting the least extra-bloc trade. Overall, we strongly recommend that RTAs should employ full cumulation of RoO under GATT Article XXIV. This strategy will enable regionalism to be compatible with multilateralism, to be sustainable in the long run, and finally to lead us to global free trade.

Keywords: *regional trade agreements, rules of origin, cumulation, gravity, GATT Article XXIV, Enabling Clause*

JEL Classification: C23, F13, F15

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I. INTRODUCTION

Regional trade agreements (RTAs) have been revitalized since the successful evolution of the European and the North American integration in the late 1980s. The rapid progress in market-driven regionalization in East Asia since the financial crisis of late 1990s has accelerated the worldwide regionalization movement. In addition, the recent failure of the World Trade Organization's (WTO) Doha Development Agenda (DDA) round in Geneva is likely to require countries to look for a second best trade policy option.

On the other hand, we have noticed that almost half of the RTAs notified to the General Agreement on Tariffs and Trade (GATT)/WTO are currently inactive,[1] even though the formation of an RTA is costly to both participating countries and the world economy. More strikingly, both regional and multilateral trade liberalization efforts have been seriously undermined by the global economic turbulence since the outbreak of the subprime mortgage crisis in U.S. In the face of growing demands for protectionist measures, we examine what practices might enable RTA partners to improve their conditions and at the same time foster multilateralization. The effectiveness of RTAs depends on their design and content, as well as the length of time they are in effect. More specifically, RTAs should create a significant positive welfare effect for all the member countries and for the global economy. Otherwise, RTAs could easily become ineffective over time. In addition to the positive gains to members and the global economy, the negative welfare effects on nonmembers should be minimized or avoided.

A number of questions have previously been addressed concerning these issues. Some economists worry about the 'spaghetti bowl phenomenon' expected from the complicated web of hub-and-spoke type of overlapping free trade agreements (FTAs). In particular, they are concerned that the additional cost of FTA administration for verifying rules of origin (RoO) and the trade diversion effect of RoO may offset or overwhelm the initial welfare gains from regional trade liberalization efforts.[2] Baldwin (2006), Estevadeordal, Harris, and Suominen (2007), Gasiorek, Augier, and Lai-Tong (2007), and

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[1] As of November 2008, 191 of 418 cumulated RTAs (45.7 percent) notified since 1948 have been inactive. See WTO web site, http://www.wto.org/english/tratop_e/region_e/regfac_e.htm.

[2] RoO may divert trade from non-members to members, especially in the intermediate input sector, thereby increasing trade between members. However, the additional verifying costs of final products may weaken the trade creation effect. For a discussion of the importance of RoO in RTAs, see Estevadeordal and Suominen (2008).

Harris (2008) carefully evaluate the RoO-related costs and suggest that RTAs could be compatible with multilateralism through the harmonization and cumulation of RoO. In particular, Estevadeordal and Suominen (2003), Augier, Gasiorek, and Lai-Tong (2003), and Gasiorek, Augier, and Lai-Tong (2007) quantitatively estimate the trade effect of RoO, focusing on restrictiveness and different cumulation provisions of RoO by using Gravity regression analysis. They find that simple RoO and diagonal cumulation of RoO increase intraregional trade.

However, the existing studies simply measure the overall trade effect and do not distinguish between the trade creation and trade diversion effects. Moreover, the empirical evidence is limited to the diagonal cumulation case of the Pan-European Cumulation System (PECS). In order to find best practices for RTAs to enhance global free trade, it is necessary to clarify the trade effect on members and nonmembers more precisely and compare all the possible cumulation schemes. This research is an attempt to address this limitation of the existing literature.

We consider another important issue of multilateral rules governing regionalism, GATT Article XXIV and the Enabling Clause. The legal provisions strongly influence the trade effects of RTAs. In particular, we attempt to clarify whether the trade effects of RTAs under different legal provisions are affected by member-specific characteristics; that is, we compare trade effects of RTAs between north-north, north-south, and south-south under GATT Article XXIV. In addition, unlike existing empirical studies on this issue that cover a limited number of RTAs before 2000, we include almost all the RTAs notified to the GATT/WTO through 2005 (see Table 1).

In sum, we attempt to propose best practices for RTAs as a way to enhance global free trade. For countries to avoid the negative effects of trade diversion and trade suppression, we recommend harmonization of RTAs incorporating more liberalized cumulation of RoO under GATT Article XXIV. In order to support this argument, we quantitatively estimate the trade creation and diversion effects of harmonized and cumulated RoO (bilateral, diagonal, and full cumulation) for RTAs established under GATT Article XXIV and under the Enabling Clause by adopting a Gravity regression analysis. The member-specific effects will be carefully considered.

The paper is organized as follows. Section II examines the importance of harmonizing RTAs to promote global free trade and discusses some policy concerns related to harmonization. Section III specifies Gravity equations, describes data and estimation

techniques, and summarizes empirical findings to support our argument for multilateralizing regionalism through cumulated RoO with multilateral rules governing RTAs. Section IV concludes with our findings and implications.

II. MULTILATERALIZING RTAs

1. Best Practices for RTAs to Foster Global Free Trade

To foster global free trade, best practices for RTAs should be designed to maximize their trade creation effect and minimize their trade diversion effect. In search of the best practices for RTAs, Plummer (2007) suggests 'Ten Commandments' to be considered and grades 11 active Asian FTAs[3] from 'A' through 'D' according to each of the following 10 conditions: comprehensive coverage of both goods and services within a reasonable period of time,[4] low and symmetrical RoO, progress in trade facilitation, intellectual property protection, nondiscriminatory foreign direct investment-related provisions, transparent anti-dumping procedures and dispute resolution, open and nondiscriminatory government procurement, competition policy, and low and standardized technical barriers to trade. The 11 Asian FTAs receive passing grades for most of the commandments, except the condition for low and symmetrical RoO. Nine of 11 FTAs were graded as a problematic 'C' in that category. Elek (2005) suggests that the best practices for Asia-Pacific RTAs should include the following content: WTO-plus approach,[5] comprehensive in scope (liberalizing all sectors and minimizing any phase-out periods for sensitive products), compatible with multilateral liberalization, simple RoO, transparency, and openness. Soesastro (2003) also emphasizes open accession, Most Favored Nation (MFN)-based multilateral liberalization approach, and harmonization of RoO.

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[3] The 11 FTAs are AFTA (ASEAN Free Trade Area), Singapore-New Zealand, EFTA (European Free Trade Association)-Singapore, Japan-Singapore, U.S.-Singapore, Australia-Singapore, Korea-Chile, Japan-Mexico, Thailand-Australia, India-Singapore, and Korea-Singapore. See Table 1 in Plummer (2007).

[4] This counts as two conditions, one for the goods sector and another for the services sector.

[5] Obligations exceeding the existing requirements of the WTO agreements—such as more restrictive requirements for investment, intellectual property, and services that oblige new members (mostly developing countries) to take on more commitments than existing members (mostly developed countries)—have been accepted in the WTO.

In sum, we propose to multilateralize RTAs by consolidating and harmonizing provisions of existing RTAs. In particular, we argue that consolidation and harmonization of RTAs through cumulation of common RoO and nondiscriminatory application of GATT Article XXIV should be considered for multilateralizing regionalism.

2. Consolidating RTAs by Harmonizing and Cumulating RoO[6]

RoO are necessary for discriminatory RTAs, including all FTAs, to determine the eligibility of members for preferential treatment. Duttagupta and Panagariya (2001) demonstrate that the RoO can improve the political viability of FTAs. On the other hand, acknowledging that the RoO result in additional costs of administration[7] and may divert trade from nonmembers, Brenton (2003) and Medalla (2008) propose simple and common RoO with more liberalized cumulation in order to reduce constraints on the choice of inputs for export production.

To promote global free trade, best practices for RTAs should include harmonized common RoO to consolidate existing overlapping RTAs into a single comprehensive or a region-wide RTA. Overlapping RTAs could result in high costs for verifying RoO that exceed the initial gains from free trade by reducing or eliminating trade barriers. In order to solve this problem, the region-wide RTA could amend the overlapping RTAs by developing one common set of RoO in which the product value is cumulated between different members, similar to the case of PECS for the European Union (EU), the European Free Trade

[6] As described in Gasiorek, Augier, and Lai-Tong (2007), there are three different types of cumulation−bilateral, diagonal, and full cumulation. The bilateral cumulation applies to a traditional bilateral FTA, which provides that materials originating in one country be considered materials originating in the partner country and vice versa. The diagonal cumulation applies to trade between three or more trading partners linked by FTAs with common RoO. It provides that materials originating in one country be considered materials originating in all of the partner countries. The full cumulation also applies to trade between three or more trading partners linked by FTAs with common RoO, but it is more flexible than the diagonal cumulation. It provides that all the materials used in the preferential area be considered materials satisfying the RoO. Customs unions are a good example of the full cumulation scheme.

[7] As surveyed by Medalla (2008), the administration cost varies; for example, 3 percent of the value of goods traded for EFTA countries, between 4-4.5 percent and 6-8 percent for other EU schemes, and around 6 percent for the North American Free Trade Agreement (NAFTA) case.

Association (EFTA), and the Central and Eastern European Countries (CEEC).[8] The harmonized RoO of the diagonal cumulation system reduces the verifying costs at borders, produces positive investment creation effects, and is compatible with open regionalism by providing a friendly environment for new members.

Alternatively, the region-wide RTA could consider implementing a full cumulation system and evolving to a customs union (CU) instead of an FTA.[9] Krueger (1995) strongly argues that CUs are a better form of economic cooperation than FTAs by analyzing static net welfare gains and dynamic evolutionary paths. The negative opinion of FTAs among some economists is mainly based on the potential spaghetti bowl phenomenon from the hub-and-spoke type of overlapping FTAs. Mirus and Rylska (2001) support Krueger's (1995) argument by carefully describing the costs and the benefits of FTAs versus CUs, focusing on RoO and common external tariffs (CET).

3. RTAs Compatible with Multilateralism: GATT Article XXIV

Best practices for RTAs should be compatible with the GATT/WTO multilateralism by avoiding discriminatory preferential regionalism. The legal basis for the establishment of RTAs is provided by two GATT/WTO provisions: GATT Article XXIV and the Enabling Clause.[10] Depending on what provision the RTA is established under, there are significant differences in the scope of trade liberalization and the resulting trade effects. The most important requirements stipulated in GATT Article XXIV are that members (i) do not raise external trade barriers against nonmembers and (ii) eliminate duties and other restrictive regulations of commerce with respect to 'substantially all trade' within a reasonable length of

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[8] The PECS was introduced in 1997 in order to remove impediments to duty-free trade in industrial goods across the EU, the EFTA and the CEEC. These member countries decided to amend their various FTAs by substituting one common set of RoO. Value could thus be cumulated between different European countries without prejudicing the duty-free status of end products (for more detailed information, see Stewart-Brown, 2001). For a discussion of multilateralizing regionalism in the case of PECS, see Baldwin (2006), Augier, Gasiorek, and Lai-Tong (2003), and Augier, Evans, Gasiorek, and Lai-Tong (2006).

[9] For empirical studies on trade effects of customs unions compared to FTAs, see Park and Park (2008), Magee (2008), Ghosh and Yamarik (2004), and Brown, Deardorff, and Stern (2001).

[10] As of November 2008, 92 percent of RTAs had been notified to the GATT/WTO under GATT Article XXIV. More specifically, 323 of 351 RTAs since 1948 had been notified under GATT Article XXIV and the remaining 28 RTAs had been notified under the Enabling Clause. See WTO web site, http://www.wto.org/english/tratop_e/region_e/regfac_e.htm.

time.

The Enabling Clause is much less stringent than GATT Article XXIV. In effect, any RTA formed under the Enabling Clause does not require members to eliminate trade barriers with respect to 'substantially all trade.' Therefore, the lenient legal regime of the Enabling Clause makes the formation and expansion of an RTA much easier, especially for developing country members, but it may allow more exclusive lists to be effective. In order to maximize trade creation and minimize trade diversion effects of RTAs, Rajapatirana (1994) recommends not allowing RTAs to be formed under the Enabling Clause.

On the contrary, an RTA established under GATT Article XXIV is expected to create more trade between members and divert less trade from nonmembers because it is based on the WTO's MFN principle. Cooper and Massell (1965) argue that nondiscriminatory unilateral trade liberalization is superior to a discriminatory CU. In contrast, Wonnacott and Wonnacott (1981) claim that unilateral trade liberalization is not superior to a CU, but their argument is criticized by El-Agraa and Jones (2000) for inadequate exclusion of CET in their model. In a later paper, El Agraa (2002) addresses this inadequacy by incorporating GATT Article XXIV into the formation of a CU's CET determination process and supports Wonnacott and Wonnacott's (1981) argument supporting a CU over unilateral liberalization.

III. TRADE EFFECTS OF RTAs: A GRAVITY REGRESSION ANALYSIS

1. Model Specifications, Data, and Estimation Techniques

We employ an extended Gravity model of bilateral trade flows to estimate the trade effects of RTAs with different RoO cumulation and legal bases.

Equation (1) as a reference case:

$$\ln(Trade_{ijt}) = \alpha_0 + \alpha_1 \ln(GDP_{it}GDP_{jt}) + \alpha_2 \ln(DIST_{ij}) + \beta' X' + \gamma_1 RTA/Insiders_{ijt} + \gamma_2 RTA/Outsiders_{ijt} + \delta Year_t + \varepsilon_{ijt}$$

Equation (2) for multilateral rules governing regionalism:

$$\ln(Trade_{ijt}) = \alpha_0 + \alpha_1 \ln(GDP_{it}GDP_{jt}) + \alpha_2 \ln(DIST_{ij}) + \beta' X' + \gamma_3 RTA/GATT/Insiders_{ijt} + \gamma_4 RTA/GATT/Outsiders_{ijt} + \gamma_5 RTA/Enabling/Insiders_{ijt}$$

$$+ \gamma_6 RTA/Enabling/Outsiders_{ijt} + \delta Year_t + \varepsilon_{ijt}$$

Equation (3) for harmonizing RoO:

$$\ln(Trade_{ijt}) = \alpha_0 + \alpha_1 \ln(GDP_{it}GDP_{jt}) + \alpha_2 \ln(DIST_{ij}) + \beta'X' + \gamma_7 RTA/Bilateral/Insiders_{ijt}$$
$$+ \gamma_8 RTA/Bilateral/Outsiders_{ijt} + \gamma_9 RTA/Diagonal/Insiders_{ijt}$$
$$+ \gamma_{10} RTA/Diagonal/Outsiders_{ijt} + \gamma_{11} RTA/Full/Insiders_{ijt}$$
$$+ \gamma_{12} RTA/Full/Outsiders_{ijt} + \delta Year_t + \varepsilon_{ijt}$$

Equation (4) for best practices RTAs:

$$\ln(Trade_{ijt}) = \alpha_0 + \alpha_1 \ln(GDP_{it}GDP_{jt}) + \alpha_2 \ln(DIST_{ij}) + \beta'X'$$
$$+ \gamma_{13} RTA/Bilateral/GATT/Insiders_{ijt} + \gamma_{14} RTA/Bilateral/GATT/Outsiders_{ijt}$$
$$+ \gamma_{15} RTA/Diagonal/GATT/Insiders_{ijt} + \gamma_{16} RTA/Diagonal/GATT/Outsiders_{ijt}$$
$$+ \gamma_{17} RTA/FullGATT//Insiders_{ijt} + \gamma_{18} RTA/Full/GATT/Outsiders_{ijt}$$
$$+ \gamma_{19} RTA/Bilateral/Enabling/Insiders_{ijt} + \gamma_{20} RTA/Bilateral/Enabling/Outsiders_{ijt}$$
$$+ \delta Year_t + \varepsilon_{ijt}$$

where i and j denote particular countries, and t denotes time,

- $Trade_{ijt}$ denotes the value of the bilateral trade between *i* and *j* at time *t*,
- *GDP* is real GDP,
- *Dist* is the distance between *i* and *j*,
- *X* is a set of control variables that includes border, common language, and colony dummy,
- *RTA/Insiders* is a binary variable which is unity if *i* and *j* belong to the same RTA,
- *RTA/Outsiders* is a binary variable which is unity if *i* belongs to an RTA and *j* does not or vice versa,
- *RTA/GATT/Insiders* is a binary variable which is unity if *i* and *j* belong to the same RTA formed under GATT Article XXIV,
- *RTA/GATT/Outsiders* is a binary variable which is unity if *i* belongs to an RTA formed under GATT Article XXIV and *j* does not or vice versa,
- *RTA/Enabling/Insiders* is a binary variable which is unity if *i* and *j* belong to the same RTA formed under the Enabling Clause,

- *RTA/Enabling/Outsiders* is a binary variable which is unity if *i* belongs to an RTA formed under the Enabling Clause and *j* does not or vice versa,
- *RTA/Bilateral/Insiders* is a binary variable which is unity if *i* and *j* belong to an RTA formed with bilateral cumulation,
- *RTA/Bilateral/Outsiders* is a binary variable which is unity if *i* belongs to an RTA formed with bilateral cumulation and *j* does not or vice versa,
- *RTA/Diagonal/Insiders* is a binary variable which is unity if *i* and *j* belong to an RTA formed with diagonal cumulation,
- *RTA/Diagonal/Outsiders* is a binary variable which is unity if *i* belongs to an RTA formed with diagonal cumulation and *j* does not or vice versa,
- *RTA/Full/Insiders* is a binary variable which is unity if *i* and *j* belong to an RTA formed with full cumulation,
- *RTA/Full/Outsiders* is a binary variable which is unity if *i* belongs to an RTA formed with full cumulation and *j* does not or vice versa,
- *RTA/Bilateral/GATT/Insiders* is a binary variable which is unity if *i* and *j* belong to an RTA formed with bilateral cumulation under GATT Article XXIV,
- *RTA/Bilateral/GATT/Outsiders* is a binary variable which is unity if *i* belongs to an RTA formed with bilateral cumulation under GATT Article XXIV and *j* does not or vice versa,
- *RTA/Diagonal/GATT/Insiders* is a binary variable which is unity if *i* and *j* belong to an RTA formed with diagonal cumulation under GATT Article XXIV,
- *RTA/Diagonal/GATT/Outsiders* is a binary variable which is unity if *i* belongs to an RTA formed with diagonal cumulation under GATT Article XXIV and *j* does not or vice versa,
- *RTA/Full/GATT/Insiders* is a binary variable which is unity if *i* and *j* belong to an RTA formed with full cumulation under GATT Article XXIV,
- *RTA/Full/GATT/Outsiders* is a binary variable which is unity if *i* belongs to an RTA formed with full cumulation under GATT Article XXIV and *j* does not or vice versa,
- *RTA/Bilateral/Enabling/Insiders* is a binary variable which is unity if *i* and *j* belong to an RTA formed with bilateral cumulation under the Enabling Clause,
- *RTA/Bilateral/Enabling/Outsiders* is a binary variable which is unity if *i* belongs to an RTA formed with bilateral cumulation under the Enabling Clause and *j* does not or vice versa,

- *Year* denotes a set of binary variables which is unity in the specific year *t*.

The data for the Gravity model in this study come from various sources. The trade flow data come from the *Direction of Trade Statistics* provided by the International Monetary Fund (IMF) for the periods 1980-2005 for 154 countries. Nominal value of bilateral trade is measured by the sum of the bilateral exports. These data are deflated by GDP deflators to generate real trade flows. The data for Real GDP at purchasing power parity (PPP) are from the World Bank's *World Development Indicators*. Data on country pair specific variables, such as distance, colonial ties, common land border, and common languages, are obtained from the Central Intelligence Agency's *World Factbook*. We include most of the RTAs notified to the GATT/WTO under GATT XXIV or the Enabling Clause. Table 1 lists the RTAs included in this analysis.

In the estimations of equations (1), (2), (3), and (4), Santos Silva and Tenreyo (2006) and Magee (2008) indicate that there is a problem of heteroskedasticity. Moreover, bilateral trade values can be zero; that is, some pairs of countries did not trade in a certain year. The most common approach to solving this problem is to exclude the country pairs with no trade. However, Santos Silva and Tenreyo (2006) show that a Poisson Pseudo-Maximum Likelihood (PPML) estimation technique provides consistent estimates of the parameters in the presence of heteroskedasticity and zero trade values. Contrary to these arguments, Martinez-Zarzoso et al. (2006) show that the PPML estimation is not always the best estimator, because small changes in the simulation setting can lead to different outcomes. Therefore, we apply two different estimation techniques: the PPML estimation including the zero trade values and the standard panel data estimation excluding the zero trade values with fixed and random effects.[11]

[11] In this research, we only report results from the PPML estimation with fixed and random effects because it includes the zero trade values in a certain year and performs better than the standard panel data estimation. On the other hand, there are two different estimation techniques in the panel setting: random effects and fixed effects. The random effects estimation assumes that the individual country pair effect is a random variable. In contrast, the fixed effects method assumes the presence of unobserved country specific factors. The fixed effects estimation can help to alleviate potential specification errors from omitted variables, a cause of an endogeneity problem. The generally accepted way of choosing between fixed and random effects is performing the Hausman specification test (Hausman, 1978), which compares the fixed to random effects under the null hypothesis that the individual effects are uncorrelated with the other regressors in the model. We conducted the Hausman test and found that the null hypothesis is rejected. Thus, our empirical analysis will

2. Summary Statistics

The estimations use annual data consisting of 210,095 country pairs in total. The number of observations varies per year. Summary statistics for the data used in the estimations are presented in Table 2. Of all observations, 10,692 country pairs (5.1 percent) belong to RTAs ("insiders") and 163,549 country pairs (77.8 percent) belong to the member-nonmember ("outsiders") relationship. The 62.1 (14.6 and 23.3) percent of 12,522 country pairs apply bilateral (diagonal and full, respectively) cumulation of RoO to members in the RTAs. The 64.8 (35.2) percent of 10,725 country pairs form RTAs under GATT Article XXIV (the Enabling Clause, respectively). The 41.4 (28.2 and 30.5) percent of 6,946 country pairs form RTAs between developed (developed-developing and developing, respectively) countries under GATT Article XXIV.

In Table 2, we observe some notable findings. First, the bilateral trade between RTA members is almost twice as high as the average bilateral trade in the whole sample. On the other hand, the logarithmic mean of trade (2.23) in column (3) is comparable to that (2.38) in column (1), indicating that the bilateral trade between members and nonmembers is not much smaller than the average volume of bilateral trade in the whole sample. From these figures, we may expect that RTAs create more trade among members without seriously diverting trade from nonmembers. However, this is a casual observation because other important variables, such as year and country size, are not controlled. In addition, self-selection may have played an important role in generating a large trade volume between RTA members because countries that trade with each other more are likely to form RTAs in the first place. Second, there is no significant difference in economic size for the membership of RTAs, but geographical distance is very important for the membership. Thirdly, RTA membership seems to have been chosen after taking account of specific, possibly exogenous, country characteristics. RTA member countries are more likely to share a common land border and common language, but not necessarily a common historical background.

Focusing on the cumulation of RoO, bilateral trade between members is much higher than the trade between members and nonmembers; this is similar to the average case without classifying the type of RoO cumulation. Moreover, regardless of the membership, the bilateral trade of country pairs increases as the type of RoO cumulation is deepened and

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focus more on the results from the fixed effect estimation.

liberalized. Richer countries adopt more liberalized cumulation schemes as indicated by the mean values of the log of GDP in pairs. The transportation cost resulting from distance does not affect the choice of cumulation scheme. The country specific characteristics, such as border sharing, common languages, and colonial background, do not reveal any specific pattern. No surprising characteristic was evident from the different legal bases of RTA formation. As we expect, the bilateral trade and economic size between RTA members under the Enabling Clause is smaller than that under GATT Article XXIV.

3. Empirical Results

Tables 3-5 report econometric results from the Gravity regression analysis of RTA trade effects by provisions related to the cumulations of RoO and the legal basis for GATT/WTO compatibility. Table 6 summarizes the trade effects of RTAs by type of provisions searching for best practices RTAs.

Equations (1) and (3) in Table 3 present the estimation results of the impact of RTAs on intra- and extra-bloc membership in general. As we interpret the random effects in equation (3), the conventional variables behave the way the model predicts and the estimated coefficients are statistically significant, excluding the statistically insignificant border dummy. To summarize briefly, the estimated coefficient on bilateral distance is significantly negative. The estimated coefficients on log of GDP in pairs, common language dummy, and colony dummy are all significantly positive. This indicates that the transaction cost, market size, and historical background matter for increasing bilateral trade.

From equation (1) of the fixed effect estimation, estimated coefficient on the RTA membership dummy variable is positive and statistically significant. The estimate on the intra-bloc membership implies that a pair of countries that joins an RTA experiences a 3.5 percent increase in trade, with other variables constant.[12] The estimate on the extra-bloc dummy variable is negative and statistically significant. The estimate implies that RTA members' trade with nonmembers is estimated to fall by 11.6 percent. Hence, RTAs in general increase trade among members and divert trade from other countries that do not belong to the bloc.

[12] Since $\exp^{0.034}=1.035$, an increase from zero (no membership) to one (membership) in the RTA dummy variable raises bilateral trade by 3.5 percent.

A. Multilateral Rules Governing Regionalism: GATT Article XXIV vs Enabling Clause

Equations (2) and (4) in Table 3 and Table 6 summarize the effects of RTAs by legal provision on bilateral trade flows. We compare the relative effects of RTAs established under GATT Article XXIV to RTAs established under the Enabling Clause. The RTAs under GATT Article XXIV create more intra-bloc trade (8.2 percent > 3.5 percent) and divert less extra-bloc trade (-8.1 percent > -11.6 percent) than RTAs on average in Equation (1). The trade creation effect under the Enabling Clause is negative (-7.1 percent), and the trade diversion is somewhat stronger (-8.6 percent) than that under GATT Article XXIV. This result supports our argument favoring more strict application of WTO's multilateral principle to RTAs.

The relatively more favorable outcomes of RTAs under GATT Article XXIV compared to those under the Enabling Clause could be caused by member-specific characteristics; that is, the different trade effects are the result not of different legal provisions but of different membership combinations. In order to check whether the member-specific characteristics matter, we divide the set of GATT/Insiders into the following three subsets: GATT/North-North Insiders, GATT/North-South Insiders, and GATT/South-South Insiders.[13] We then reestimate the following equation.

$$\ln(Trade_{ijt}) = \alpha_0 + \alpha_1 \ln(GDP_{it}GDP_{jt}) + \alpha_2 \ln(DIST_{ij}) + \beta' X' + \gamma_3 RTA/GATT/North\text{-}North\ Insiders_{ijt} + \gamma_4 RTA/GATT/North\text{-}South\ Insiders_{ijt} + \gamma_5 RTA/GATT/South\text{-}South\ Insiders_{ijt} + \gamma_6 RTA/GATT/Outsiders_{ijt} + \gamma_7 RTA/Enabling/Insiders_{ijt} + \gamma_8 RTA/Enabling/Outsiders_{ijt} + \delta\, Year_t + \varepsilon_{ijt}$$

where

- *RTA/GATT/North-North Insiders* is a binary variable which is unity if *i* and *j* belong to the same RTA formed between developed countries under GATT Article XXIV,
- *RTA/GATT/North-South Insiders* is a binary variable which is unity if *i* and *j* belong to the same RTA formed between developed and developing countries under GATT Article XXIV, and
- *RTA/GATT/South-South Insiders* is a binary variable which is unity if *i* and *j* belong to the same RTA formed between developing countries under GATT Article XXIV.

[13] The classification of North and South is based on Subramanian and Wei (2003).

Equations (5)-(8) in Table 4 summarize trade effects of RTAs taking into account member-specific characteristics. We find that RTAs with developed countries create more trade between members, indicating that the member-specific characteristics are important factors. However, this finding does not undermine our argument in favor of RTAs established under GATT Article XXIV over those established under the Enabling Clause. The three different membership combinations of RTAs under GATT Article XXIV create more trade between members compared to RTAs under the Enabling Clause. This result clearly supports our argument favoring more strict application of WTO's multilateral principle to RTAs as a best practice.

B. Harmonizing RoO: Bilateral, Diagonal, and Full Cumulation

Equations (9) and (11) in Table 5 and Table 6 estimate the trade effects of RTAs with different cumulation schemes. Analyzing the fixed effect estimation in Equation (9), full cumulation (35.8 percent) is the best option in terms of trade creation effect, followed by diagonal cumulation (16.0 percent). The trade creation effect of bilateral cumulation is limited to 0.9 percent insignificantly. Diagonal cumulation diverts the largest volume of trade from nonmembers to members (-16.0 percent) among the three schemes. Overall, full cumulation is the optimal provision of RoO cumulation in terms of creating the most intra-bloc trade (35.8 percent) and diverting the least extra-bloc trade (-3.1 percent).

C. Best Practices for RTAs

Equations (10) and (12) in Table 3 and Table 6 estimate the trade effects of RTAs with different cumulation schemes under different legal provisions using two dummies that interact. Again analyzing the fixed effect estimation in the Equation (10), full cumulation under GATT Article XXIV is the best option in terms of creating the most intra-bloc trade (34.9 percent) and diverting the least extra-bloc trade (-1.8 percent). We do not compare each of the interacted cases with the Enabling Clause case because we do not have RTAs with diagonal or full cumulation in our data set. However, comparing RTAs with bilateral cumulation under the Enabling Clause, we argue that RTAs should be established under GATT Article XXIV.

Table 6 also summarizes the estimation results for the best practices RTAs by different types of provisions. As shown by the relative trade effects to the general RTA case as a ratio, full cumulation under GATT Article XXIV is the best RTA framework and the hub-and-spoke type of bilateral RTA should be avoided. As Rajapatirana (1994) and Baldwin (2006) note, RTAs should not be established under the Enabling Clause. As an alternative to full cumulation, we propose diagonal cumulation to boost spoke-to-spoke trade, but this may not be the most effective way to foster global free trade because of the significant trade diversion effect expected.

IV. CONCLUDING REMARKS

In this research, we proposed some policy options in search of best practices for RTAs as a way to foster global free trade. More specifically, we quantitatively estimated the trade creation and diversion effects of harmonized and cumulated RoO (bilateral, diagonal, and full cumulation) for RTAs established under GATT Article XXIV and under the Enabling Clause by adopting a Gravity regression analysis.

We found that (i) RTAs in general create trade among members and divert trade from countries that do not belong to the bloc; (ii) RTAs should be established under the comprehensive GATT Article XXIV, rather than under the piecemeal Enabling Clause; and (iii) full cumulation is the optimal provision of RoO cumulation in terms of creating the most intra-bloc trade and diverting the least extra-bloc trade.

Overall, we strongly recommend that RTAs should employ full cumulation of RoO under GATT Article XXIV. This strategy will enable regionalism to be compatible with multilateralism, to be sustainable in the long run, and finally to lead us to global free trade.

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Table 1. Classification of Regional Trade Agreements (RTAs)

Legal Provisions	RTAs
GATT Article XXIV	ANZCERTA, CACM, Canada-Chile, Canada-Costa Rica, Canada-Israel, CARICOM, CEFTA, CIS, Chile-El Salvador, Chile-Mexico, Chile-Costa Rica, Costa Rica-Mexico, EC, EC-Algeria, EC-Chile, EC-Croatia, EC-Egypt, EC-FYROM, EC-Iceland, EC-Israel, EC-Jordan, EC-Lebanon, EC-Morocco, EC-Norway, EC-South Africa, EC-Switzerland, EC-Syria, EC-Tunisia, EC-Turkey, EFTA, EFTA-Chile, EFTA-Croatia, EFTA-FYROM, EFTA-Israel, EFTA-Jordan, EFTA-Morocco, EFTA-Singapore, EFTA-Tunisia, EFTA-Turkey, El Salvador-Mexico, Guatemala-Mexico, Honduras-Mexico, India-Singapore, Israel-Mexico, Japan-Singapore, Japan-Mexico, Jordan-Singapore, Korea-Chile, Mexico-Nicaragua, NAFTA, New Zealand-Singapore, Pan-Arab FTA, Panama-El Salvador, PATCRA, Thailand-Australia, Thailand-New Zealand, Turkey-Croatia, Turkey-Israel, Turkey-FYROM, Turkey-Bosnia and Herzogovina, Turkey-Tunisia, SACU, Singapore-Australia, USA-Australia, USA-Chile, USA-Israel, USA-Jordan, USA-Singapore
Enabling Clause	AFTA, CAN, CEMAC, COMESA, EAC, GCC, MERCOSUR, PATCRA, WAEMU

Provisions related to RoO Cumulation	RTAs
Diagonal Cumulation	PANEURO (EC 15, Bulgaria, Czech Republic, Estonia, Hungary, Iceland, Latvia, Liechtenstein, Lithuania, Norway, Poland, Romania, Slovak Republic, Slovenia, Switzerland, Turkey), Canada-Israel
Full Cumulation	EEA excluding Switzerland, EC-Morocco, EC-Tunisia, EC-Algeria, ANZCERTA
Bilateral Cumulation	Rest of RTAs

Note: ASEAN Free Trade Area (AFTA), The Australia New Zealand Closer Economic Relations Trade Agreement (ANZCERTA), Central American Common Market (CACM), Andean Community (CAN), Caribbean Community and Common Market (CARICOM), Central European Free Trade Agreement (CEFTA), Economic and Monetary Community of Central Africa (CEMAC), Commonwealth of Independent States (CIS), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), European Communities (EC), European Free Trade Association (EFTA), Gulf Cooperation Council (GCC), Southern Common Market (MERCOSUR), North American Free Trade Agreement (NAFTA), Papua New Guinea - Australia Trade and Commercial Relations Agreement (PATCRA), Southern Africa Customs Union (SACU), and West African Economic and Monetary Union (WAEMU).

Table 2. Summary Statistics

	All (N =210,095)				RTA/Insiders (N =10,692)				RTA/Outsiders (N =163,549)			
	Mean		Standard Deviation (SD)		Mean		Standard Deviation (SD)		Mean		Standard Deviation (SD)	
Log of Trade	2.38		2.97		4.41		3.45		2.23		2.81	
Log of GDP in pairs	21.27		2.77		21.43		3.80		21.34		2.70	
Log of Distance	8.20		0.79		6.88		0.81		8.30		0.70	
Common Land Border	0.02		0.15		0.18		0.38		0.01		0.10	
Common Language	0.18		0.39		0.38		0.49		0.17		0.38	
Colony	0.02		0.12		0.00		0.04		0.01		0.12	
	RTA/ Bilateral/Insiders (N=7,775)		RTA/ Bilateral/Outsiders (N=100,097)		RTA/ Diagonal/Insiders (N=1,833)		RTA/ Diagonal/Outsiders (N=13,950)		RTA/ Full/Insiders (N=2,914)		RTA/ Full/Outsiders (N=53,394)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Log of Trade	3.23	3.10	1.69	2.67	5.64	2.07	2.08	2.25	7.24	2.41	3.46	2.89
Log of GDP in pairs	20.17	3.56	20.71	2.67	23.47	1.76	21.89	2.37	24.72	1.98	22.51	2.45
Log of Distance	6.94	0.84	8.32	0.71	6.63	0.62	8.14	0.72	6.80	0.68	8.23	0.69
Common Land Border	0.19	0.39	0.01	0.11	0.10	0.30	0.01	0.12	0.11	0.32	0.01	0.08
Common Language	0.49	0.50	0.20	0.40	0.03	0.17	0.08	0.28	0.07	0.26	0.14	0.35
Colony	0.02	0.12	0.00	0.04	0.01	0.09	0.00	0.06	0.04	0.20	0.04	0.21
	RTA/GATT /Insiders (N=6,946)		*RTA/GATT/North-North Insiders (N=2,873)*		*RTA/GATT/North-South Insiders (N=1,956)*		*RTA/GATT/South-South Insiders (N=2,117)*		RTA/GATT /Outsiders (N=125,202)		RTA/Enabling /Insiders (N=3,779)		RTA/Enabling /Outsiders (N=84,548)	
	Mean	SD	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	Mean	SD	Mean	SD	Mean	SD
Log of Trade	5.61	3.02	*7.86*	*2.04*	*5.33*	*2.26*	*2.83*	*2.23*	2.67	2.89	2.20	3.07	1.81	2.69
Log of GDP in pairs	22.47	4.05	*24.70*	*2.07*	*23.97*	*1.97*	*18.07*	*4.02*	21.69	2.77	19.53	2.28	21.14	2.52
Log of Distance	6.89	0.90	*6.68*	*0.62*	*7.56*	*0.74*	*6.50*	*1.00*	8.24	0.75	6.89	0.63	8.37	0.60
Common Land Border	0.11	0.31	*0.15*	*0.36*	*0.02*	*0.15*	*0.13*	*0.35*	0.01	0.11	0.30	0.46	0.01	0.10
Common Language	0.31	0.46	*0.10*	*0.30*	*0.08*	*0.27*	*0.82*	*0.38*	0.16	0.36	0.50	0.50	0.20	0.40
Colony	0.03	0.17	*0.04*	*0.19*	*0.06*	*0.23*	*0.00*	*0.00*	0.02	0.14	0.00	0.06	0.01	0.10

Table 3. Trade Effect of RTAs: Gravity Regression Analysis

Dependent Variable: $\ln(Trade_{ij})$	PPML with Fixed Effect		PPML with Random Effect	
	(1)	(2)	(3)	(4)
$\ln(GDP_iGDP_j)$	0.561 (0.007)***	0.566 (0.007)***	0.482 (0.004)***	0.483 (0.004)***
$\ln(Dist_{ij})$			-0.603 (0.014)***	-0.600 (0.014)***
Border			-0.068 (0.073)	-0.041 (0.073)
Colony			0.399 (0.093)***	0.394 (0.093)***
Common Language			0.389 (0.029)***	0.396 (0.029)***
RTA/Insiders	0.034 (0.011)***		0.051 (0.011)***	
RTA/Outsiders	-0.123 (0.006)***		-0.110 (0.006)***	
RTA/GATT/Insiders		0.079 (0.012)***		0.094 (0.010)***
RTA/GATT/Outsiders		-0.085 (0.006)***		-0.074 (0.006)***
RTA/Enabling/Insiders		-0.074 (0.025)***		-0.074 (0.024)**
RTA/Enabling/Outsiders		-0.090 (0.007)***		-0.078 (0.006)***
Time Dummies	Yes	Yes	Yes	Yes
Observations	202,808	202,808	210,095	210,095

Notes: Standard errors are in parentheses. Intercept is included but not reported. *, **, and *** indicate that the estimated coefficients are statistically significant at 10 percent, 5 percent, and 1 percent, respectively. For the PPML estimation with fixed effect, 7,287 observations out of 210,095 observations are dropped due to all zero outcomes for all the periods covered.

Table 4. Trade Effect of RTAs with Member-specific Characteristics

Dependent Variable: $\ln(Trade_{ij})$	PPML with Fixed Effect		PPML with Random Effect	
	(5)	(6)	(7)	(8)
$\ln(GDP_iGDP_j)$	0.549 (0.007)***	0.568 (0.007)***	0.479 (0.004)***	0.484 (0.004)***
$\ln(Dist_{ij})$			-0.606 (0.014)***	-0.600 (0.014)***
Border			-0.050 (0.073)	-0.041 (0.073)
Colony			0.409 (0.093)***	0.391 (0.093)***
Common Language			0.385 (0.029)***	0.399 (0.029)***
RTA/GATT/North-North Insiders	0.254 (0.021)***	0.245 (0.021)***	0.235 (0.021)***	0.223 (0.020)***
RTA/GATT/North-South Insiders	0.042 (0.015)***	0.034 (0.015)**	0.053 (0.015)***	0.044 (0.015)***
RTA/GATT/South-South Insiders	0.010 (0.022)	0.012 (0.022)	0.078 (0.022)***	0.078 (0.022)***
RTA/GATT/Outsiders	-0.087 (0.006)***	-0.082 (0.006)***	-0.075 (0.006)***	-0.073 (0.006)***
RTA/Enabling/Insiders		-0.069 (0.025)***		-0.048 (0.024)**
RTA/Enabling/Outsiders		-0.090 (0.007)***		-0.078 (0.006)***
Time Dummies	Yes	Yes	Yes	Yes
Observations	202,808	202,808	210,095	210,095

Notes: Standard errors are in parentheses. Intercept is included but not reported. *, **, and *** indicate that the estimated coefficients are statistically significant at 10 percent, 5 percent, and 1 percent, respectively. For the PPML estimation with fixed effect, 7,287 observations out of 210,095 observations are dropped due to all zero outcomes for all the periods covered.

Table 5. Trade Effect of RTAs with Harmonizing RoO and Governing GATT Article XXIV

Dependent Variable: $\ln(Trade_{ij})$	PPML with Fixed Effect		PPML with Random Effect	
	(9)	(10)	(11)	(12)
RTA/Bilateral/Insiders	0.009 (0.012)		0.029 (0.011)***	
RTA/Bilateral/Outsiders	-0.094 (0.006)***		-0.087 (0.006)***	
RTA/Diagonal/Insiders	0.148 (0.014)***		0.122 (0.014)***	
RTA/Diagonal/Outsiders	-0.174 (0.009)***		-0.172 (0.009)***	
RTA/Full/Insiders	0.306 (0.015)***		0.304 (0.015)***	
RTA/Full/Outsiders	-0.032 (0.009)***		-0.015 (0.008)*	
RTA/Bilateral/GATT/Insiders		0.038 (0.013)***		0.059 (0.013)***
RTA/Bilateral/GATT/Outsiders		-0.060 (0.006)***		-0.056 (0.006)
RTA/Diagonal/GATT/Insiders		0.202 (0.030)***		0.187 (0.030)***
RTA/Diagonal/GATT/Outsiders		-0.160 (0.009)***		-0.156 (0.009)***
RTA/Full/GATT/Insiders		0.299 (0.016)***		0.303 (0.015)***
RTA/Full/GATT/Outsiders		-0.018 (0.009)**		-0.001 (0.008)
RTA/Bilateral/Enabling/Insiders		-0.059 (0.025)**		-0.035 (0.024)
RTA/Bilateral/Enabling/Outsiders		-0.082 (0.007)***		-0.071 (0.007)***
Time Dummies	Yes	Yes	Yes	Yes
Observations	202,808	202,808	210,095	210,095

Notes: Standard errors are in parentheses. Intercept is included but not reported. *, **, and *** indicate that the estimated coefficients are statistically significant at 10 percent, 5 percent, and 1 percent, respectively. For the PPML estimation with fixed effect, 7,287 observations out of 210,095 observations are dropped due to all zero outcomes for all the periods covered.

Table 6. Best Practices for RTAs

Absolute Trade Effects (%)	Fixed Effect		Random Effect	
	Trade Creation	Trade Diversion	Trade Creation	Trade Diversion
RTA in General	3.5	-11.6	5.2	-10.4
GATT Article XXIV	8.2	-8.1	9.9	-7.1**
Enabling Clause	-7.1	-8.6	-7.1**	-7.5
Bilateral Cumulation	0.9#	-9.0	2.9	-8.3
Diagonal Cumulation	16.0	-16.0	13.0	-15.8
Full Cumulation	35.8	-3.1	35.5	-1.5*
Bilateral Cumulation and GATT Article XXIV	3.9	-5.8	6.1	-5.4#
Diagonal Cumulation and GATT Article XXIV	22.4	-14.8	20.6	-14.4
Full Cumulation and GATT Article XXIV	34.9	-1.8**	35.4	-0.1#
Bilateral Cumulation and the Enabling Clause	-5.7**	-7.9	-0.1#	-3.4
Relative Trade Effects to the General Case (Ratio)	Trade Creation	Trade Diversion	Trade Creation	Trade Diversion
RTA in General	1.00	1.00	1.00	1.00
GATT Article XXIV	2.38	0.70	1.88	0.68**
Enabling Clause	-3.06	0.74	-2.36**	0.72
Bilateral Cumulation	0.26#	0.78	0.56	0.80
Diagonal Cumulation	4.61	1.38	2.48	1.52
Full Cumulation	10.35	0.27	6.79	0.14*
Bilateral Cumulation and GATT Article XXIV	1.12	0.50	1.16	0.52#
Diagonal Cumulation and GATT Article XXIV	6.47	1.28	3.93	1.39
Full Cumulation and GATT Article XXIV	10.08	0.15**	6.76	0.01#
Bilateral Cumulation and the Enabling Clause	-2.66**	0.68	-1.02#	0.33

Note: All the estimated coefficients are statistically significant at 1 percent but #, *, and ** indicate that the estimated coefficients are statistically insignificant, significant at 10 percent, and at 5 percent, respectively.