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**Working Paper**

## Do trade facilitation provisions in regional trade agreements matter? Impact on trade costs and multilateral spillovers

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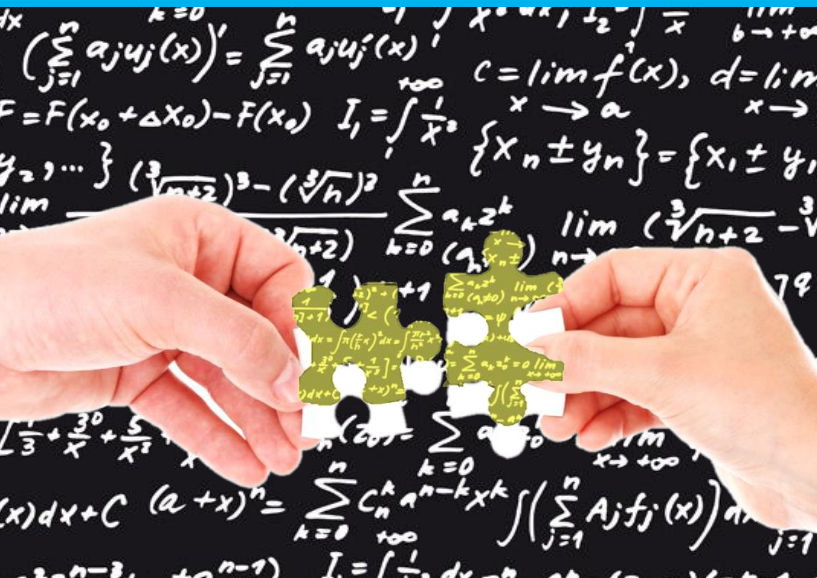
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Do trade facilitation provisions  
in regional trade agreements  
matter?

Impact on trade costs and  
multilateral spillovers



Yann Duval

Nora Neufeld

Chorthip Utoktham

ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON TRADE

# Working Paper

NO. 164 | 2016

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# WORKING PAPER

## **Do trade facilitation provisions in regional trade agreements matter? Impact on trade costs and multilateral spillovers**

Yann Duval, Nora Neufeld and Chorthip Utoktham\*

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## Abstract

The scope and depth of bilateral and regional preferential trade agreements (RTAs) negotiated over the past 15 years has expanded beyond traditional market access and preferential tariffs to include provisions on a wide range of issues, including trade facilitation. This study is a first attempt to measure the extent to which RTA provisions related to those featured in the WTO Trade Facilitation Agreement (TFA) contribute to reducing trade costs. Inclusion of such provisions in RTAs does not appear to systematically result in their implementation. Nonetheless, we find that TFA-related provisions in RTAs have a statistically significant impact on bilateral trade costs among RTA members. Aid for Trade Facilitation measures and Freedom of Transit provisions are found to be relatively more effective at reducing trade costs between members than other types of trade facilitation measures. Importantly, the discriminatory (preferential) effect of trade facilitation provisions in RTAs is accompanied by a non-discriminatory reduction in trade costs with all trade partners. Multilateral spillovers from trade facilitation measures in RTAs on trade costs are found to exceed any discriminatory effects within three years of an RTA's entry into force, highlighting the complementarity between regional and global trade facilitation initiatives.

**Keywords:** trade integration, trade facilitation, trade costs, WTO, trade policy, WTO TFA, regional trade agreements (RTAs), free trade agreements (FTAs), multilateral spillovers, discriminatory effects.

**JEL:** F1, F5, F6

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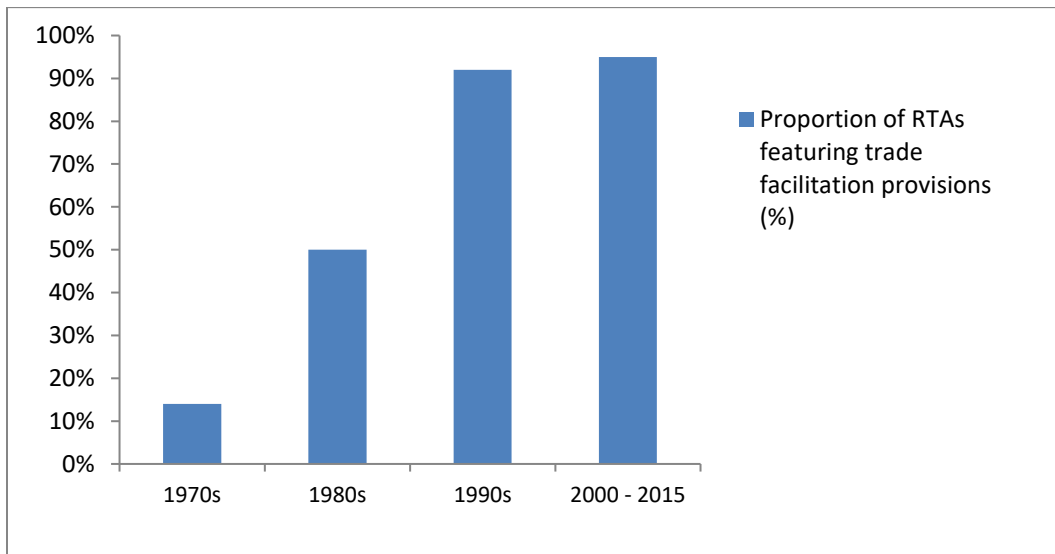
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# 1. Introduction

The number of regional trade agreements (RTAs) has increased rapidly over the past two decades. The content and scope of the RTAs has also expanded considerably beyond agreements on preferential tariffs and/or their eliminations. In particular, trade facilitation issues, i.e., measures aimed at increasing the efficiency of trade procedures, are now almost systematically included in bilateral and regional trade agreements, as shown in figure 1.

**Figure 1. RTAs increasingly address trade facilitation**



Source: Neufeld (2016)

While the benefits of trade facilitation are well established (see WTO, 2015 and ADB/ESCAP, 2013 for literature reviews), it has long been debated whether such benefits can be effectively captured through negotiations of bilateral or regional preferential trade agreements (e.g., Moise, 2004; Maur, 2008). After all, given the obvious benefits of simpler procedures for both governments and traders, aren't countries already actively working on trade facilitation unilaterally regardless of what commitments they may be making in RTAs? In addition, given the likelihood that trade facilitation measures will apply to all trade partners once implemented, does including trade facilitation provisions in RTAs really help preferential trade partners in reducing trade costs with each other? If so, do the trade facilitation commitments made through RTAs spillover and help reduce trade costs with other trade partners?



This paper is a first attempt to bring some answers to these questions by measuring the extent to which trade facilitation provisions included in RTAs may have reduced trade costs. Limiting our investigation to those trade facilitation measures that are related to the ones now included in the WTO Trade Facilitation Agreement (TFA), we find a fairly robust and statistically significant relationship between inclusion of trade facilitation provisions in RTAs and reduction in trade costs. We also find evidence that trade facilitation provisions in RTAs result in multilateral non-discriminatory trade costs reduction over time. Finally, our results suggest that, among different types of TFA-related measures considered, RTA trade facilitation commitments related to Aid for trade facilitation, transit, and transparency are most effective in reducing trade costs.

Following an overview of countries' commitments to trade facilitation through RTAs in section II, we very briefly review the literature on measuring the impact of trade facilitation on trade cost in section III.A. Methodology and data sources used to estimate a trade cost model covering trade facilitation provisions in RTAs are introduced in section III.B. Results are presented and discussed in section III.C, followed by conclusions and limitations of the study.

## **2. Trade facilitation commitments through RTAs: At a glance**

Several studies on trade facilitation provisions in RTAs have already been conducted, most recently by Neufeld (2014; 2016). While earlier studies (e.g., Bin Peng, 2008; Duval, 2011) used broader definitions of trade facilitation,<sup>1</sup> Neufeld focused on measures directly linked to those of the WTO TFA.

The 5 TFA-related measures found to be most frequently included in RTAs – out of 28 measures considered in her study<sup>2</sup> - are (1) Exchange of customs-related information, (2) Cooperation on customs & other TF matters, followed by (3) Simplification of formalities/procedures, (4) Publication and availability of information, and (5) Appeals, respectively. The comprehensiveness of the trade facilitation provisions of RTAs varies greatly but has increased over time, with more recent agreements including more provisions. No obvious link between inclusion of trade facilitation provisions in RTAs and level of development

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<sup>1</sup> Trade facilitation in some RTAs include procedures related to Sanitary and Phyto-sanitary (SPS) and Technical Barriers to Trade (TBT) Agreements (e.g., ASEAN Trade in Goods Agreement).

<sup>2</sup> For the full list of measures, refer to figure 2.

is apparent, with sixty per cent of the 30 most trade-facilitating treaties featuring both developing and developed signatories (Neufeld, 2016).

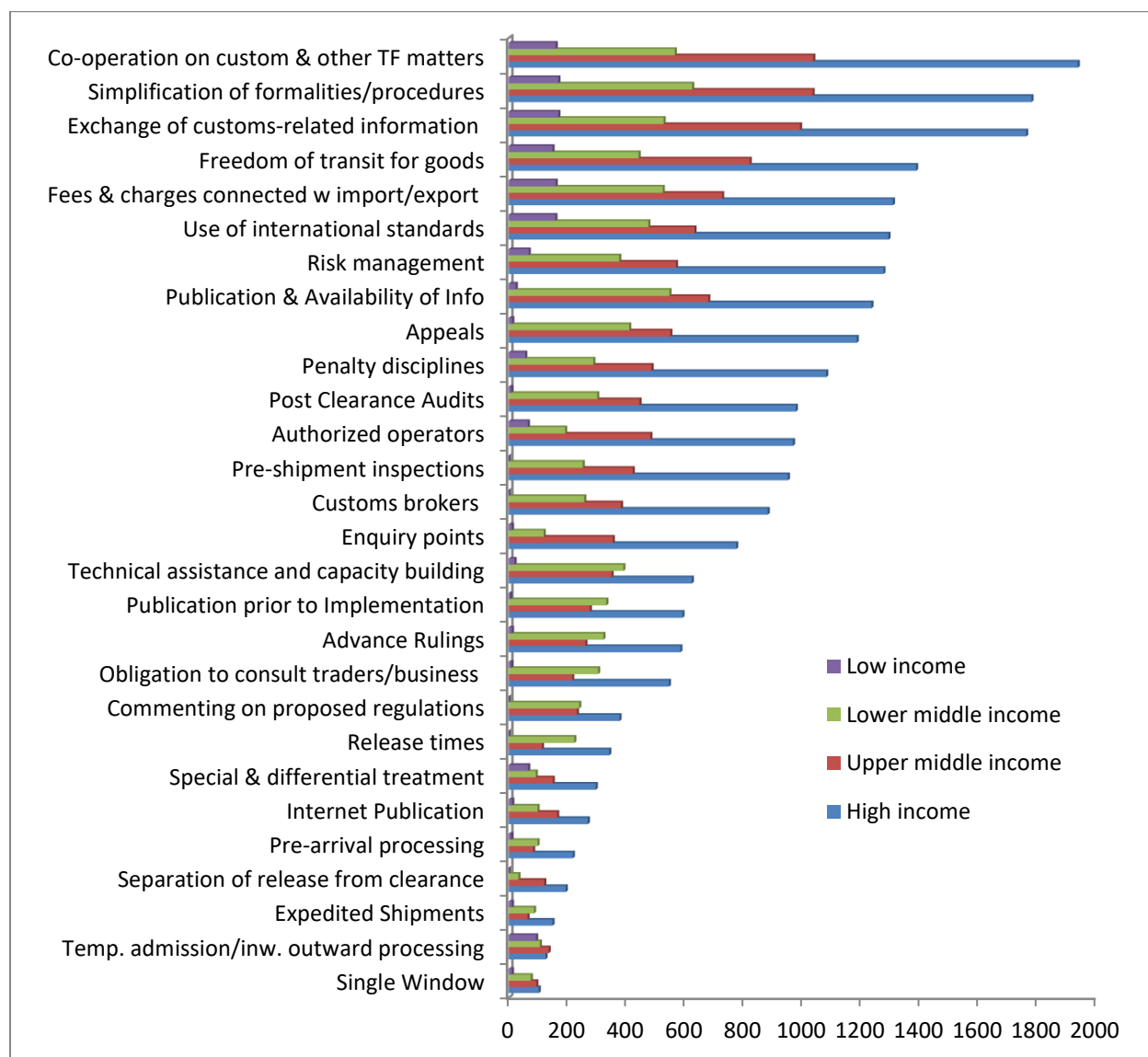
Using data from Neufeld (2016) on those 28 TFA-related provisions in 234 RTAs,<sup>3</sup> and considering the membership of each RTA, we are able to construct a bilateral dataset of trade facilitation commitments through RTAs to investigate this a little more. Specifically, we are able to examine how often countries from different income groups have committed to different TFA measures with trade partners bilaterally through RTAs (figure 2). High income and upper middle income countries have made the greatest number of commitments through RTAs regardless of the TFA measures considered. Not surprisingly, the overall number of commitments made by low income countries is much lower, in large part because such countries are less often involved in RTAs to begin with.

Figure 2 reveals that the 3 most-frequent TFA measures are the same for all income groups - and also identical to those found to be most frequent in RTA texts. However, Freedom of transit of goods and Fees & charges connected with import and export round up the top 5 across most of the income groups. The relative frequency of various TFA measures is broadly consistent across country groups, with some exceptions. Special and differential treatment provisions are, unsurprisingly, relatively more frequent in low income countries, but so are also commitments to authorized operators. Overall, commitments by lower middle income countries seem to be more wide ranging than for other groups, with higher number of commitments on measures such as Obligations to consult traders and Advance rulings than in upper income countries.

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<sup>3</sup> Neufeld's dataset covers RTAs included in the WTO RTA-IS database entered into force between 2005 and 2012. Please refer to the Annex of Neufeld (2015 and 2016) for the full list.

**Figure 2. TFA-related commitments in RTAs by income group**



Source: Authors

Note: the figure shows, for each of 28 TFA-related measures and based on the entire dataset, the total number of bilateral commitments made by all countries in each income group through their RTAs.<sup>4</sup>

Using the above-mentioned data from Neufeld (2016), we also develop an index of countries' commitments to trade facilitation through RTAs. The index, referred to in this paper as the Regional Trade Facilitation Commitment (RTFC) index, is simply the number of the 28 TFA-related provisions to which any country committed through any of its RTAs – noting that such commitments may often be of a non-binding nature, given the flexible language used in most

<sup>4</sup> The list of countries included in the analysis available in Appendix Table A.2.

RTAs, as well as their generally weak dispute resolution mechanism. To the extent that trade facilitation measures in RTAs may be non-discriminatory once implemented, this index gives us a measure of a country's overall international trade facilitation commitments outside of the multilateral trading system and the WTO TFA.

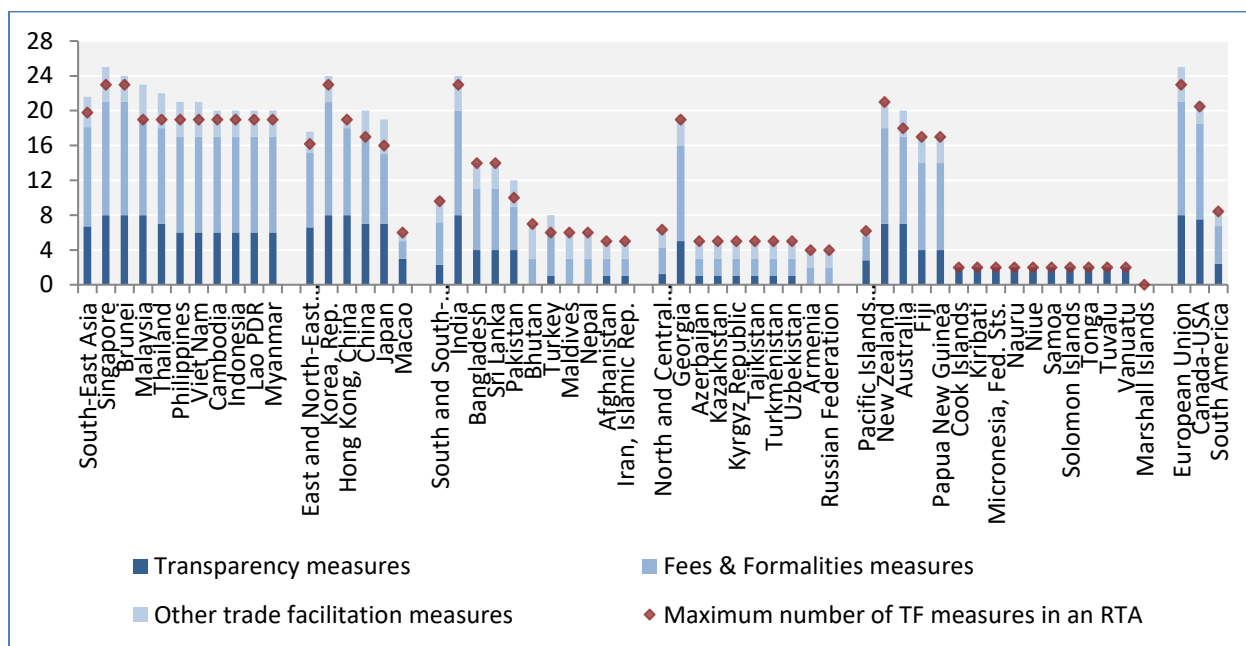
TFA-related commitments of countries in Asia and the Pacific and other World regions through RTAs (i.e., RTFCs) are shown in figure 3, with different shades representing different types of trade facilitation measures. Large developed trading partners are unsurprisingly highly committed to trade facilitation through RTAs, with the European Union having made commitments in RTAs on 25 of the 28 TFA-related measures considered. A few developing countries also individually stand out by their level of commitments through RTAs, including Singapore and Republic of Korea, but also India and Georgia (in their own subregions).

European Union, Canada and United States of America aside, South-East Asia, Central America and East and North-East Asia have some of the highest levels of exposure to TFA-related commitments through RTAs. On average, the numbers of trade facilitation measures included in RTAs involving South-East Asia and East and North-East Asia countries are 20 and 16, respectively. Commitments of South-East Asian countries through RTAs are also particularly consistent, essentially due to the emphasis placed by ASEAN on trade facilitation issues. In contrast, the average level of trade facilitation commitments through RTAs in South and South-West Asia is only 10 (of 28). Many countries in Africa, as well as some in South America, have even lower levels of commitments. North and Central Asian and Pacific Islands subregional average commitments are lowest at only 6 (of 28).

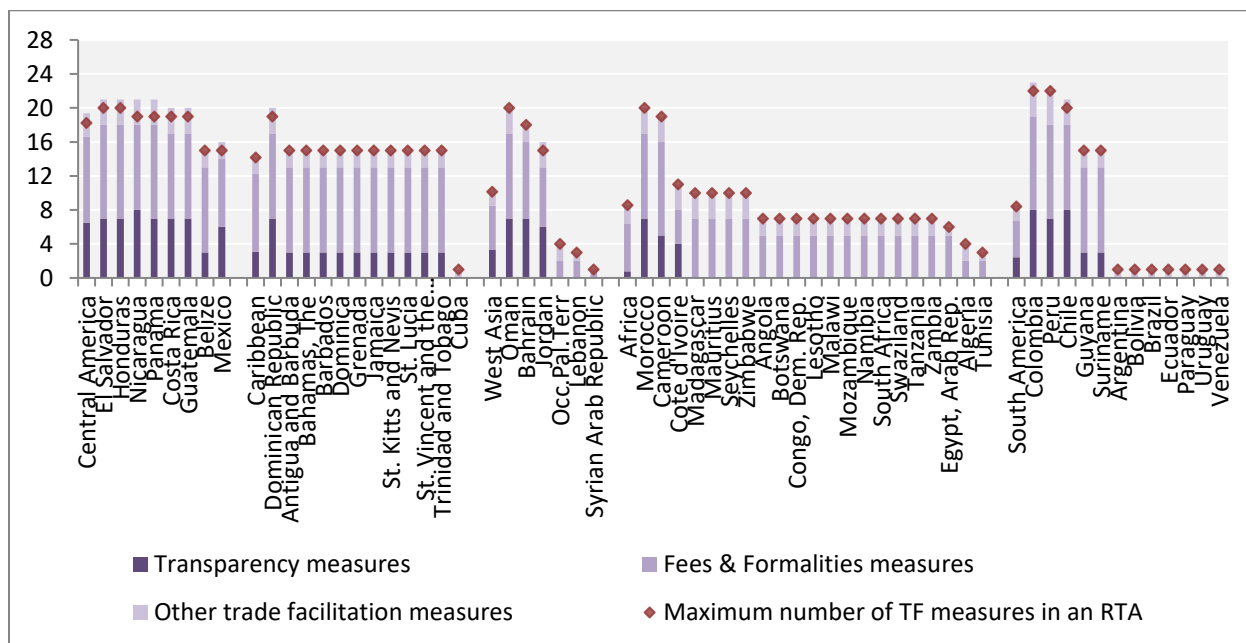
Importantly, figure 3 is based solely on the RTAs reviewed in Neufeld (2016). While no countries appear to have committed to all 28 TFA-related provisions through these RTAs, countries have sometimes made commitments on other trade facilitation measures (beyond those set out in the TFA) in their RTAs. In addition, they may have made commitments closely related to those included in the TFA through other agreements not reported to the WTO and not considered to be trade agreements as such (e.g., in the case of South-East Asia, ASEAN countries have a separate ASEAN Customs Agreement, which covers several TFA measures). Therefore, the scores are likely to represent the lower bound of countries' commitments to TFA-related measures through regional agreements.

**Figure 3. Number of WTO TFA-related provisions committed to through RTAs (RTFC index)**

**a. Asia-Pacific Economies**



**b. West Asia and other world regions**



Source: Authors' calculations based on Neufeld (2016)

Notes: Of the total 28 TFA-related measures considered, 8 are transparency measures and 16 are measures related to fees & formalities. The category "Other provisions in TF" includes "transit" related to GATT Article V, "Exchange of customs-related information" and "Special & differential treatment" and "Technical assistance and capacity building". The red diamonds indicate, for each country, the highest number of TFA measures found in any one of its RTAs.



### **3. Measuring the impact of WTO TFA-related commitments in RTAs**

#### **3.1 Literature review**

Measuring international trade costs comprehensively is generally a complex endeavour, given the many cost components and factors involved. In that context, the inverse-gravity measure of trade cost established by Novy (2013) has become an increasingly accepted measure of aggregate international trade costs, enabling calculation of bilateral trade costs using macro-level data. The United Nations ESCAP and the World Bank now maintain a joint global database of international trade costs based on that measure, covering trade costs for over 180 countries since 1995.<sup>6</sup>

The importance of non-tariff barriers in overall transaction costs is now well established. Based on an extensive review of the gravity modelling literature, Anderson and Van Wincoop (2004) inferred that tariff-equivalent trade costs amounted to approximately 170% for industrialized countries, while tariff barriers only accounted for about 8%. A significant number of studies conducted over the past decade point to trade facilitation and the streamlining of trade procedures as one of the keys to reducing trade costs – see WTO (2015) for a comprehensive review.

Most recently, Arvis et al. (2015), using the ESCAP-World Bank trade cost data, confirmed that several trade facilitation related indicators such as behind-the-border business facilitation, trade logistics, and port connectivity, were important determinants of trade costs. Furthermore, they found that regional trade agreements (RTA) could reduce trade costs between the economies involved by almost 15% - a result generally in line with Novy (2013), who also found that the presence of a free trade agreement (FTA) across a set of advanced economies was associated with a 7-12% decrease in trade costs.

Other recent studies examined the impact of WTO TFA-related measures on trade costs. Moïse and Sorescu (2014) construct sixteen trade facilitation indicators corresponding to the main WTO TFA provisions and find that implementation of TFA provisions could result in a 16-17% reduction in trade costs. Duval et al. (2015), using data from a new United Nations Regional Commissions (UNRCs) Survey on Global Trade Facilitation and Paperless Trade

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<sup>6</sup> Available at: <http://artnet.unescap.org/databases.html#first>

Implementation<sup>7</sup> and accounting for additional trade cost factors identified in Arvis et al. (2015), find that trade costs reductions from WTO TFA implementation in Asia and the Pacific could range from 7% to 11%, depending on the extent of implementation of non-binding provisions.

Overall, the literature on trade costs and trade facilitation provides strong evidence that streamlining trade procedures, including implementation of WTO TFA-related measures, is essential to reducing trade costs. There is also general evidence that RTAs indeed contribute to reducing trade costs between members. However, no study has yet evaluated the impact of trade facilitation commitments in RTAs on trade costs. This paper therefore extends existing studies by explicitly investigating whether inclusion of WTO TFA related provisions in RTAs may have contributed to reducing trade costs around the world.

### 3.2 Methodology and data

Our trade cost model builds on Arvis et al. (2015) and Duval and Utoktham (2011). Aggregate bilateral international trade costs are modelled as a function of natural geographic factors (i.e. distance, landlockedness, and contiguity), cultural and historical distance (i.e. common official language, common unofficial language, former colonial relationships, and formerly same country), as well as other behind-the border facilitation measures (i.e. entry costs of business, index of credit information and information disclosure index) and seaport connectivity.

The baseline trade cost model is therefore specified as follows:

$$\begin{aligned} \ln(\tau_{ij}) = & \beta_0 + \beta_1 \ln(gtarif_{ij}) + \beta_2 \ln(dist_{ij}) + \beta_3 contig_{ij} + \beta_4 comlang\_off_{ij} \\ & + \beta_5 comlang\_ethno_{ij} + \beta_6 colony_{ij} + \beta_7 comcol_{ij} + \beta_8 smctry_{ij} + \beta_9 landlocked_{ij} \\ & + \beta_{10} \ln(lsci_{ij}) + \beta_{11} \ln(entrycost_{ij}) + \beta_{12} \ln(creditinfo_{ij}) + \beta_{13} \ln(disclosure_{ij}) \\ & + \beta_{14} TFinRTA_{ij} + D_t + \varepsilon_{ij} \end{aligned}$$

where

$\tau_{ij}$  denotes comprehensive trade costs (1+rate)

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<sup>7</sup> Available at: <http://unnex.unescap.org/UNTFsurvey2015.asp>



$gtariff_{ij}$  denotes geometric average tariff factor (1+rate) that each reporting country (i) charges to its trade partner (j) and vice versa, which can be expressed by

$$gtariff_{ijt} = \sqrt{tariff_{ijt} \times tariff_{jit}}$$

$dist_{ij}$  denotes geographical distance between country i and j

$contig_{ij}$  denotes dummy variable of contiguity where 1 if country i and j are contiguous

$comlang\_off_{ij}$  denotes dummy variable of common language where 1 if country i and j use the same common official language

$comlang\_ethno_{ij}$  denotes dummy variable of common language where 1 if a language is spoken by at least 9% of the population in both countries

$colony_{ij}$  denotes dummy variable where 1 if country i and j ever in colonial relationship

$comcol_{ij}$  denotes dummy variable where 1 if country i and j have common colonizer after 1945

$smctry_{ij}$  denotes dummy variable where 1 if country i and j were or are the same country

$landlocked_{ij}$  denotes dummy variable of landlockedness where 1 if either country i or j is landlocked

$entrycost_{ij}$  denotes geometric average of cost of entering business of country i and country j

$creditindex_{ij}$  denotes geometric average of depth of credit information index of country i and country j

$disclosure_{ij}$  denotes geometric average of information disclosure index of country i and country j

$LSCI_{ij}$  denotes average scores of liner shipping connectivity index of country i

$TFinRTA_{ij}$  denotes number of trade facilitation (TF) provisions in RTAs to which both i and j belong.

One of the important explanatory variables in Arvis et al. (2015) is the RTA dummy variable, which indicates whether any 2 economies have preferential or free trade arrangements with each other (either bilaterally or regionally). Given the focus of this study, we include in our model the number of TFA-related provisions included in RTAs as an explanatory variable (TF-

in-RTA<sub>ij</sub>). The RTA dummy variable is dropped given the high correlation between our indicator and the RTA dummy variable (0.82).

In an effort to take care of possible endogeneity problems arising from the resulting omitted variable bias, we estimate the model using 2-stage least squares (2SLS) with the RTA dummy variable – alone or with its lagged term - as instrumental variables.<sup>8</sup> In all models, time fixed effects are included to increase estimation efficiency. Robust standard errors are also systematically clustered by country-pairs.

The model is estimated using a panel data covering 132 countries from 2005 to 2012. Definition, data sources and expected signs of all the factors included in the baseline model are summarized in table 1. Descriptive statistics of the main variables in the model as well as their correlations are provided in Appendix table A1. The list of countries included in the dataset is provided in Appendix table A2.

The overall TFinRTA<sub>ij</sub> indicator is simply the number of TFA-related measures that are featured in the RTAs in which each pair of economies is involved. The 28 TFA-related measures considered when calculating the overall bilateral TF-in-RTA indicator are listed in table 2. The TFA-related measures are classified into 5 categories of TF measures, allowing for the calculation of sub-indicators for each group of trade facilitation measures, in addition to the overall score.

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<sup>8</sup> This is possible because the correlation coefficient between trade costs and RTA dummy is low at approximately 0.32 (see Appendix table A1.b).

**Table 1. Data source, definition, treatment, source and expected sign**

Variable	Definition	Data Treatment	Source	Expected Sign
$\tau_{ij}$	Comprehensive trade costs.		World Bank-ESCAP	N/A
$gtariff_{ij}$	Geometric average tariff factor (1+rate) that each reporting country (i) charges to its trade partner (j) and vice versa		World Integrated Trade Solution	+
$dist_{ij}$	Geographical distance between country i and j.	N/A	CEPII	+
$contig_{ij}$	Dummy variable of contiguity equal to 1 if country i and j share a common border and zero otherwise.	N/A	CEPII	-
$comlang\_off_{ij}$	Dummy variable of common language equal to 1 if country i and j use the same common official language and zero otherwise.	N/A	CEPII	-
$comlang\_ethno_{ij}$	Dummy variable of common language equal to 1 if a language is spoken by at least 9% of the population in both countries and zero otherwise.	N/A	CEPII	-
$colony_{ij}$	Dummy variable equal to 1 if country i and j were ever in colonial relationship and zero otherwise.	N/A	CEPII	-
$comcol_{ij}$	Dummy variable equal to 1 if country i and j had a common coloniser after 1945 and zero otherwise.	N/A	CEPII	-
$smctry_{ij}$	Dummy variable equal to 1 if country i and j were or are the same country and zero otherwise.	N/A	CEPII	-
$landlocked_{ij}$	Dummy variable equal to 1 if either country i or j is landlocked and zero otherwise.	N/A	CEPII	+
$entrycost_{ij}$	Geometric average of cost of entering business of country i and j. <sup>9</sup>	0.0001 replacement	Doing Business	+
$creditindex_{ij}$	Geometric average of depth of credit information index of country i and j.	0.0001 replacement	Doing Business	-
$disclosure_{ij}$	Geometric average of depth of credit information index of country i and j.	0.0001 replacement	Doing Business	-
$LSCI_{ij}$	Geometric average of liner shipping connectivity index of country i and j.	Data filling/ 0.0001 replacement	UNCTAD	-
$TFinRTA_{ij}$	Number of TFA-related provisions in RTAs of which both country i and j are members		WTO / Neufeld	-

*Notes:* Table 1 presents the variables, data sources, definitions, data treatment, source and expected sign from econometric estimation. Where available, the average of the most recent data from 2012 onwards is used in the estimation. Data filling for the LSCI is done to ensure inclusion of landlocked economies: port-of-transit countries are used as proxies for landlocked countries' port performance. For variables subjected to log transformation during model estimation, zeros are replaced with 0.0001 to prevent observations being omitted.

<sup>9</sup> Data for credit information from the Doing Business (DB) Reports lags by one year, i.e., data from the DB Report 2014 is from the year 2013.

**Table 2. TFA measures considered in calculating TF-in-RTA indicators**

Bilateral TF-in-RTA indicators	WTO trade facilitation agreement measures
Transparency measures (TFinRTA_t)	Publication & availability of Info
	Internet publication
	Enquiry points
	Publication prior to implementation
	Obligation to consult traders/business
	Commenting on proposed regulations
	Advance rulings
	Appeals
Fees & formalities measures (TFinRTA_f)	Fees & charges connected w import/export
	Penalty disciplines
	Pre-arrival processing
	Separation of release from clearance
	Risk management
	Post clearance audits
	Release times
	Authorized operators
	Expedited shipments
	Co-operation on custom & other TF matters
	Simplification of formalities/procedures
	Use of international standards
	Single window
	Pre-shipment inspections
Customs brokers	
Transit measures (TFinRTA_ti)	Freedom of transit for goods
Customs cooperation (TFinRTA_i)	Exchange of customs-related information
Aid for TF measures (TFinRTA_apt)	Special & differential treatment
	Technical assistance and capacity building
<b>TFinRTA_o</b>	<b>(all 28 measures above)</b>

### **3.3 Results and discussion**

Table 3 shows the estimated results of our trade cost model featuring the overall bilateral TFinRTA indicator. Models (1) to (4) show estimation results using OLS and 2SLS, with slightly different specifications. Models (2) and (3) correspond to the baseline model presented in the methodology section. Models (1) and (4) are variations of the baseline model, where the TFinRTA indicator is expressed in log form and as a percentage of all 28 TF measures.

All the variables have the expected signs when statistically significant. For trade facilitation related variables in particular, higher number of trade facilitation provisions in RTAs, lower business costs of entry, greater access to financing, and better liner shipping connectivity are all statistically significant and associated with lower trade costs across countries. All the 2SLS models pass the weak identification test (Kleibergen-Paap rk Wald F statistic), the test for overidentifying restriction (Hansen J statistic) and the endogeneity test. Results of first-stage least square are available in Appendix.

**Table 3. Baseline model results (final stage)<sup>10</sup>**

	(1)	(2)	(3)	(4)
VARIABLES	Ln(Overall TFinRTA%) (OLS)	Overall TFinTRA (2SLS; IV: RTA)	Overall TFinRTA (2SLS; IV: RTA and lag)	Ln(Overall TFinRTA%) (2SLS; IV: RTA and lag)
In_gtariff	0.810*** [5.629]	0.811*** [5.554]	<b>0.809***</b> <b>[5.561]</b>	<b>0.827***</b> <b>[5.824]</b>
In_dist	0.194*** [26.89]	0.203*** [28.29]	<b>0.202***</b> <b>[28.33]</b>	<b>0.189***</b> <b>[26.08]</b>
Contig	-0.173*** [-6.643]	-0.159*** [-5.921]	<b>-0.161***</b> <b>[-6.055]</b>	<b>-0.165***</b> <b>[-6.400]</b>
comlang_off	-0.0184 [-0.674]	-0.0357 [-1.250]	<b>-0.0336</b> <b>[-1.189]</b>	<b>-0.0165</b> <b>[-0.600]</b>
comlang_ethno	-0.103*** [-3.960]	-0.0723*** [-2.601]	<b>-0.0770***</b> <b>[-2.814]</b>	<b>-0.0941***</b> <b>[-3.595]</b>
Colony	-0.144*** [-4.967]	-0.158*** [-5.404]	<b>-0.156***</b> <b>[-5.346]</b>	<b>-0.148***</b> <b>[-5.124]</b>
Comcol	-0.0659** [-2.066]	-0.0605* [-1.844]	<b>-0.0620*</b> <b>[-1.902]</b>	<b>-0.0554*</b> <b>[-1.743]</b>
Smctry	0.0394 [0.937]	0.0704 [1.567]	<b>0.0667</b> <b>[1.504]</b>	<b>0.0352</b> <b>[0.841]</b>
landlocked_ij	0.199*** [11.71]	0.182*** [10.17]	<b>0.184***</b> <b>[10.38]</b>	<b>0.201***</b> <b>[11.93]</b>
In_lsci_ij	-0.236*** [-23.34]	-0.228*** [-21.53]	<b>-0.230***</b> <b>[-21.90]</b>	<b>-0.232***</b> <b>[-22.59]</b>
In_startbiz_cost_ij	0.0177*** [4.422]	0.0189*** [4.643]	<b>0.0187***</b> <b>[4.614]</b>	<b>0.0185***</b> <b>[4.585]</b>
In_credit_creditinfo_old_ij	-0.0229*** [-12.05]	-0.0267*** [-13.26]	<b>-0.0261***</b> <b>[-13.07]</b>	<b>-0.0243***</b> <b>[-12.72]</b>
In_invest_disclosure_ij	-0.00288 [-0.754]	-0.00318 [-0.826]	<b>-0.00327</b> <b>[-0.852]</b>	<b>-0.00122</b> <b>[-0.321]</b>
TFinRTA_o		-0.0120*** [-7.762]	<b>-0.0104***</b> <b>[-7.557]</b>	
In_TFinRTA_o_pc	-0.00311*** [-3.569]			<b>-0.00819***</b> <b>[-7.899]</b>
Constant	0.145** [2.228]	0.119* [1.812]	<b>0.121*</b> <b>[1.853]</b>	<b>0.163**</b> <b>[2.456]</b>
Observations	11,321	11,321	11,321	11,321
R-squared	0.534	0.507	0.513	0.527
Year FE	Yes	Yes	Yes	Yes
Clustered SE	Pair	Pair	Pair	Pair
Endo Var1	-	TFinRTA_o	TFinRTA_o	In_TFinRTA_o_pc
IV1	-	rta	rta	rta
IV2	-	-	rta_lag1	rta_lag1
F-stat		115	116.1	88.15

<sup>10</sup> First stage least square results available in Appendix table A3.

### ***Significant (but limited) discriminatory effects of TFinRTA on trade costs between RTA members***

We find statistically significant evidence that countries who are involved in RTAs with more trade facilitation provisions have lower trade costs with each other. However, the scale of trade cost reductions is limited. Based on Model (3), we find that each additional TFA-related measure included in an RTA may cut costs between the countries involved by about 1 percent. At the same time, based on Model (4), a doubling of the number of trade facilitation measures included in an average RTA may only reduce trade costs among RTA partners by only about 0.8%.<sup>11</sup>

The finding of a statistically significant but limited discriminatory effect of the TFinRTA provisions on trade costs of RTA members relative to those with non-members is consistent with the argument that many – but not all - trade facilitation measures are non-discriminatory by nature and/or likely to be implemented in a non-discriminatory manner because of cost considerations.<sup>12</sup> One explanation for such a discriminatory effect is that the measures, even if implemented on a non-discriminatory basis, do benefit relatively more the countries that are already regular trading partners as well as those are geographically or culturally closer together. For example, *publication of trade procedures on the internet* in a country's national language (as opposed to in English) is not obviously discriminatory, but doing so is likely to reduce trade costs most between countries where traders generally understand each other's language (e.g., Lao PDR and Thailand).

Another explanation is that some measures can indeed be implemented in such a way that they benefit and apply only to RTA members. This is the case, for example, for provisions on mutual recognition of *authorized economic operators* (AEOs), or on *single windows* designed to enable electronic data exchange between RTA members (e.g., the ASEAN Single Window). Effective implementation of the WTO TFA will certainly help in further reducing the discriminatory effects of related provisions in RTAs.

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<sup>11</sup> For reference, the average of TFinRA in our sample is 4.2. Please refer to appendix table A1.a.

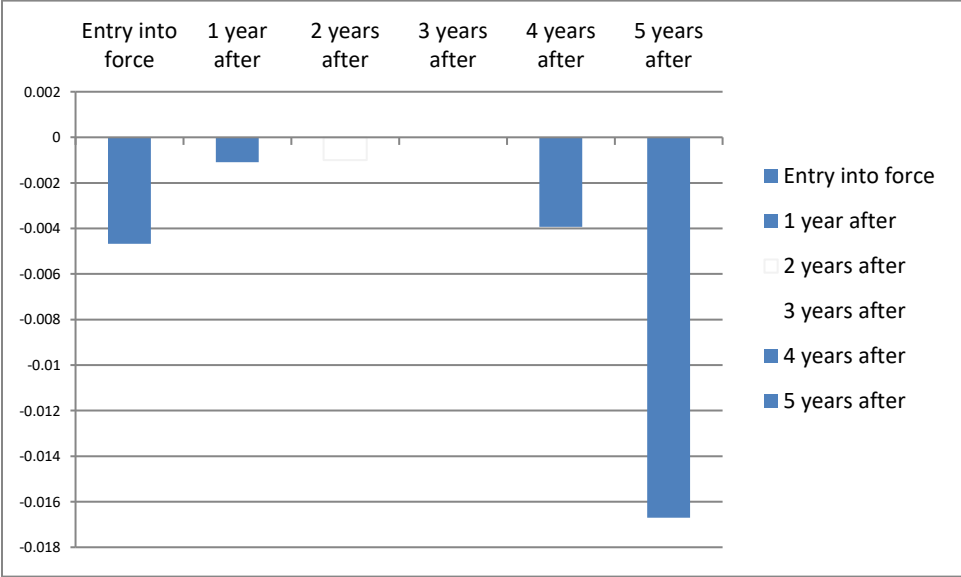
<sup>12</sup> Refer to Hammanaka (2010) or Duval (2011) for further elaborations on this.

**Multi-year lag between trade facilitation commitments in RTAs and their implementation**

While including TF provisions in agreements suggests that parties are keen on implementing them, actual and/or full implementation may take time. We estimate models with lagged TFinRTA variables in order to investigate the time it takes for TF provisions in RTAs to lead to reduction in trade costs – this is also helpful in confirming that including TF provisions actually causes the reduction in trade costs. Detailed results are shown in Appendix table A4.

Regardless of the specifications,<sup>13</sup> we find that the impact of the lagged TFinRTA variables on trade costs are greater than the trade cost reduction observed during the year of entry into force of the agreement. As shown in figure 5, while significant trade cost reductions are observed within the first year of RTA implementation, most of the trade costs reductions appear to materialize after the 4<sup>th</sup> year of implementation. This result provides support for requesting delays of at least 3-4 years when submitting TFA measures under Category B of the TFA.

**Figure 5. Changes in trade costs associated with TF provisions in RTAs over time**



*Note:* The figure shows the value of coefficients for TF-in-RTA and its lags in model (L7), illustrating the relative changes in trade costs over time; Coefficients for the TF-in-RTA lags “2 years after” and “3 years after” are not statistically significant from zero.

<sup>13</sup> Models L1-L6 include only one lag at the final stage, with the effect of the lag isolated by including all lags in the first stage least square. This works well, as results of model L7, where all lags are included in the final stage, are fully consistent with those in L1-L6.

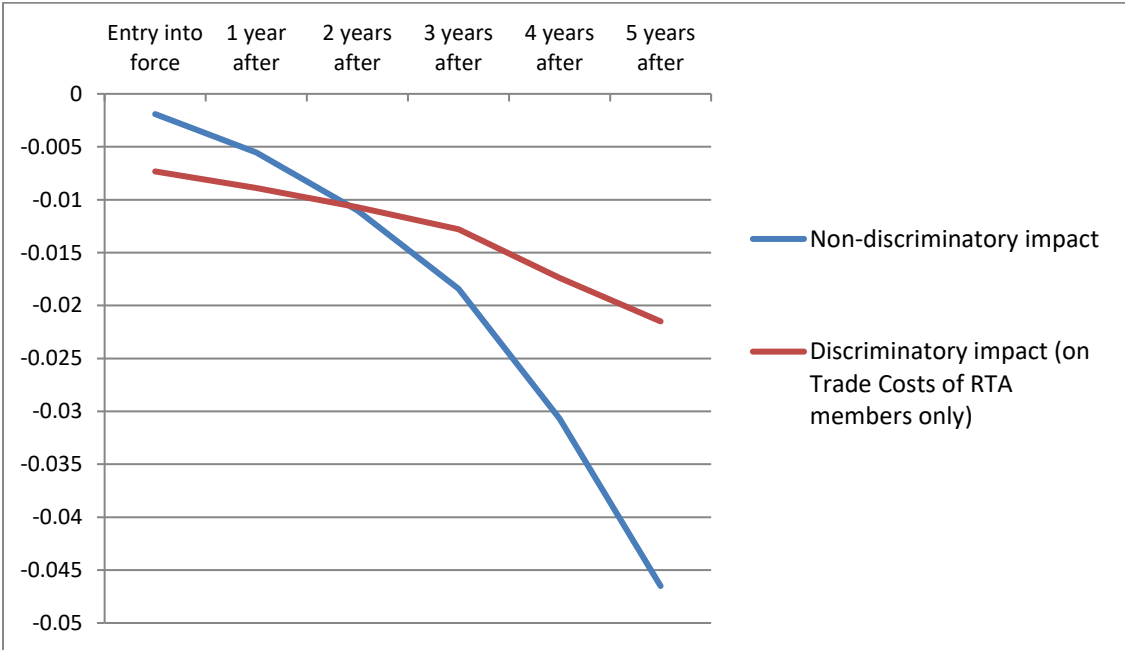


**Non-discriminatory effect of TF provisions in RTAs on trade costs exceeds discriminatory effect over time**

The bilateral TFinRTA indicator enables us to measure the trade cost reduction among RTA partners relative to non-partners. The statistically significant but small impact of that indicator on trade costs identified earlier suggests that many TF provisions in RTAs may indeed be implemented in a non-discriminatory manner, providing trade costs benefits across the board to all partners rather than only to RTA partners.

In order to investigate the possible non-discriminatory effect of TF provisions included in RTA, we replace our bilateral TFinRTA variable (i.e., indicating the number of TF measures two countries have agreed upon with each other in an RTA) with RTFC<sub>ij</sub>, i.e., the geometric average of the total number of TF measures each country *i* and *j* committed to through RTAs, regardless of whether the two countries belong to a same RTA. RTFC values for various countries and subregions were discussed earlier (see also figure 3).

**Figure 6. Discriminatory and non-discriminatory impact of TF provisions in RTAs over time**



Note: Relative cumulative impact on trade costs of TFinRTA and RTFC<sub>ij</sub> based on Models L1-L6 and RL1-RL6, respectively.

The resulting trade cost model estimates are shown in Appendix table A5. Model (R3) suggests that individual country commitments through RTA do have a significant effect on its trade costs with all economies, with the non-discriminatory effect nearly 2.5 times larger than the discriminatory effect found in our baseline Model (3) earlier.

Looking at the lag models (RL1-RL6), we find that the non-discriminatory effect is not significant in the first year of implementation but grows steadily afterwards to surpass the discriminatory trade cost reduction effect two years after entry into force of the RTA (see figure 6). This finding may be explained in part by the fact that traders in non-RTA member countries are less likely to be aware – and slower to take advantage of - a new trade facilitation measure implemented under an RTA even if it is available to them. This finding is particularly encouraging as it really shows that trade facilitation initiatives at the bilateral and regional level can ultimately facilitate trade at the multilateral level.

### ***Which type of trade facilitation measures matters most?***

It is interesting to explore which type of trade facilitation provision in RTAs may be most effective in reducing trade costs. Models (T1) to (T5) consider the alternative effect of 5 different types of TFA measures in RTAs on trade costs, namely, transparency, fees and formalities, transit, exchange of customs-related information and Aid for Trade Facilitation (S&DT/TACB).<sup>14</sup>

Looking at the effect of the different types of trade facilitation measures separately,<sup>15</sup> we find that all types of trade facilitation measures in RTAs also have a statistically significant association with lower trade costs. As shown in Table 4, the results suggest that inclusion of transparency measures is relatively more effective in reducing trade costs than including measures related to fees and formalities – a 100% increase in the number of transparency provisions in RTA lowers trade costs among RTA partners by 1.52%, while a similar increase in the number of measures related to simplification of fees and formalities does so by slightly less than 1%.

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<sup>14</sup> To ensure the coefficients are comparable across models, the bilateral TFinRTA variables are standardized by expressing them as a percentage of the total number of measures in each category – and log transformed so that coefficient can be directly interpreted as elasticities.

<sup>15</sup> In line with the existing literature (e.g., Nordas and Piermartini, 2004; Fontagne et al., 2016), the effects of the different types of measures are evaluated using separate models since multicollinearity between measures prevents us from including them in one single model. The trade cost changes implied by the results should be interpreted in relative rather than absolute terms.

**Table 4. Model results for different types of TF measures in RTAs (2-stage least square: final stage)**

	(T1)	(T2)	(T3)	(T4)	(T5)
VARIABLES	Transparency	Fees and formalities	Transit	Exchange of customs-related info	S&DT, TACB
ln_TFinRTA_t_pc	-0.0152*** [-7.497]				
ln_TFinRTA_f_pc		-0.00909*** [-7.877]			
ln_TFinRTA_ti_pc			-0.0177*** [-7.474]		
ln_TFinRTA_i_pc				-0.0109*** [-7.798]	
ln_TFinRTA_aft_pc					-0.0250*** [-7.403]

*Note:* Only coefficients on log-transformed standardized TFinRTA variables are shown here - with their t-values in brackets. Full model estimation results available in Appendix table A6.

Interestingly, the type of TF measure most effective in reducing trade costs among RTA partners are Aid for Trade Facilitation measures, including special and differential treatment and/or capacity building and technical assistance. Such measures are actually relatively rare in RTAs and are most frequent in RTAs involving members at different stages of development. A doubling of such AfTF measures in RTAs is linked to a 2.5% reduction in trade costs between trade partners. Similarly, inclusion of freedom of transit provisions in RTAs is associated with a 1.8% reduction in trade costs among RTA members. In contrast, the inclusion of a provision on exchange of customs-related information brings a reduction in trade costs of around 1.1%.<sup>16</sup>

#### **4. Conclusions, limitations and future research**

Using WTO data on TF provisions in RTAs, together with the latest available data from the ESCAP-World Bank Trade Cost Database, the study investigated the impact of trade facilitation provisions in RTAs on trade costs. The econometric analysis shows that the inclusion of trade facilitation measures in RTAs has a statistically significant but small discriminatory impact on trade costs between RTA members. The relatively small impact found may be explained by the

<sup>16</sup> This later result may be explained by the fact that provisions on this issue in RTAs are intended to improve compliance and control rather than to speed up trade.

fact that trade facilitation provisions in RTAs are not systematically implemented - or that countries are implementing trade facilitation measures unilaterally regardless of specific commitments made through trade agreements.

Importantly, results suggest that the non-discriminatory impact of trade facilitation measures in RTAs, i.e., on trade costs with all trade partners, is several times higher than that of measures limited to RTA members, particularly over time. Indeed, we find that implementation of TF measures generally takes time, with the trade costs reduction being relatively small the year of entry into force, but then growing significantly three to five years later. Multilateral spillovers from trade facilitation measures in RTAs on trade costs typically surpass any discriminatory effects within three years of an RTA's entry into force.

Finally, we find that transparency measures (GATT Article X) seem to be relatively more effective at reducing trade costs than those related to fees and formalities (GATT Article VIII). Similarly, RTAs that feature Aid for Trade Facilitation measures ("S&DT/TACB") and Freedom of Transit provisions seem to be more effective at reducing trade costs between members than others.

These results confirm both the importance of the WTO Trade Facilitation Agreement and that of regional trade facilitation initiatives. Once ratified, the WTO TFA will provide a useful platform to reduce discriminatory effects of TFA-related provisions implemented as part of bilateral and regional commitments and ensure harmonized implementation of measures by all members. The WTO TFA, with its strong "S&DT/TACB" and transit facilitation features also appears set to be particularly effective at reducing trade costs.

As for regional trade facilitation initiatives, specifically the negotiation and implementation of TF measures as part of RTAs, our results provide some quantitative evidence that they have been useful in reducing trade costs by stimulating early implementation of TFA-related measures. As entry into force of the WTO TFA grows nearer, however, RTA negotiators will need to become more ambitious in the type of trade facilitation provisions and measures they will include in RTAs, in order for RTAs to provide members with continuous leadership in streamlining trade procedures. Given that Governments are in many cases already implementing trade facilitation measures unilaterally, particular attention may be given in future RTAs to trade facilitation measures that require close cooperation between members to be implemented, such as one-

stop border crossings or cross-border electronic exchange of trade data and documents. The various initiatives taking place in the Asia-Pacific region, including the ASEAN Single Window and the Framework Agreement on Facilitation of Cross-Border Paperless Trade in Asia and the Pacific, are particularly promising in this regard.

This study is subject to several limitations and further research will be important to verify and strengthen the robustness of these preliminary findings. First, the data on TF provisions in RTAs used in this study only cover 28 measures related to the WTO Trade Facilitation Agreements (TFA): As discussed earlier, many RTAs have a broader scope of trade facilitation and some include measures not featured in the TFA – which were therefore de facto excluded in this analysis. The dataset of TFA-related measures in RTAs is also only binary, i.e., it only provides information on whether (or not) a particular TFA measure is generally covered (mentioned) in an RTA - not how well it is covered and/or how binding the commitment related to that TFA measure may be. For example, the TFA provisions on transit are relatively detailed while the provisions on transit in RTAs are generally very vague – with detailed provisions instead included in separately negotiated regional transit and/or transport agreements not included in this analysis.<sup>17</sup> Future datasets may therefore need to better capture the qualitative aspects of TF provisions in RTAs, give their likely impact on implementation of associated trade facilitation measures and, ultimately, trade costs.

Second, while we are quite confident about the overall direction, statistical significance, and relative strength of the effects of various factors analyzed in the study, the absolute strength of the effects on trade costs should be taken with caution. Experience shows that there is a tendency for the effects of individual trade facilitation factors to be overestimated, as multicollinearity between these factors typically prevents the simultaneous inclusion of all relevant factors in one model. In our study, besides preferential tariff rates, we were able to include only one aspect of RTAs in the trade cost models, i.e., the depth of RTAs in terms of trade facilitation coverage; As such, we cannot fully dismiss the possibility that the effects of the TFinRTA variable on trade costs also reflect at least in part those associated with other RTA provisions, or with the overall level of RTAs depth.<sup>18</sup> Our use of an instrumental variable

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<sup>17</sup>See Cousin and Duval (2015).

<sup>18</sup> This possibility is difficult to dismiss, as the RTAs with more extensive trade facilitation commitments are often also those with deeper commitments in other areas. At the same time, the models estimated are models of trade costs (and not standard gravity models of trade flows), which can reasonably be thought to be most of affected by RTA provisions on trade facilitation rather than on other issues.

approach may not have addressed this issue adequately and other approaches may have to be considered in future work.<sup>19</sup>

As negotiations of broader and deeper regional trade and economic partnership agreements continue, further research is needed on the impact on trade and trade costs of RTA provisions aimed at addressing various types of non-tariff barriers to trade, including, but not limited to, trade facilitation measures. This will require not only the development of new indicators capturing characteristics of RTA provisions across a broader range of areas, but also of innovative ways to estimate their simultaneous impact on trade and trade costs.

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<sup>19</sup> The use of the Arellano-Bold estimator was suggested as a possible alternative approach to deal with instrumental variables and for further robustness checks. Although our 2SLS models successfully pass the various statistical tests, using alternative instrumental variables may also provide further assurance of the robustness of the results. Meantime, we also take solace in the fact that the OLS results generally hold.

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## Appendix

**Table A1.a. descriptive statistics of main variables**

Variable	No. of observations	Average	SD	Min	Max	Variable	No. of observations	Average	SD	Min	Max
ctcij	11321	3.10	1.30	1.10	12.00	landlocked_ij	11321	0.24	0.43	0	1
geometric_avg_tariff	11321	1.00	0.04	1.00	1.60	TFinRTA_o	11321	4.20	5.90	0	23
dist	11321	5507.00	4016.00	117.00	19080.00	RTFC_ij	11321	11.00	6.60	0	23
contig	11321	0.07	0.25	0	1	rta	11321	0.64	0.48	0	1
comlang_off	11321	0.16	0.37	0	1	rta_lag1	11321	0.60	0.49	0	1
comlang_ethno	11321	0.18	0.38	0	1	lsci_ij	11321	25.00	17.00	1.30	135.00
colony	11321	0.04	0.20	0	1	startbiz_cost_ij	11321	15.00	27.00	0.01	768.00
comcol	11321	0.06	0.23	0	1	credit_creditinfo_old_ij	11321	2.70	2.50	0.00	6.00
smctry	11321	0.03	0.16	0	1	invest_disclosure_ij	11321	5.00	2.30	0.00	10.00

**Table A1.b. Correlation coefficient of main variables**

	ln_ctcij	ln_gtari ff	ln_dist	contig	comlang off	comlang ethno	colony	comcol	smctry	land- locked_ij	ln_RT A_o score	rta	rta_ lag1	ln_lsci_ij	ln_ startbiz_ cost_ij	ln_credit_ creditinfo_ old_ij	ln_invest_ disclosur e_ij
ln_ctcij	1.0000																
ln_gtari ff	0.3350	1.0000															
ln_dist	0.3940	0.1730	1.0000														
contig	-0.2350	-0.0599	-0.3400	1.0000													
comlang_off	-0.0999	0.0580	-0.0876	0.0996	1.0000												
comlang_ethno	-0.1310	0.0511	-0.0785	0.0986	0.7930	1.0000											
colony	-0.1460	-0.0650	-0.0526	0.0899	0.1330	0.1310	1.0000										
comcol	-0.0278	0.1110	-0.0470	0.0560	0.3760	0.3290	-0.0350	1.0000									
smctry	-0.1410	-0.0420	-0.2550	0.3100	0.1350	0.1040	0.0370	0.1390	1.0000								
landlocked_ij	0.1770	-0.0059	-0.0612	0.0292	-0.0399	-0.0995	-0.0351	-0.0342	0.0168	1.0000							
ln_TFinRTA_o_pc	-0.1540	-0.0091	-0.2030	0.1480	0.0965	0.1010	0.0084	0.1430	0.0706	0.0898	1.0000						
rta	-0.3050	-0.0888	-0.4200	0.1640	0.1570	0.1460	0.0182	0.1160	0.1180	0.1120	0.8270	1.0000					
rta_lag1	-0.3280	-0.1160	-0.4550	0.1810	0.1690	0.1560	0.0177	0.1230	0.1290	0.1230	0.7020	0.8900	1.0000				
ln_lsci_ij	-0.3330	-0.2170	-0.0649	0.0442	-0.1080	-0.0784	0.0880	-0.1440	-0.0105	0.2760	0.0620	0.0472	0.0583	1.0000			
ln_startbiz_cost_ij	0.2740	0.3640	0.0535	0.0142	0.0958	0.0581	-0.0709	0.1090	0.0374	0.0938	0.0109	-0.0528	-0.0445	-0.3320	1.0000		
ln_credit_creditinfo_old_ij	-0.3030	-0.3020	-0.0049	0.0086	-0.1500	-0.0938	0.0610	-0.2080	-0.0219	-0.0800	-0.1010	-0.0693	-0.0424	0.5040	-0.4840	1.0000	
ln_invest_disclosure_ij	-0.0795	-0.0619	-0.0415	0.0116	-0.0120	0.0193	0.0186	-0.0089	-0.0037	-0.0536	0.0767	-0.0013	-0.0048	0.1930	-0.0975	0.0893	1.0000

**Table A2. Countries used in empirical analysis**

High Income: OECD		Upper middle income		Lower middle income	
Australia	Japan	Albania	Kazakhstan	Armenia	Moldova
Belgium	Korea, Rep.	Algeria	Lebanon	Bangladesh	Morocco
Canada	Luxembourg	Angola	Macedonia, FYR	Bhutan	Nicaragua
Chile	Netherlands	Azerbaijan	Malaysia	Bolivia	Pakistan
Czech Republic	New Zealand	Belarus	Maldives	Cameroon	Papua New Guinea
Denmark	Norway	Belize	Mauritius	Cote d'Ivoire	Philippines
Estonia	Poland	Botswana	Mexico	Egypt, Arab Rep.	Samoa
Finland	Portugal	Brazil	Namibia	El Salvador	Sri Lanka
France	Slovak Republic	Bulgaria	Panama	Georgia	Swaziland
Germany	Slovenia	China	Paraguay	Guatemala	Syrian Arab Republic
Greece	Spain	Colombia	Peru	Guyana	Tajikistan
Hungary	Sweden	Costa Rica	Romania	Honduras	Ukraine
Iceland	Switzerland	Dominica	South Africa	India	Uzbekistan
Ireland	United Kingdom	Dominican Republic	St. Lucia	Indonesia	Vanuatu
Israel	United States	Ecuador	St. Vincent and the Grenadines	Kyrgyz Republic	Vietnam
Italy		Fiji	Suriname	Lao PDR	Zambia
		Grenada	Thailand	Lesotho	
<b>High income: non-OECD</b>		Iran, Islamic Rep.	Tonga		
Antigua and Barbuda	Lithuania	Jamaica	Tunisia		
Argentina	Oman	Jordan	Turkey		
Bahamas, The	Russian Federation				
Bahrain	Seychelles	<b>Low income</b>			
Barbados	Singapore	Afghanistan	Mozambique		
Brunei	St. Kitts and Nevis	Cambodia	Nepal		
Croatia	Trinidad and Tobago	Congo, Dem. Rep.	Tanzania		
Cyprus	Uruguay	Madagascar	Zimbabwe		
Hong Kong, China	Venezuela	Malawi			
Latvia					

**Table A3. Trade costs model estimation - Base models [first stage least squares]**

VARIABLES	(2) Overall TFinTRA (2SLS; IV: RTA)	(3) Overall TFinRTA (2SLS; IV: RTA and lag)	(4) Ln(Overall TFinRTA%) (2SLS; IV: RTA and lag)
ln_gtariff	6.198*** [2.716]	4.161* [1.862]	10.45*** [6.185]
ln_dist	2.251*** [14.30]	2.050*** [13.02]	1.474*** [12.60]
contig	1.751*** [3.009]	1.753*** [3.039]	1.748*** [5.131]
comlang_off	-1.979*** [-2.833]	-1.910*** [-2.787]	-0.530* [-1.717]
comlang_ethno	2.576*** [3.546]	2.561*** [3.592]	1.122*** [3.990]
colony	-0.869* [-1.906]	-0.925** [-2.108]	-0.0461 [-0.128]
comcol	0.708 [1.448]	0.780 [1.606]	1.690*** [7.928]
smctry	3.222*** [2.918]	3.113*** [2.835]	0.375 [0.637]
landlocked_ij	-1.607*** [-5.887]	-1.518*** [-5.630]	0.0141 [0.0746]
ln_lsci_ij	0.500*** [2.843]	0.510*** [2.948]	0.299** [2.260]
ln_startbiz_cost_ij	0.231*** [3.398]	0.239*** [3.585]	0.288*** [5.220]
ln_credit_creditinfo_old_ij	-0.306*** [-11.26]	-0.292*** [-11.04]	-0.156*** [-7.103]
ln_invest_disclosure_ij	-0.0669 [-1.185]	-0.0384 [-0.698]	0.150*** [2.622]
rta	7.725*** [34.70]	11.29*** [47.96]	12.07*** [93.55]
rta_lag1		-4.072*** [-16.53]	-1.029*** [-7.316]
Constant	-20.39*** [-14.46]	-18.58*** [-13.22]	-23.77*** [-20.53]
Observations	11,321	11,321	11,321
R-squared	0.437	0.456	0.742
Reporter FE	No	No	No
Partner FE	No	No	No
Year FE	Yes	Yes	Yes
Clustered SE	Pair	Pair	Pair
Endo Var1	TFinRTA_o	TFinRTA_o	ln_TFinRTA_o_pc
IV1	rta	rta	rta
IV2	-	rta_lag1	rta_lag1
Adjusted R-squared	0.436	0.455	0.742
Weak ID Test	1204	1216	5410
Prob>F	0	0	0

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

t-stat. in square brackets

**Table A4.a. Trade costs model estimation – Lag models [Final stage]**

VARIABLES	(L1) Overall: no lag	(L2) Overall: 1- year lag	(L3) Overall: 2- year lag	(L4) Overall: 3- year lag	(L5) Overall: 4- year lag	(L6) Overall: 5- year lag	(L7) Overall: all- year lag
ln_gtariff	0.806*** [5.564]	0.780*** [5.373]	0.768*** [5.293]	0.758*** [5.215]	0.727*** [4.966]	0.706*** [4.756]	0.713*** [4.735]
ln_dist	0.201*** [28.29]	0.198*** [27.81]	0.195*** [27.16]	0.192*** [26.40]	0.186*** [25.24]	0.180*** [23.88]	0.184*** [24.06]
contig	-0.166*** [-6.300]	-0.164*** [-6.192]	-0.161*** [-6.055]	-0.157*** [-5.874]	-0.148*** [-5.450]	-0.141*** [-5.064]	-0.133*** [-4.596]
comlang_off	-0.0294 [-1.059]	-0.0310 [-1.107]	-0.0324 [-1.147]	-0.0341 [-1.199]	-0.0389 [-1.328]	-0.0414 [-1.379]	-0.0487 [-1.548]
comlang_ethno	-0.0863*** [-3.222]	-0.0847*** [-3.137]	-0.0835*** [-3.060]	-0.0827*** [-2.996]	-0.0784*** [-2.743]	-0.0763*** [-2.589]	-0.0594* [-1.888]
colony	-0.152*** [-5.220]	-0.153*** [-5.270]	-0.154*** [-5.317]	-0.155*** [-5.407]	-0.159*** [-5.610]	-0.162*** [-5.801]	-0.169*** [-5.984]
comcol	-0.0651** [-2.017]	-0.0614* [-1.894]	-0.0562* [-1.722]	-0.0490 [-1.487]	-0.0348 [-1.026]	-0.0206 [-0.589]	-0.0179 [-0.498]
smctry	0.0593 [1.368]	0.0557 [1.281]	0.0500 [1.144]	0.0420 [0.958]	0.0299 [0.668]	0.0186 [0.408]	0.0346 [0.726]
landlocked_ij	0.188*** [10.79]	0.189*** [10.79]	0.190*** [10.86]	0.192*** [10.93]	0.194*** [10.97]	0.197*** [11.09]	0.189*** [10.31]
ln_lsci_ij	-0.233*** [-22.52]	-0.232*** [-22.24]	-0.232*** [-22.07]	-0.230*** [-21.71]	-0.228*** [-21.03]	-0.226*** [-20.47]	-0.221*** [-19.42]
ln_startbiz_cost_ij	0.0182*** [4.534]	0.0189*** [4.677]	0.0195*** [4.852]	0.0201*** [5.001]	0.0214*** [5.285]	0.0226*** [5.537]	0.0232*** [5.556]
ln_creditinfo_old_ij	-0.0249*** [-12.45]	-0.0250*** [-12.56]	-0.0248*** [-12.68]	-0.0245*** [-12.66]	-0.0244*** [-12.66]	-0.0238*** [-12.36]	-0.0262*** [-12.75]
ln_invest_disclosure_ij	-0.00346 [-0.901]	-0.00303 [-0.787]	-0.00228 [-0.590]	-0.00158 [-0.409]	-0.000230 [-0.0593]	0.00113 [0.288]	0.00120 [0.307]
TFinRTA_o	-0.00733*** [-5.890]						-0.00468*** [-4.560]
TFinRTA_o_lag1		-0.00889*** [-6.392]					-0.00109 [-1.256]
TFinRTA_o_lag2			-0.0107*** [-7.003]				-0.001000 [-1.179]
TFinRTA_o_lag3				-0.0128*** [-7.552]			0.000871 [1.001]
TFinRTA_o_lag4					-0.0174*** [-8.439]		-0.00393*** [-3.622]
TFinRTA_o_lag5						-0.0215*** [-8.221]	-0.0167*** [-6.477]
Constant	0.125* [1.930]	0.147** [2.248]	0.174*** [2.652]	0.205*** [3.104]	0.247*** [3.699]	0.268*** [3.970]	0.259*** [3.719]
Observations	11,321	11,321	11,321	11,321	11,321	11,321	11,321
R-squared	0.524	0.522	0.519	0.516	0.509	0.502	0.483
Reporter FE	No	No	No	No	No	No	No
Partner FE	No	No	No	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Pair	Pair	Pair	Pair	Pair	Pair	Pair
Endo Var1	TFinRTA_o	TFinRTA_o_la g1	TFinRTA_o_la g2	TFinRTA_o_la g3	TFinRTA_o_la g4	TFinRTA_o_la g5	TFinRTA_o
Endo Var2							TFinRTA_o_la g1
Endo Var3							TFinRTA_o_la g2

VARIABLES	(L1) Overall: no lag	(L2) Overall: 1-year lag	(L3) Overall: 2-year lag	(L4) Overall: 3-year lag	(L5) Overall: 4-year lag	(L6) Overall: 5-year lag	(L7) Overall: all-year lag
Endo Var4							TFinRTA_o_lag3
Endo Var5							TFinRTA_o_lag4
Endo Var6							TFinRTA_o_lag5
IV1	rta	rta	rta	rta	rta	rta	rta
IV2	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1
IV3	rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2
IV4	rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3
IV5	rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4
IV6	rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5
Adjusted R-squared	0.523	0.521	0.518	0.515	0.508	0.501	0.481
F-stat	115.7	116.1	116.8	115.7	110.7	107.2	82.59
Prob > F	0	0	0	0	0	0	0

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

t-stat. in square brackets

**Table A4.b. Trade costs model estimation – Lag models [First stage least squares]**

VARIABLES	(L1) Overall: no lag	(L2) Overall: 1-year lag	(L3) Overall: 2-year lag	(L4) Overall: 3-year lag	(L5) Overall: 4-year lag	(L6) Overall: 5-year lag
ln_gtariff	1.329 [0.596]	2.939 [1.387]	3.597* [1.810]	4.067** [2.193]	3.588** [2.069]	2.989* [1.800]
ln_dist	1.654*** [10.96]	1.523*** [10.47]	1.289*** [9.288]	1.021*** [7.781]	0.745*** [6.038]	0.475*** [4.096]
contig	1.997*** [3.458]	1.966*** [3.558]	1.817*** [3.411]	1.675*** [3.241]	1.507*** [2.984]	1.294*** [2.616]
comlang_off	-1.584** [-2.371]	-1.594** [-2.474]	-1.647*** [-2.698]	-1.720*** [-2.995]	-1.801*** [-3.296]	-1.806*** [-3.454]
comlang_ethno	2.531*** [3.649]	2.302*** [3.432]	2.047*** [3.221]	1.816*** [3.048]	1.600*** [2.838]	1.429*** [2.668]
colony	-1.043*** [-2.602]	-0.870** [-2.314]	-0.722** [-2.058]	-0.633* [-1.956]	-0.554* [-1.833]	-0.552* [-1.922]
comcol	1.216** [2.475]	1.312*** [2.772]	1.350*** [2.926]	1.427*** [3.151]	1.468*** [3.259]	1.494*** [3.327]
smctry	2.837** [2.571]	2.156** [2.160]	1.400 [1.532]	0.763 [0.903]	0.107 [0.132]	-0.314 [-0.402]
landlocked_ij	-1.234*** [-4.489]	-1.149*** [-4.350]	-1.020*** [-4.066]	-0.882*** [-3.670]	-0.765*** [-3.306]	-0.656*** [-2.902]
ln_lsci_ij	0.518*** [3.027]	0.463*** [2.825]	0.440*** [2.818]	0.455*** [3.075]	0.476*** [3.388]	0.495*** [3.661]
ln_startbiz_cost_ij	0.239*** [3.706]	0.247*** [4.040]	0.266*** [4.609]	0.275*** [5.050]	0.275*** [5.333]	0.267*** [5.403]
ln_credit_creditinfo_old_ij	-0.237*** [-9.002]	-0.233*** [-9.360]	-0.221*** [-9.655]	-0.197*** [-9.263]	-0.180*** [-8.913]	-0.159*** [-8.106]
ln_invest_disclosure_ij	0.0325 [0.595]	0.0144 [0.295]	0.00406 [0.0945]	0.0258 [0.686]	0.0462 [1.347]	0.0690** [2.156]
rta	11.27*** [48.63]	-0.305*** [-3.244]	-0.222*** [-2.622]	-0.188** [-2.544]	-0.233*** [-3.766]	-0.217*** [-3.885]
rta_lag1	-1.401*** [-8.979]	10.06*** [35.89]	0.305*** [5.080]	0.292*** [5.224]	0.295*** [4.480]	0.171*** [4.281]

	(L1)	(L2)	(L3)	(L4)	(L5)	(L6)
VARIABLES	Overall: no lag	Overall: 1-year lag	Overall: 2-year lag	Overall: 3-year lag	Overall: 4-year lag	Overall: 5-year lag
rta_lag2	-1.032*** [-7.144]	-0.978*** [-6.640]	8.614*** [31.64]	0.00986 [0.232]	0.0510 [1.313]	0.0946*** [2.810]
rta_lag3	-0.475*** [-4.101]	-0.573*** [-5.343]	-0.524*** [-4.613]	8.054*** [30.96]	-0.0399 [-1.184]	-0.00200 [-0.0654]
rta_lag4	-0.982*** [-8.415]	-0.855*** [-6.625]	-0.948*** [-7.504]	-1.038*** [-7.747]	6.974*** [27.24]	0.0747** [2.405]
rta_lag5	-1.604*** [-6.524]	-1.658*** [-6.802]	-1.640*** [-6.545]	-1.737*** [-6.927]	-1.859*** [-7.277]	4.840*** [22.26]
Constant	-14.87*** [-10.87]	-13.59*** [-10.41]	-11.76*** [-9.554]	-9.574*** [-8.345]	-7.614*** [-7.123]	-6.062*** [-6.116]
Observations	11,321	11,321	11,321	11,321	11,321	11,321
R-squared	0.486	0.461	0.441	0.424	0.401	0.386
Reporter FE	No	No	No	No	No	No
Partner FE	No	No	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Pair	Pair	Pair	Pair	Pair	Pair
Endo Var1	TFinRTA_o	TFinRTA_o_la g1	TFinRTA_o_la g2	TFinRTA_o_lag 3	TFinRTA_o_la g4	TFinRTA_o_lag5
IV1	rta	rta	rta	rta	rta	rta
IV2	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1
IV3	rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2
IV4	rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3
IV5	rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4
IV6	rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5
Adjusted R-squared	0.485	0.459	0.440	0.423	0.400	0.385
Weak ID Test	434.7	264	220.4	203.2	163.2	88.60
Prob>F	0	0	0	0	0	0

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

t-stat. in square brackets

**Table A4.c. Trade costs model estimation – Lag models [First stage least squares; cont'ed]**

VARIABLES	(L7)					
	Overall: all-year lag	Overall: all-year lag	Overall: all-year lag	Overall: all-year lag	Overall: all-year lag	Overall: all-year lag
ln_gtariff	1.329 [0.596]	2.939 [1.387]	3.597* [1.810]	4.067** [2.193]	3.588** [2.069]	2.989* [1.800]
ln_dist	1.654*** [10.96]	1.523*** [10.47]	1.289*** [9.288]	1.021*** [7.781]	0.745*** [6.038]	0.475*** [4.096]
contig	1.997*** [3.458]	1.966*** [3.558]	1.817*** [3.411]	1.675*** [3.241]	1.507*** [2.984]	1.294*** [2.616]
comlang_off	-1.584** [-2.371]	-1.594** [-2.474]	-1.647*** [-2.698]	-1.720*** [-2.995]	-1.801*** [-3.296]	-1.806*** [-3.454]
comlang_ethno	2.531*** [3.649]	2.302*** [3.432]	2.047*** [3.221]	1.816*** [3.048]	1.600*** [2.838]	1.429*** [2.668]
colony	-1.043*** [-2.602]	-0.870** [-2.314]	-0.722** [-2.058]	-0.633* [-1.956]	-0.554* [-1.833]	-0.552* [-1.922]
comcol	1.216** [2.475]	1.312*** [2.772]	1.350*** [2.926]	1.427*** [3.151]	1.468*** [3.259]	1.494*** [3.327]
smctry	2.837** [2.571]	2.156** [2.160]	1.400 [1.532]	0.763 [0.903]	0.107 [0.132]	-0.314 [-0.402]
landlocked_ij	-1.234*** [-2.571]	-1.149*** [-2.314]	-1.020*** [-2.058]	-0.882*** [-1.956]	-0.765*** [-1.833]	-0.656*** [-1.922]

VARIABLES	(L7)					
	Overall: all-year lag	Overall: all-year lag	Overall: all-year lag	Overall: all-year lag	Overall: all-year lag	Overall: all-year lag
ln_lsci_ij	[-4.489] 0.518*** [3.027]	[-4.350] 0.463*** [2.825]	[-4.066] 0.440*** [2.818]	[-3.670] 0.455*** [3.075]	[-3.306] 0.476*** [3.388]	[-2.902] 0.495*** [3.661]
ln_startbiz_cost_ij	0.239*** [3.706]	0.247*** [4.040]	0.266*** [4.609]	0.275*** [5.050]	0.275*** [5.333]	0.267*** [5.403]
ln_credit_creditinfo_old_ij	-0.237*** [-9.002]	-0.233*** [-9.360]	-0.221*** [-9.655]	-0.197*** [-9.263]	-0.180*** [-8.913]	-0.159*** [-8.106]
ln_invest_disclosure_ij	0.0325 [0.595]	0.0144 [0.295]	0.00406 [0.0945]	0.0258 [0.686]	0.0462 [1.347]	0.0690** [2.156]
rta	11.27*** [48.63]	-0.305*** [-3.244]	-0.222*** [-2.622]	-0.188** [-2.544]	-0.233*** [-3.766]	-0.217*** [-3.885]
rta_lag1	-1.401*** [-8.979]	10.06*** [35.89]	0.305*** [5.080]	0.292*** [5.224]	0.295*** [4.480]	0.171*** [4.281]
rta_lag2	-1.032*** [-7.144]	-0.978*** [-6.640]	8.614*** [31.64]	0.00986 [0.232]	0.0510 [1.313]	0.0946*** [2.810]
rta_lag3	-0.475*** [-4.101]	-0.573*** [-5.343]	-0.524*** [-4.613]	8.054*** [30.96]	-0.0399 [-1.184]	-0.00200 [-0.0654]
rta_lag4	-0.982*** [-8.415]	-0.855*** [-6.625]	-0.948*** [-7.504]	-1.038*** [-7.747]	6.974*** [27.24]	0.0747** [2.405]
rta_lag5	-1.604*** [-6.524]	-1.658*** [-6.802]	-1.640*** [-6.545]	-1.737*** [-6.927]	-1.859*** [-7.277]	4.840*** [22.26]
Constant	-14.87*** [-10.87]	-13.59*** [-10.41]	-11.76*** [-9.554]	-9.574*** [-8.345]	-7.614*** [-7.123]	-6.062*** [-6.116]
Observations	11,321	11,321	11,321	11,321	11,321	11,321
R-squared	0.486	0.461	0.441	0.424	0.401	0.386
Reporter FE	No	No	No	No	No	No
Partner FE	No	No	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Pair	Pair	Pair	Pair	Pair	Pair
Endo Var1	TFinRTA_ o	TFinRTA_o_lag 1	TFinRTA_o_lag 2	TFinRTA_o_lag 3	TFinRTA_o_lag 4	TFinRTA_o_lag 5
IV1	rta	rta	rta	rta	rta	rta
IV2	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1
IV3	rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2
IV4	rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3
IV5	rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4
IV6	rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5
Adjusted R-squared	0.485	0.459	0.440	0.423	0.400	0.385
Weak ID Test	434.7	264	220.4	203.2	163.2	88.60
Prob>F	0	0	0	0	0	0

\*\*\* p<0.01, \*\* p<0.05, \*  
p<0.1  
t-stat. in square  
brackets

**Table A5.a. Trade cost model estimation – RTFC models (final stage)**

VARIABLES	(R3) RTFC (2SLS; IV: RTA and lag)	(RL1) RTFC: no lag	(RL2) RTFC: 1-year lag	(RL3) RTFC: 2-year lag	(RL4) RTFC: 3-year lag	(RL5) RTFC: 4-year lag	(RL6) RTFC: 5-year lag
ln_gtariff	<b>0.294</b> [1.581]	0.762*** [4.766]	0.716*** [4.564]	0.690*** [4.662]	0.677*** [4.624]	0.631*** [4.299]	0.606*** [4.099]
ln_dist	<b>0.237***</b> [23.49]	0.200*** [24.95]	0.201*** [27.26]	0.202*** [28.33]	0.202*** [28.25]	0.201*** [27.96]	0.198*** [27.72]
contig	<b>-0.171***</b> [-5.358]	-0.177*** [-6.747]	-0.176*** [-6.714]	-0.175*** [-6.665]	-0.173*** [-6.581]	-0.168*** [-6.358]	-0.162*** [-6.104]
comlang_off	<b>-0.0691**</b> [-2.085]	-0.0233 [-0.829]	-0.0266 [-0.950]	-0.0295 [-1.060]	-0.0322 [-1.158]	-0.0413 [-1.465]	-0.0464 [-1.630]
comlang_ethno	<b>-0.0625**</b> [-1.994]	-0.105*** [-3.950]	-0.102*** [-3.856]	-0.0984*** [-3.742]	-0.0949*** [-3.600]	-0.0846*** [-3.151]	-0.0785*** [-2.884]
colony	<b>-0.188***</b> [-5.336]	-0.145*** [-4.900]	-0.149*** [-5.004]	-0.152*** [-5.106]	-0.156*** [-5.197]	-0.164*** [-5.425]	-0.168*** [-5.586]
comcol	<b>-0.0792**</b> [-2.164]	-0.0728** [-2.263]	-0.0717** [-2.230]	-0.0677** [-2.100]	-0.0618* [-1.902]	-0.0473 [-1.415]	-0.0329 [-0.954]
smctry	<b>0.0712</b> [1.297]	0.0441 [1.045]	0.0451 [1.065]	0.0453 [1.064]	0.0455 [1.066]	0.0450 [1.036]	0.0402 [0.919]
landlocked_ij	<b>0.134***</b> [5.809]	0.194*** [10.87]	0.190*** [10.83]	0.187*** [10.52]	0.183*** [10.08]	0.176*** [9.396]	0.174*** [9.098]
ln_lsci_ij	<b>-0.197***</b> [-15.01]	-0.236*** [-21.99]	-0.232*** [-21.54]	-0.228*** [-21.31]	-0.223*** [-20.10]	-0.213*** [-18.36]	-0.206*** [-16.93]
ln_startbiz_cost_ij	<b>0.0174***</b> [4.038]	0.0172*** [4.319]	0.0175*** [4.372]	0.0177*** [4.469]	0.0180*** [4.541]	0.0186*** [4.683]	0.0193*** [4.855]
ln_credit_creditinfo_old_ij	<b>-0.0188***</b> [-8.905]	-0.0218*** [-11.54]	-0.0214*** [-11.37]	-0.0209*** [-10.87]	-0.0206*** [-10.59]	-0.0195*** [-9.667]	-0.0187*** [-8.917]
ln_invest_disclosure_ij	<b>-0.0146***</b> [-3.087]	-0.00469 [-1.154]	-0.00505 [-1.274]	-0.00514 [-1.310]	-0.00528 [-1.339]	-0.00581 [-1.460]	-0.00537 [-1.358]
RTFC_ij	<b>-0.0257***</b> [-6.222]	-0.00191 [-0.702]					
RTFC_ij_lag1			-0.00362* [-1.754]				
RTFC_ij_lag2				-0.00547*** [-3.457]			
RTFC_ij_lag3					-0.00741*** [-4.529]		
RTFC_ij_lag4						-0.0123*** [-5.892]	
RTFC_ij_lag5							-0.0158*** [-5.848]
Constant	<b>0.108</b> [1.508]	0.132** [2.067]	0.134** [2.098]	0.136** [2.125]	0.142** [2.219]	0.157** [2.448]	0.170*** [2.660]
Observations	<b>11,321</b>	11,321	11,321	11,321	11,321	11,321	11,321
R-squared	<b>0.400</b>	0.532	0.532	0.533	0.533	0.528	0.523
Reporter FE	<b>No</b>	No	No	No	No	No	No
Partner FE	<b>No</b>	No	No	No	No	No	No
Year FE	<b>Yes</b>	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	<b>Pair</b>	Pair	Pair	Pair	Pair	Pair	Pair
Endo Var1	<b>RTFC_ij</b>	RTFC_ij	RTFC_ij_lag1	RTFC_ij_lag2	RTFC_ij_lag3	RTFC_ij_lag4	RTFC_ij_lag5
IV1	<b>rta</b>	rta	rta	rta	rta	rta	rta
IV2	<b>rta_lag1</b>	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1



VARIABLES	(R3) RTFC (2SLS; IV: RTA and lag)	(RL1) RTFC: no lag	(RL2) RTFC: 1-year lag	(RL3) RTFC: 2-year lag	(RL4) RTFC: 3-year lag	(RL5) RTFC: 4-year lag	(RL6) RTFC: 5-year lag
IV3		rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2
IV4		rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3
IV5		rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4
IV6		rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5
Adjusted R-squared	<b>0.399</b>	0.531	0.532	0.532	0.532	0.527	0.522
F-stat	<b>88.15</b>	113.6	113.6	115.4	117.9	115.5	115
Prob > F	<b>0</b>	0	0	0	0	0	0

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

t-stat. in square brackets

**Table A5.b. Trade cost model estimation – Max-TFinRTA models (first stage least square)**

VARIABLES	(R3) RTFC (2SLS; IV: RTA and lag)	(RL1) RTFC: no lag	(RL2) RTFC: 1- year lag	(RL3) RTFC: 2- year lag	(RL4) RTFC: 3- year lag	(RL5) RTFC: 4-year lag	(RL6) RTFC: 5-year lag
ln_gtariff	-19.53*** [-6.311]	-22.10*** [-7.142]	-22.33*** [-7.380]	-17.74*** [-6.225]	-13.29*** [-4.930]	-9.439*** [-3.677]	-7.872*** [-3.129]
ln_dist	1.882*** [10.89]	1.523*** [8.670]	1.436*** [8.542]	1.260*** [7.931]	1.077*** [7.130]	0.854*** [5.940]	0.652*** [4.731]
contig	0.319 [0.459]	0.558 [0.817]	0.602 [0.908]	0.627 [0.986]	0.651 [1.074]	0.567 [0.983]	0.532 [0.977]
comlang_off	-2.055*** [-3.606]	-1.747*** [-3.145]	-1.806*** [-3.257]	-1.841*** [-3.365]	-1.893*** [-3.480]	-2.123*** [-3.872]	-2.217*** [-4.072]
comlang_ethno	1.651*** [2.975]	1.622*** [3.000]	1.676*** [3.076]	1.735*** [3.214]	1.791*** [3.330]	1.948*** [3.582]	1.939*** [3.576]
colony	-1.688*** [-3.183]	-1.796*** [-3.471]	-1.850*** [-3.791]	-1.778*** [-3.792]	-1.736*** [-3.828]	-1.599*** [-3.599]	-1.491*** [-3.515]
comcol	-0.298 [-0.552]	0.119 [0.227]	0.433 [0.824]	0.898* [1.770]	1.237** [2.503]	1.543*** [3.139]	1.750*** [3.536]
smctry	1.299 [0.994]	1.042 [0.795]	0.906 [0.716]	0.711 [0.592]	0.733 [0.654]	0.615 [0.591]	0.309 [0.325]
landlocked_ij	-2.497*** [-7.809]	-2.234*** [-6.999]	-2.071*** [-6.621]	-2.174*** [-7.294]	-2.195*** [-7.673]	-2.146*** [-7.757]	-2.012*** [-7.496]
ln_lsci_ij	1.546*** [8.496]	1.553*** [8.561]	1.721*** [9.703]	1.972*** [11.37]	2.135*** [12.50]	2.097*** [12.53]	2.091*** [12.74]
ln_startbiz_cost_ij	0.0398 [0.520]	0.0406 [0.527]	0.0962 [1.282]	0.110 [1.475]	0.114 [1.548]	0.119* [1.655]	0.124* [1.815]
ln_credit_creditinfo_old_ij	0.159*** [5.013]	0.211*** [6.489]	0.214*** [6.683]	0.210*** [6.692]	0.165*** [5.339]	0.141*** [4.633]	0.114*** [3.842]
ln_invest_disclosure_ij	-0.433*** [-6.412]	-0.369*** [-5.365]	-0.309*** [-4.855]	-0.277*** [-4.777]	-0.252*** [-4.664]	-0.242*** [-4.733]	-0.194*** [-4.084]
rta	4.508*** [18.64]	4.497*** [18.49]	-2.592*** [-10.31]	-2.652*** [-11.93]	-2.055*** [-9.577]	-1.789*** [-8.605]	-1.164*** [-5.870]
rta_lag1	-2.713*** [-14.07]	-0.703*** [-6.333]	6.964*** [25.58]	-0.380*** [-2.751]	-0.708*** [-5.991]	-0.322** [-2.188]	-0.641*** [-4.896]
rta_lag2		-0.395*** [-3.673]	-0.869*** [-10.47]	7.113*** [26.70]	-0.514*** [-3.941]	-0.591*** [-5.425]	-0.110 [-0.754]
rta_lag3		-0.513*** [-4.627]	-0.649*** [-5.540]	-0.952*** [-9.542]	6.935*** [26.60]	-0.871*** [-6.519]	-1.132*** [-9.883]
rta_lag4		-0.436*** [-3.735]	-0.319*** [-3.219]	-0.578*** [-5.186]	-0.728*** [-7.673]	7.057*** [28.18]	0.148 [1.080]

VARIABLES	(R3) RTFC (2SLS; IV: RTA and lag)	(RL1) RTFC: no lag	(RL2) RTFC: 1- year lag	(RL3) RTFC: 2- year lag	(RL4) RTFC: 3- year lag	(RL5) RTFC: 4-year lag	(RL6) RTFC: 5-year lag
rta_lag5		-1.999*** [-8.486]	-1.925*** [-8.310]	-1.635*** [-7.311]	-1.714*** [-7.709]	-1.809*** [-8.068]	5.037*** [18.92]
Constant	-5.112*** [-3.254]	-1.793 [-1.125]	-2.017 [-1.334]	-3.130** [-2.201]	-3.275** [-2.430]	-3.140** [-2.444]	-2.590** [-2.106]
Observations	11,321	11,321	11,321	11,321	11,321	11,321	11,321
R-squared	0.328	0.347	0.344	0.339	0.344	0.335	0.334
Reporter FE	No	No	No	No	No	No	No
Partner FE	No	No	No	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Pair	Pair	Pair	Pair	Pair	Pair	Pair
Endo Var1	RTFC_ij	RTFC_ij	RTFC_ij_lag 1	RTFC_ij_la g2	RTFC_ij_lag 3	RTFC_ij_lag4	RTFC_ij_lag5
IV1	rta	rta	rta	rta	rta	rta	rta
IV2	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1
IV3		rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2	rta_lag2
IV4		rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3	rta_lag3
IV5		rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4	rta_lag4
IV6		rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5	rta_lag5
Adjusted R-squared	0.327	0.346	0.342	0.338	0.343	0.334	0.332
IV F-Test	210.9	129.9	129.4	136.8	155	125.7	109.5
Prob>F		0	0	0	0	0	0
Weak ID Test		74.25	137.5	134	121.6	136.5	88.38
Prob>F	0	0	0	0	0	0	0

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

t-stat. in square brackets

**Table A6.a. Trade costs model estimation – by type of TFinRTA provisions [final stage]**

VARIABLES	(T1)	(T2)	(T3)	(T4)	(T5)
	Transparency	Fees and formalities	Transit	Exchange of customs-related info	S&DT, TACB
ln_gtariff	0.858*** [5.805]	0.854*** [5.968]	0.643*** [4.249]	0.868*** [6.066]	0.887*** [6.069]
ln_dist	0.208*** [28.50]	0.188*** [25.65]	0.208*** [28.85]	0.187*** [25.25]	0.192*** [25.61]
contig	-0.155*** [-5.336]	-0.174*** [-6.761]	-0.122*** [-4.466]	-0.173*** [-6.822]	-0.185*** [-6.388]
comlang_off	-0.0361 [-1.207]	-0.0302 [-1.107]	0.0143 [0.510]	-0.0252 [-0.901]	-0.0636** [-2.019]
comlang_ethno	-0.0708** [-2.431]	-0.0963*** [-3.700]	-0.101*** [-3.870]	-0.103*** [-3.846]	-0.0672** [-2.230]
colony	-0.170*** [-5.658]	-0.135*** [-4.642]	-0.142*** [-4.966]	-0.136*** [-4.815]	-0.165*** [-5.508]
comcol	-0.0676** [-2.032]	-0.0461 [-1.431]	-0.0315 [-0.983]	-0.0601* [-1.837]	-0.0777** [-2.311]
smctry	0.0757* [1.703]	0.0245 [0.578]	0.00654 [0.146]	0.0267 [0.630]	0.0988** [2.040]
landlocked_ij	0.177*** [9.690]	0.199*** [11.71]	0.231*** [13.62]	0.199*** [11.67]	0.168*** [8.775]
ln_lsci_ij	-0.224*** [-20.96]	-0.231*** [-22.30]	-0.259*** [-25.06]	-0.230*** [-22.04]	-0.213*** [-18.17]
ln_startbiz_cost_ij	0.0175*** [4.330]	0.0174*** [4.324]	0.0222*** [5.181]	0.0169*** [4.197]	0.0190*** [4.710]
ln_credit_creditinfo_old_ij	-0.0255*** [-12.75]	-0.0251*** [-13.00]	-0.0274*** [-13.20]	-0.0249*** [-12.88]	-0.0255*** [-12.53]
ln_invest_disclosure_ij	-0.00442 [-1.153]	-0.00171 [-0.444]	0.000333 [0.0863]	-0.00111 [-0.288]	-0.00497 [-1.241]
ln_TFinRTA_t_pc	-0.0152*** [-7.497]				
ln_TFinRTA_f_pc		-0.00909*** [-7.877]			
ln_TFinRTA_ti_pc			-0.0177*** [-7.474]		
ln_TFinRTA_i_pc				-0.0109*** [-7.798]	
ln_TFinRTA_aft_pc					-0.0250*** [-7.403]
Constant	-0.0870 [-1.235]	0.168** [2.524]	-0.00694 [-0.103]	0.153** [2.290]	-0.0620 [-0.848]
Observations	11,321	11,321	11,321	11,321	11,321
R-squared	0.505	0.524	0.505	0.519	0.475
Reporter FE	No	No	No	No	No
Partner FE	No	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes
Clustered SE	Pair	Pair	Pair	Pair	Pair
Endo Var1	ln_TFinRTA_t_p c	ln_TFinRTA_f_p c	ln_TFinRTA_ti_p c	ln_TFinRTA_i_p c	ln_TFinRTA_aft_p c
IV1	rta	rta	rta	rta	rta
IV2	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1
Adjusted R-squared	0.505	0.523	0.504	0.518	0.475

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 ; t-stat. in square brackets

**Table A6.b. Trade costs model estimation – by type of TF-in-RTA provisions [first stage least squares]**

VARIABLES	(T1) Transparency	(T2) Fees and formalities	(T3) Transit	(T4) Exchange of customs-related info	(T5) S&DT, TACB
ln_gtariff	6.083*** [2.614]	11.96*** [6.157]	-6.509*** [-3.086]	11.33*** [5.817]	5.279** [2.478]
ln_dist	1.786*** [12.46]	1.096*** [8.524]	1.594*** [13.46]	0.889*** [6.976]	0.499*** [3.819]
contig	1.640*** [2.861]	0.604 [1.117]	3.265*** [6.909]	0.584 [1.090]	-0.227 [-0.527]
comlang_off	-1.480*** [-2.579]	-1.964*** [-4.907]	1.548*** [3.135]	-1.180** [-2.439]	-2.027*** [-3.969]
comlang_ethno	2.175*** [3.753]	0.783** [2.226]	0.134 [0.292]	0.0527 [0.113]	1.452*** [2.847]
colony	-1.525*** [-3.534]	1.421*** [3.580]	0.284 [0.612]	1.008** [2.100]	-0.702* [-1.808]
comcol	0.169 [0.314]	2.558*** [8.818]	2.168*** [4.816]	0.844* [1.653]	-0.318 [-0.795]
smctry	2.736*** [3.071]	-0.865 [-0.981]	-1.521* [-1.868]	-0.513 [-0.638]	2.621*** [3.648]
landlocked_ij	-1.541*** [-5.727]	-0.229 [-0.955]	1.749*** [7.015]	-0.177 [-0.695]	-1.311*** [-5.539]
ln_lsci_ij	0.706*** [4.429]	0.388*** [2.815]	-1.348*** [-9.364]	0.374** [2.477]	0.862*** [5.754]
ln_startbiz_cost_ij	0.0868 [1.408]	0.137** [2.383]	0.343*** [5.986]	0.0710 [1.308]	0.113* [1.954]
ln_credit_creditinfo_old_ij	-0.163*** [-5.906]	-0.224*** [-9.251]	-0.242*** [-9.564]	-0.172*** [-6.763]	-0.0967*** [-3.776]
ln_invest_disclosure_ij	-0.102* [-1.922]	0.0895 [1.435]	0.173*** [3.890]	0.126** [2.128]	-0.0910* [-1.700]
rta	7.777*** [34.88]	11.34*** [89.75]	6.411*** [30.55]	9.282*** [65.46]	4.470*** [20.23]
rta_lag1	-2.827*** [-11.45]	-1.633*** [-9.861]	-1.858*** [-8.986]	-1.123*** [-6.947]	-1.176*** [-5.092]
Constant	-26.47*** [-20.23]	-20.15*** [-16.09]	-19.00*** [-16.06]	-18.35*** [-14.84]	-15.86*** [-13.69]
Observations	11,321	11,321	11,321	11,321	11,321
R-squared	0.330	0.647	0.420	0.553	0.194
Reporter FE	No	No	No	No	No
Partner FE	No	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes
Clustered SE	Pair	Pair	Pair	Pair	Pair
Endo Var1	ln_TFinRTA_t_pc	ln_TFinRTA_f_pc	ln_TFinRTA_ti_pc	ln_TFinRTA_i_pc	ln_TFinRTA_a_ft_pc
IV1	rta	rta	rta	rta	rta
IV2	rta_lag1	rta_lag1	rta_lag1	rta_lag1	rta_lag1
Adjusted R-squared	0.328	0.647	0.419	0.552	0.192
Weak ID Test	652.8	4334	521.8	2367	244.5
Prob>F	0	0	0	0	0

t-stat. in square brackets



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