

# Determinants of services trade agreements: Regulatory incidence and convergence

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## Abstract

Given the rise of services preferentialism in the last decade and the importance of domestic regulation for services trade, this paper examines the role of regulatory incidence and convergence as determinants of services trade agreements (STAs). Our results suggest that regulation is an important determinant of STA membership. They also suggest that geography, common institutions and pre-existing trade matter more than economic size and factor endowments for addressing regulatory incidence and convergence in services negotiations. Finally, we find that countries displaying greater regulatory convergence and less restrictive regulation are also more likely candidates for reciprocal services liberalization.

**JEL classification:** F10, F13, F15

**Key words:** Services trade agreements; Economic determinants; STRI; Regulatory convergence

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# 1 Introduction

More than three decades of research on trade costs and goods trade unveiled fundamental insights into the determinants (Baier and Bergstrand, 2004), the relative magnitude and nature (Eaton and Kortum, 2002; Anderson and van Wincoop, 2003, 2004) and the consequences of barriers to cross-border transactions (Baier and Bergstrand, 2007, 2009; Bergstrand et al., 2013; Egger et al., 2011) of goods. However, much less is known about services trade and their impediments. Data on cross-border transactions of services became available only in the last decade, and data on service trade impediments have been collected and made available even more recently (for instance see Miroudot et al., 2012). Even though a cottage literature started evolving around the matter (see Francois and Hoekman, 2010, for a survey), key knowledge about fundamental drivers and consequences of service trade barriers is not available. This paper aims to bridge this gap by addressing the role of regulation in STA membership.

A striking feature of trade diplomacy in recent years has been the pace of preferential goods trade liberalization and rule-making. In the last decade, a similar trend has been observed regarding services trade. Of the 83 preferential trade agreements (PTAs) notified to the World Trade Organization (WTO) and in force prior to the year 2000, 73 (87.9%) featured provisions dealing exclusively with trade in goods. Since then and up until August 2013, another 176 PTAs have come into force of which 105 (59.7%) also include provisions on services trade<sup>1</sup>. This development indicates the rising importance of services trade in general, the growing need felt by countries to place such trade on a firmer institutional and rule-making footing, and the attractiveness of doing so on an expedited basis via preferential negotiating platforms (Sauvé and Shingal, 2011).

Unlike trade in goods, where the removal of border barriers retains significant negotiating traction, domestic regulation is the sole currency of negotiations in services trade (Mattoo and Sauvé, 2010). The importance and potentially trade- and investment-inhibiting impact of domestic regulation on service sector performance has received some attention in the literature (Kox and Nordås, 2007; Kox and Nordas, 2009). Regulatory incidence and heterogeneity have been shown to exert a significantly negative impact on bilateral services trade via Mode 3 (“Strict and different regulation discourages outward investment as local firms find it more difficult to enter foreign markets the more restricted they are at home,” Kox and Nordas, 2009), which is the most dominant mode of service delivery (for instance

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<sup>1</sup>As of 15 August 2013, the total number of STAs in force was 118. These included three alliances (MERCOSUR, EFTA and CARICOM) where an STA was negotiated after 2000 in addition to a pre-existing trade agreement in goods.

see Magdeleine and Maurer, 2008; Hoekman and Kostecki, 2001).

However, the role of regulation, both incidence and convergence, in STA membership has not been studied. Are certain countries more likely candidates for negotiated regulatory convergence from a services trade perspective? Moreover are countries displaying greater regulatory convergence also more likely candidates for deeper integration agreements in services markets? The role of geography in trade-facilitating regulatory convergence in services has also not been explored.

In a bid to expand trade volumes, the objective of an STA is two-fold: first, to bring down the level and incidence of restrictive regulation in both markets and, second, to promote convergence, approximation (including through mutual recognition) and ultimately (but less frequently) to harmonize regulatory practices between trading partners. We would thus expect trading partners in a services accord to exhibit both lower incidence of regulation and regulatory heterogeneity compared to those not party to such an agreement. Conversely, the lower the incidence of restrictive regulation and regulatory heterogeneity in a trading dyad, the more likely it is to negotiate a services agreement. Significantly, these propositions are validated by the analyses undertaken in this paper.

## 2 Related literature

Research on services preferentialism has been traditionally devoted to studying the trade effect of services accords on aggregate and disaggregated services trade flows (Pak, 2002; Grünfeld and Moxnes, 2003; Ceglowski, 2006; Kimura and Lee, 2006; Walsh, 2006; Lennon, 2008; Shingal, 2009; Francois and Hoekman, 2010; Marchetti, 2011; Egger et al., 2012; Shingal, 2013; Van der Marel and Shepherd, 2013).

More recently, researchers have begun to explore the impact that differing levels of and heterogeneity in regulation exert on bilateral services trade flows (Kox and Lejour, 2006; Francois et al., 2007; Kox and Nordas, 2007; Schwellnus, 2007; Fink, 2009; Kox and Nordas, 2009; van der Marel and Shepherd, 2013) and to estimate barriers to trade in services and FDI and/or provide estimates of services trade costs (Francois et.al. 2007; Miroudot et al., 2010; Van der Marel, 2011; Miroudot et al., 2012).

This literature has also evolved to explain services commitments in the GATS (Roy, 2011), those made reciprocally (Marchetti et al., 2012) as well as GATS+ commitments in STAs (Van der Marel and Miroudot, 2012).

However, the papers closest to ours are Baier and Bergstrand (2004), who were the first to

examine the determinants of partners’ propensities to negotiate trade agreements in goods, and Cole and Guillin (2012) and Egger and Wamser (2013), who explored the issue *inter alia* for services accords. None of these papers, however, examine the role of regulation in STA formation. Studying the role of regulation in STA membership is thus the main contribution of our paper. This is done through recourse to a new World Bank dataset on measures of services (regulatory) restrictiveness, the STRI (Borchert et al., 2012a,b).

Baier and Bergstrand (2004) found the potential welfare gains and likelihood of a PTA in goods trade between a pair of countries to be higher: (i) the closer in terms of distance two trading partners are; (ii) the more remote they are from the ROW; (iii) the larger and more similar they are economically (in terms of real GDPs) to enable exploitation of economies of scale in the presence of differentiated products; (iv) the greater is the difference in factor endowments between them, leading to Heckscher–Ohlin trade; and (v) the smaller is the difference in factor endowment ratios of the member countries relative to those of the ROW (leading to less inter-industry trade diversion). Baier and Bergstrand (2004) found these factors to have economically and statistically significant effects on the probability of negotiating a goods agreement.

In comparison, Cole and Guillin (2012) examined a dyad’s propensity to negotiate a services agreement and in their baseline specification found statistically significant evidence only for the “natural trading partner hypothesis,” similarity in terms of economic size, and factor endowment differences. Egger and Wamser (2013) found the determinants of goods and services trade agreements to be similar.

### 3 Empirical methodology

Our empirical framework draws on McFadden (1975, 1976) qualitative choice models, where utility, here the (minimum or average) net gains for two countries from participating in an STA, is modeled as a latent, unobservable variable ( $y^*$ ), which can be explained by a vector of explanatory variables ( $x$ ). Since  $y^*$  cannot be observed, an indicator variable  $STA$  is used which takes the value 1 (indicating  $y^* > 0$ ) if two countries participate in a common STA and 0 (indicating  $y^* \leq 0$ ) otherwise.

$$\text{More formally, } STA_{ij} = 1 \text{ if } y^* > 0 \text{ and } P(STA_{ij} = 1) = P(y^* > 0) = G(\alpha + \beta x_{ij}) \dots \dots (1)$$

where  $P$  is the response probability associated with a trading dyad ( $ij$ ) signing a services accord;  $G(\cdot)$  is a cumulative distribution function that ensures that  $P(STA_{ij} = 1)$  lies in the unit interval; and  $x_{ij}$  is the vector of explanatory variables for a generic country pair.

Consistent with Baier and Bergstrand (2004), empirically, (1) is estimated by a probit model, assuming normality about the error term in the latent process. Clearly, independent of the assumed cumulative distribution function, the non-linear nature of  $G(\cdot)$  implies that the coefficient estimates only reveal the signs of the partial effects of changes in  $x_{ij}$  on the probability of signing a STA. Thus, the direction of the effect of variable  $x_k$  on  $E(y * |x) = \alpha + \beta x$  is only qualitatively (not quantitatively) identical to the effect of  $x_k$  on  $E(STA|x) = G(\alpha + \beta x)$ , where  $E(\cdot)$  denotes the expectation operator.

The main objective of STAs is to increase trade in services between partners. Reducing levels of restrictive regulation and promoting regulatory convergence are important channels through which services accords expand services trade volumes. Thus, the determinants of a country’s choice to negotiate a services accord are likely to be indistinguishable from those that inform whether certain countries are more likely candidates for a reduction in restrictive regulation as well as for regulatory convergence.

Thus, in distinct regressions, we explain the restrictiveness of services regimes in a dyad and regulatory heterogeneity between partners using the same set of controls as used for explaining STA membership.

Formally,  $DREG_{ij} = \vartheta + \pi x + \varepsilon \dots\dots\dots(2)$

where  $DREG_{ij}$  is the absolute value of the difference between the logs of the services trade restrictiveness index ( $STRI$ ) of two countries and  $\varepsilon$  is an error term.

Moreover,  $SREG_{ij}^{lev} = \mu + \varphi x + \xi \dots\dots\dots(3)$

where  $SREG_{ij}^{lev}$  is the sum of the levels of  $STRI$  of two countries and  $\xi$  is an error term.

We found the dependent variables in equations (2) and (3) to be characterized by heteroskedasticity which rendered a log-linear OLS estimation biased (see Colin and Trivedi, 2005; Santos Silva and Tenreyro, 2006). Therefore we used Poisson pseudo-maximum likelihood (PPML) estimation for inference.

## 4 Explanatory variables

In their seminal work exploring the determinants of partners’ propensities to negotiate bilateral trade agreements, Baier and Bergstrand (2004) documented that distance, remoteness, economic country size, and factor endowments were the main economic determinants of goods

trade agreements and that their impact on empirical membership probability was consistent with economic theory. They also considered other institutional and political economy determinants in their sensitivity analyses. Following them, we use a largely overlapping set of determinants in our empirical analyses.

For any dyad  $ij$ , the vector  $x$  includes two geographical variables: “ $Natural_{ij}$ ” which is the inverse of distance between  $i$  and  $j$  and “ $Remote_{ij}$ ” which is the simple average of the mean distance between both countries and their partners.

$$\text{Formally, } Remote_{ij} = dcont_{ij} \times \left\{ \frac{[\log(\sum_{k=1, k \neq j}^N d_{ik}/(N-1)) + \log(\sum_{k=1, k \neq i}^N d_{jk}/(N-1))]}{2} \right\}$$

where “ $d$ ” is the bilateral distance in kilometers and “ $dcont_{ij} = 1$ ” if  $i$  and  $j$  are located on the same continent, 0 otherwise.

Economic country sizes are represented by  $SRGDP_{ij}$ , which is the sum of the logs of real GDP of country  $i$  and  $j$  and  $DRGDP_{ij}$ , which is the absolute value of the difference between the logs of real GDP of two countries.

$DKL_{ij}$  and  $DROWKL_{ij}$  determine the role of factor endowments in countries’ propensities to negotiate agreements.  $DKL_{ij}$  is the absolute value of the difference between the logs of capital-labour ratios of country  $i$  and  $j$ . Apart from  $DKL_{ij}$ , Baier and Bergstrand (2004) suggest using  $SQDKL_{ij}$  – the squared value of  $DKL_{ij}$  – in order to control for the likely non-linear impact of  $DKL_{ij}$  on the net gains from participating in a trade agreement. Moreover, to account for dependence of  $i$  and  $j$  on each other, Baier and Bergstrand (2004) suggested including  $DROWKL_{ij}$  which is calculated as the absolute value of the difference between the logs of capital-labour ratios of countries  $i$  and  $j$  and those of ROW.

$$\text{Formally, } DROWKL_{ij} = \frac{1}{2} \left[ \left\{ \log \left( \frac{\sum_{k=1, k \neq j}^N K_k}{\sum_{k=1, k \neq i}^N L_k} \right) - \log \left( \frac{K_i}{L_i} \right) \right\} + \left\{ \log \left( \frac{\sum_{k=1, k \neq j}^N K_k}{\sum_{k=1, k \neq i}^N L_k} \right) - \log \left( \frac{K_j}{L_j} \right) \right\} \right]$$

Institutional variables in  $x_{ij}$  include common language, colonial antecedents and legal origins. More importantly from the perspective of this paper, we also control for the level of services regulation in the dyad ( $SREG_{ij}$ , which is the sum of the logs of  $STRI_i$  and  $STRI_j$ ) and regulatory heterogeneity between partners by including the absolute value of the difference between the logs of STRI of both countries ( $DREG_{ij}$ ).

In line with the endogenous protection literature (Trefler, 1993), we also control for “import penetration” by using data on countries’ average bilateral merchandise trade ( $BTG_{ij}$ ). To measure the average as well as the difference in the overall supply and demand potentials i.e. comparative advantage in and openness to overall services trade for two countries in the

past, we also include the minimum value of world services trade for two countries in a dyad [ $\min(\text{Trade}_{ij}^S)$ ] and the maximum value of world services trade for two countries in a dyad [ $\max(\text{Trade}_{ij}^S)$ ]. Finally, to control for historical policy alignment, we also control for active goods trade agreements in the year 1980 ( $GTA_{1980}$ ).

## 5 Testable hypotheses

The testable propositions from Baier and Bergstrand (2004) are likely to be similar for STAs as well. Thus:

1. Neighbouring countries are more likely to sign a trade agreement especially if both are remote from the rest of the world and this is likely to be true of services accords as well.
2. The “natural trading partner hypothesis” is also expected to hold true for STAs.
3. Similar and larger economically-sized countries are also likely to gain more due to the exploitation of economies of scale and the presence of greater varieties flowing from deeper integration in services markets.
4. The greater the difference in relative factor endowments between countries, and the larger the intercontinental trade costs, the more trade creation is likely to be.
5. The greater the difference in relative factor endowments between potential partners and the ROW, the more likely trade diversion becomes.
6. Protection tends to be higher in sectors with greater import penetration. This means that more bilateral trade is likely to be associated with a lesser inclination to negotiate a trade accord.
7. A small maximum inclination towards world services trade [ $\max(\text{Trade}_{ij}^S)$ ] is likely to be associated with lesser inclination towards liberalization due to large natural services barriers. Moreover, given a small minimum inclination towards world services trade [ $\min(\text{Trade}_{ij}^S)$ ], a larger value of [ $\max(\text{Trade}_{ij}^S)$ ] implies historically more heterogeneity between countries, which is expected to be a source of less inclination towards liberalizing services trade reciprocally.
8. Dyads with common institutions and homogeneity in regulation are more likely to enter into agreements as are partners with low initial barriers to services trade.
9. Partners with existing trade agreements in goods are also more likely to negotiate STAs.

In estimating equation (1), we thus expect the coefficients of  $Remote_{ij}$ ,  $Natural_{ij}$ ,  $SRGDP_{ij}$ ,  $DKL_{ij}$ ,  $SQDKL_{ij}$ ,  $GTA_{1980}$ ,  $\min(Trade_{ij}^S)$  and  $\max(Trade_{ij}^S)$ , and the institutional variables to be positive while those of  $DRGDP_{ij}$ ,  $DROWKL_{ij}$ ,  $SREG_{ij}$ ,  $DREG_{ij}$  and  $BTG_{ij}$ , to be negative.

## 6 Data

Data on trade agreements are taken from the WTO's Regional Trade Agreements Information System database, where  $STA = 1$  for agreements notified under Article V of the GATS during 1958- 15 August 2013 and 0 otherwise.  $GTA_{1980} = 1$  for agreements notified under Article XXIV of the GATT during 1958-1980 and 0 otherwise.

The earliest STA was the EC Treaty that entered into effect (eif) in 1958 (but only notified to the WTO in 1995). After that, there was one STA in the 1980s (Australia-New Zealand, eif 1989), eight during the 1990s (including both the NAFTA and the EC enlargement) and 108 STAs since the year 2000. Since trade agreements are typically phased in over a multi-year transition period, to control for potential endogeneity in estimation, our data on the time-varying independent variables in  $x_{ij}$  are measured in the year 1980. The choice of this early year is also likely to control for any domino effects that the earliest STAs may have exerted on the recent wave of services preferentialism since 2000 during which 108 of the 118 WTO-notified STAs have come into effect.

The CEPII gravity dataset (Head et al., 2010) provides geographic distances between capital cities, used to compute  $Natural_{ij}$  and  $Remote_{ij}$ . Data on real GDP and population are taken from the Penn World Tables (Heston and Summers, 2011) and these are used to calculate  $SRGDP_{ij}$  and  $DRGDP_{ij}$ .

We approximated factor endowment ratios  $K_i/L_i$  by using real per capita income ( $PCY$ ). This was done since we measured time-variant determinants of STAs 14 years prior to the data of STA membership (prior to the entering of all STAs in the data). At that time, using the perpetual inventory method to estimate capital stocks as in Baier and Bergstrand (2004) would have led to an unjustifiable loss of observations. Moreover, real per-capita income ratios are highly correlated with capital-labour ratios (see Egger and Larch, 2008; Bergstrand et al., 2010)<sup>2</sup>. Data on PCY are also taken from the Penn World Tables.

Data on common language and colonial antecedents are taken from the CEPII gravity dataset

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<sup>2</sup>The correlation coefficient between real PCY and K/L in the subsample of our data for which both variables exist is close to 0.9.



(Head et al. 2010), while those on legal origins are compiled using La Porta et al. (1999)<sup>3</sup>. All trade data were averaged over 1979-1981 to minimize fluctuations in recording practices. Data on  $BTG_{ij}$  were sourced from UN Comtrade. We used goods trade data as a measure of complementarity of bilateral goods and services trade, especially since bilateral services trade data are not available for a period as early as 1979-1981.  $\min(Trade_{ij}^S)$  and  $\max(Trade_{ij}^S)$  were calculated using data on world services trade from the World Bank’s World Development Indicators.

Finally, ten countries in our sample did not exist in the year 1980: these included the Czech Republic and nine former USSR republics<sup>4</sup>. GDP and merchandise trade data for these countries were constructed for the year 1980 and 1980-82<sup>5</sup>, respectively. This was done by multiplying historical GDP and merchandise trade data (both corrected for inflation) for Czechoslovakia and the USSR by the shares of the Czech Republic and each of the nine former USSR republics, respectively, in “constructed Czechoslovakian” and “constructed USSR” GDP and merchandise trade in the year 1994<sup>6</sup>.

However, services trade data were not available historically and hence, these were constructed using actual data shares from 1999-2001<sup>7</sup> as below:

$$Trade_{i1979-81}^S = \sum_i Trade_{i1979-81}^S \times \frac{Trade_{i1999-2001}^S}{\sum_i Trade_{i1999-2001}^S}$$

The measure of regulation in services markets used in this paper is the World Bank’s Services Trade Restrictiveness Index (STRI; Borchert et.al. 2012 a, b). Compiled from responses to questionnaires sent out by the World Bank to 79 developing countries on “impediments to international integration” and from publicly available information for OECD countries, the STRI is a quantitative index of restrictions on services trade encompassing 103 countries, 5 major service sectors and 19 sub-sectors. The information is also available by modes of service delivery.

A comparison of STRI by regions/groups in Figure 1 shows that the Middle-East & North Africa (MENA) has the most restrictive services trade policies, followed by South Asia (SA), East Asia & the Pacific (EAP) and Sub-Saharan Africa (SSA), with the last also being the most heterogeneous cohort. As expected, the OECD and East & Central Asia (ECA) not only report the lowest STRI values but also form the most homogeneous cohorts.

<sup>3</sup>[http://www.economics.harvard.edu/faculty/shleifer/files/qgov\\_web.xls](http://www.economics.harvard.edu/faculty/shleifer/files/qgov_web.xls)

<sup>4</sup>These were Armenia, Belarus, Georgia, Kazakhstan, the Kyrgyz Republic, Lithuania, Russia, Ukraine and Uzbekistan.

<sup>5</sup>Trade data for these countries were missing in 1979.

<sup>6</sup>This was the earliest year of the coming into existence of all these ten countries.

<sup>7</sup>These were the earliest years for which services trade data were consistently available for all these ten countries.

<Insert Figure 1 here>

A closer look at Figure 1 also provides an insight into the factors likely to influence the choice of partners for negotiated regulatory convergence. For instance, high levels of per capita income (PCY), economic development and political stability all likely feature behind the observed homogeneity in STRI among OECD countries though there are significant differences in language, culture and distances within this cohort. In the case of ECA on the other hand, there is far more homogeneity in terms of language, culture and distances, though more differences in terms of PCY and levels of development. This seems to suggest that a combination of these factors could determine which countries are potential candidates for negotiated regulatory convergence.

The STRI data are available for 103 countries, leading to 5253 [=  $(103 \times 102)/2$ ] possible dyads (treating pair  $ij$  and pair  $ji$  as the same dyad). There was an STA in force between 462 of these dyads until 15 August 2013. A preliminary analysis of the variables in  $x_{ij}$  shown in Figure 2 reveals that STA members relative to non-members in our sample are closer in terms of distance but more remote, larger in terms of real GDP and more similarly-sized, have smaller differences in PCY (and hence, relative factor endowments) with respect to each other but not compared to ROW, display less restrictive and more homogeneous services regulation, are more likely to have a common language, and exhibit higher (historical) levels of bilateral merchandise trade. The 103 countries in our sample are listed in Annex Table A1 and all data are summarized in Annex Table A2.

<Insert Figure 2 here>

## 7 Estimation results

The results from the Probit estimation are reported in Table 1. The first three specifications control for economic and trade determinants first separately and then together. Specification 4 introduces institutional controls while specifications 5 and 6 include combinations of these with economic and trade determinants. The final specification 7 controls for all determinants together.

<Insert Table 1 here>

The results reported in columns 1, 2 and 4 suggest that economic determinants exert a greater influence than both institutional and trade factors though the model has the lowest

explanatory power with the lattermost (pseudo-R-squared = 12%). Moreover, most of the variables within these three sets of determinants, with the exception of the factor-endowment proxies and common law, are individually statistically significant.

As expected, less distant and more remote dyads, large sized economies with less restrictive and more homogeneous services regulation and a common language are more likely to negotiate a services accord. The coefficients on *DPCY* and *DROWPCY* provide no evidence in these results for either Heckscher-Ohlin trade determinants in driving STAs or for any inter-industry trade diversion. Counter-intuitively, these results also suggest that having common colonial antecedents reduces the propensity to negotiate a STA. The unexpected positive coefficient on *BTG<sub>ij</sub>* seems to provide more evidence in support of the domino theory (Baldwin, 2006) than for the endogenous protection literature. While the *GTA\_1980* variable drops out of these estimations, the positive coefficients on  $\min(Trade_{ij}^S)$  and  $\max(Trade_{ij}^S)$  provide evidence for both supply and demand factors in fostering reciprocal services liberalization.

These results generally hold in specifications 3, 5 and 6 though the explanatory power of the model is considerably improved when economic and institutional factors are combined. When all factors are controlled for in specification 7, only *Remote<sub>ij</sub>*, *Natural<sub>ij</sub>*, *DRGDP<sub>ij</sub>*, services trade and the regulatory variables retain statistical significance; these variables have the same impact as earlier. Interestingly, the explanatory power of this fully specified model is the same as that of the model with economic and institutional determinants being combined together; since the latter covers the full sample, we use it to assess our model's predictive power.

A comparison<sup>8</sup> of our model's predictions for STA using the specification in column 5 with the actual value of STA reveals that the propensity to negotiate (or not) a STA is correctly predicted for 93% of the dyads in our sample. Of the total, there was an STA between 462 dyads and 39.4% of these were correctly predicted by the model. The remaining 4791 dyads did not have a services accord and our model correctly predicted 98.3% of these. Matthews (1975) correlation coefficient<sup>9</sup>, calculated from these predictions, reported a value of 0.49, indicating reasonable fit between the actual and predicted propensities to negotiate STAs.

We also found evidence of "insufficient" services preferentialism in our sample for 83 possible trading partner pairs reported in Table 2 wherein our model suggested the existence of a services accord which does not exist at the moment. At the same time, 280 dyads reported

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<sup>8</sup>To enable this comparison, we used the standard decision-rule for assessing probit models. If  $STA^{pred} > 0.5$  then we take this value to be 1. If  $STA^{pred} \leq 0$  then we take this value to be 0.

<sup>9</sup> $MCC = ((TP \times TN) - (FP \times FN)) / \sqrt{(TP + FP) \times (TP + FN) \times (TN + FP) \times (TN + FN)}$  where MCC = Matthews correlation coefficient, TP = number of true positives, TN = number of true negatives, FP = number of false positives and FN = number of false negatives.

in Table 3 seem to exhibit “excessive” services preferentialism – in all cases, both sets of trading partners have a services agreement though our model suggests a very low probability for this.

<Insert Tables 2 & 3 here>

## 7.1 Secondary results

Table 4 reports the results from the PPML estimation of equation (2). As before, columns 1, 2 and 4 report the results from estimations that control for economic, trade and institutional determinants separately; columns 3, 5, 6 and 7 report results from estimations that include these variables in different combinations.

<Insert Table 4 here>

At the outset, the explanatory power of the secondary estimation is low; even the fully-specified model in column 7 has an R-squared of only 5.9%. This said, a few of the explanatory variables report expected signs on coefficients. Thus, dyads more remote from ROW tend to be more homogeneous in services regulation – the coefficient on  $Remote_{ij}$  is negative and statistically significant across specifications. Commonality in institutions is likely to result in a demand for (and greater supply of) regulatory convergence – we see evidence of this in the coefficients on common colonial antecedents and common language in specifications 4 through 7.

On the other hand,  $DRGDP_{ij}$  reports statistical significance, but unexpected signs. The result on the sum of economic size of trading partners is harder to interpret as our sample data suggest the near-absence of a relationship between market size and regulatory heterogeneity (correlation coefficient = -0.05). The impact of combined market size on differences in regulation is thus uncertain and perhaps this is what is reflected in the near-zero coefficient on  $SRGDP_{ij}$  across specifications in Table 4.

The coefficient on  $BTG_{ij}$  is negative as expected and statistically significant throughout specifications. Sectors characterized by greater trade intensity are also more likely to see a convergence in regulation facilitating such trade. Finally, the positive coefficients on  $min(Trade_{ij}^S)$  are also in line with our expectations on historical regulatory heterogeneity.

While there are no established a priori for explaining the restrictiveness of services regimes in a dyad, results from the PPML estimation of equation (3) reported in Table 5 suggest more restrictive services regimes in a dyad if:

- it is more remote from ROW;
- the countries in the dyad are more distant from each other;
- it comprises smaller sized and dissimilar economies;
- it has larger differences in factor endowments both between members and compared to ROW;
- it has lower levels of pre-existing bilateral merchandise trade or the absence of any institutionalized preferential trading arrangement in goods;
- there are differences in language (though weakly significant) between the members;
- if there is more minimum inclination towards world services trade and less maximum inclination; and
- interestingly, if it has common legal and colonial antecedents

<Insert Table 5 here>

## 7.2 Sensitivity analysis

The STRI data generally pertain to the year 2008 for most countries in the sample. Since regulatory convergence and a reduction in services restrictiveness are objectives of services preferentialism, to minimize endogeneity in our estimation emanating from reverse causality, we now only consider services accords that came into effect in the year 2008 and beyond. Results from estimating equations (1) to (3) for this sub-sample are reported in Annex Tables 3 to 5, respectively.

These robustness results from equation (1) provide little evidence for the role of factor-endowments or for common colonial antecedents in determining STA membership. On the other hand, these results provide more robust evidence for the positive role of a common language and counter-intuitive evidence for the negative impact of the common law variable. The coefficient on the  $\min(Trade_{ij}^S)$  variable also turns negative in specifications 2 and 3, thus negating the role of supply forces in promoting services preferentialism. The remaining results in Annex Table 3 are qualitatively similar to those reported in Table 1: the impact of  $Remote_{ij}$ ,  $SRGDP_{ij}$  and the regulatory variables is lesser than in the full sample and there is more robust evidence for the positive role of the  $BTG_{ij}$  variable.

Annex Tables 4 and 5 report the robustness results from estimating equations (2) and (3) and these are found to be qualitatively similar in general to those reported in Tables 4 and 5, respectively, though the  $GTA_{1980}$  drops out of these results.

In Annex Table 4 results, the coefficient on  $Natural_{ij}$  is statistically significant while those on  $SRGDP_{ij}$  and  $DROWPCY_{ij}$  are weakly significant; the common language variable reports a more robust presence in these results. However, the likely impacts of all these variables on regulatory heterogeneity in a dyad are the same as in the full sample.

In Annex Table 5 results, the one major difference is the change in the sign of the  $Natural_{ij}$  variable: the robustness results suggest that the restrictiveness of services regulation in the dyad is inversely related to the geographical distance between the countries, which is a rather interesting result. The impact of factor endowment differences also acquires a nonlinear relationship now. The remaining variables retain impacts similar to those in the full sample.

## 8 Conclusion

This paper examines the role of regulatory incidence and convergence in determining STA membership. Our empirical results suggest that large-and similar-sized economies that are distance-wise closer and remote (from ROW), with lower levels of restrictive but more homogeneous services regulation are more likely to negotiate services agreements with each other. Our results also suggest that remote and less similar-sized economies, with high levels of bilateral merchandise trade, common language and colonial antecedents are more likely candidates for regulatory convergence in STAs. Finally, the restrictiveness of services regimes in a dyad seems to be directly related to its remoteness from ROW, to the geographical distance between the countries and to their factor endowment differences as well as interestingly to commonality in legal institutions and colonial antecedents. The incidence of services regulation in a dyad is also found to be inversely related to the sizes of and similarities between countries in terms of GDP, to levels of bilateral merchandise trade and pre-existing goods agreements. Our results suggest that regulation (both incidence and heterogeneity) are important determinants of STAs. They also suggest that geography, common institutions and pre-existing trade matter more than economic size and factor endowments for addressing regulatory incidence and convergence in services negotiations. Finally, we also find that countries displaying greater regulatory convergence and less restrictive regulation are more likely candidates for reciprocal services liberalization.

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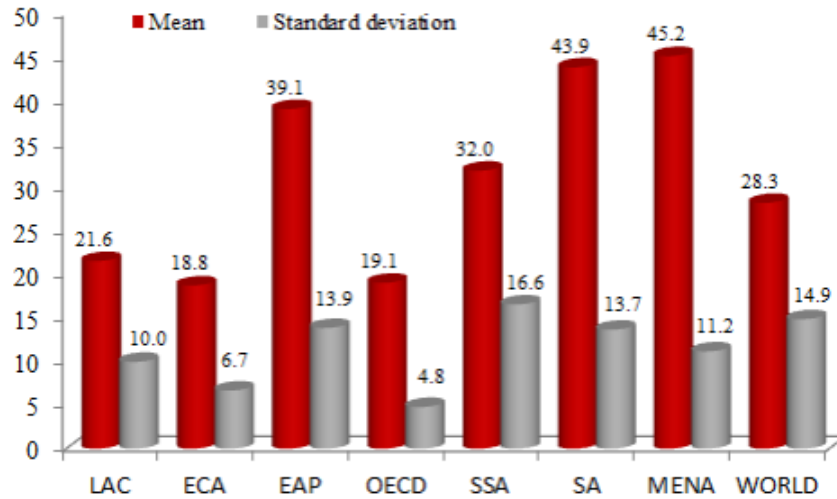
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Figure 1: Comparison of STRI across regions/groups



Source: Author calculations based on World Bank STRI database

Figure 2: Role of STA determinants: Members v Outsiders (ratio of mean values)

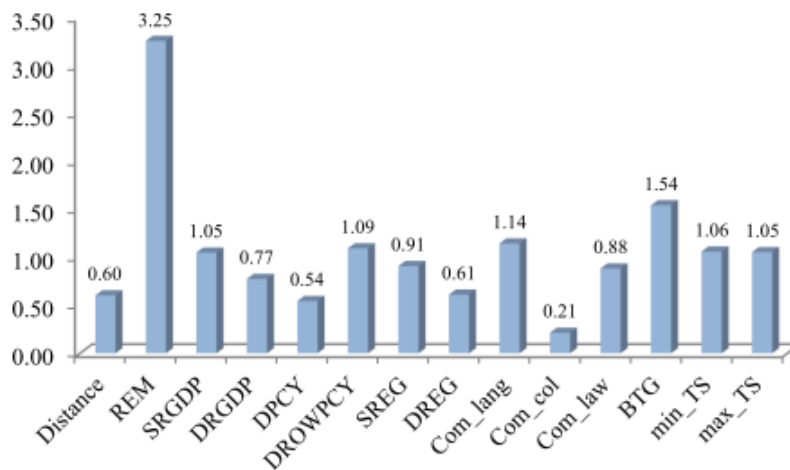


Table 1: Estimating the likelihood of negotiating a services trade agreement

<b>Probit estimation: Dependent variable STA</b>							
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>
Remote (+)	0.065*** (0.009)		0.067*** (0.010)		0.081*** (0.011)		0.088*** (0.011)
Natural (+)	0.286*** (0.044)		0.255*** (0.047)		0.248*** (0.051)		0.236*** (0.054)
SRGDP (+)	0.205*** (0.012)		0.080*** (0.024)		0.188*** (0.014)		0.025 (0.028)
DRGDP (-)	-0.092*** (0.023)		-0.172*** (0.030)		-0.128*** (0.025)		-0.126*** (0.034)
DPCY (+)	-0.038 (0.111)		-0.154 (0.114)		0.028 (0.119)		-0.049 (0.124)
SQDPCY (+)	-0.083* (0.038)		-0.057 (0.038)		-0.061 (0.039)		-0.041 (0.040)
DROWPCY (-)	0.088 (0.067)		-0.068 (0.074)		0.211** (0.080)		-0.025 (0.087)
BTG (-)		0.058*** (0.006)	0.020** (0.007)			0.059*** (0.008)	0.019* (0.008)
min(Trade <sup>S</sup> ) (+)		0.117*** (0.022)	-0.030 (0.033)			0.205*** (0.024)	0.141*** (0.038)
max(Trade <sup>S</sup> ) (+)		0.052* (0.024)	0.246*** (0.043)			-0.012 (0.027)	0.179*** (0.048)
SREG (-)				-0.640*** (0.043)	-0.707*** (0.051)	-0.769*** (0.050)	-0.747*** (0.055)
DREG (-)				-0.766*** (0.080)	-0.551*** (0.094)	-0.755*** (0.090)	-0.561*** (0.096)
Com_lang (+)				0.218** (0.080)	0.199* (0.094)	0.083 (0.088)	0.017 (0.098)
Com_col (+)				-0.514** (0.180)	-0.496* (0.212)	-0.071 (0.198)	-0.342 (0.220)
Com_law (+)				-0.057 (0.062)	-0.062 (0.077)	-0.023 (0.071)	-0.023 (0.079)
Constant	-9.079*** (0.721)	-5.626*** (0.568)	-7.780*** (0.819)	2.995*** (0.260)	-4.111*** (0.844)	-0.891 (0.685)	-2.544** (0.971)
<b>N</b>	5253	4786	4786	5253	5253	4786	4786
<b>df_m</b>	7	3	10	5	12	8	15
<b>Pseudo-r2</b>	0.286	0.12	0.287	0.144	0.384	0.264	0.385

**Note:** Levels of significance: #10% \* 5% \*\*1% \*\*\*0.1%; standard errors reported in brackets. The signs against the variables denote the expected signs of the coefficients.

Table 2: Dyads exhibiting “insufficient” preferentialism (n=83)

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<i>ARG-CHL</i>	<i>.5452351</i>	<i>ARG-COL</i>	<i>.6323817</i>	<i>ARG-PER</i>	<i>.6694701</i>	<i>ARG-USA</i>	<i>.5557622</i>	<i>ARM-GEO</i>	<i>.6910012</i>	<i>ARM-POL</i>	<i>.5317407</i>
<i>AUT-RUS</i>	<i>.670308</i>	<i>AUT-TUR</i>	<i>.5768433</i>	<i>AUT-UKR</i>	<i>.595938</i>	<i>AUT-USA</i>	<i>.5079905</i>	<i>BEL-RUS</i>	<i>.6535662</i>	<i>BEL-TUR</i>	<i>.5125991</i>
<i>BEL-UKR</i>	<i>.5541996</i>	<i>BGR-TUR</i>	<i>.5685432</i>	<i>BLR-RUS</i>	<i>.5015196</i>	<i>BOL-PER</i>	<i>.5460728</i>	<i>BRA-USA</i>	<i>.5102936</i>	<i>CAN-DEU</i>	<i>.5212128</i>
<i>CAN-GBR</i>	<i>.5664355</i>	<i>COL-PER</i>	<i>.6476514</i>	<i>CZE-RUS</i>	<i>.5034283</i>	<i>DEU-JPN</i>	<i>.5559747</i>	<i>DEU-RUS</i>	<i>.8723326</i>	<i>DEU-TUR</i>	<i>.6277232</i>
<i>DEU-UKR</i>	<i>.6881992</i>	<i>DEU-USA</i>	<i>.7916232</i>	<i>DNK-RUS</i>	<i>.6142139</i>	<i>DNK-UKR</i>	<i>.5090121</i>	<i>DOM-TTO</i>	<i>.6399667</i>	<i>ECU-PER</i>	<i>.6847796</i>
<i>ESP-TUR</i>	<i>.5526477</i>	<i>ESP-UKR</i>	<i>.6111115</i>	<i>ESP-USA</i>	<i>.7369705</i>	<i>FIN-RUS</i>	<i>.6289294</i>	<i>FRA-RUS</i>	<i>.8102681</i>	<i>FRA-TUR</i>	<i>.5349486</i>
<i>FRA-UKR</i>	<i>.6362016</i>	<i>FRA-USA</i>	<i>.5770085</i>	<i>GBR-USA</i>	<i>.7787322</i>	<i>GEO-LTU</i>	<i>.5158181</i>	<i>GEO-NLD</i>	<i>.5424612</i>	<i>GEO-POL</i>	<i>.6056658</i>
<i>GEO-ROU</i>	<i>.5017859</i>	<i>GRC-RUS</i>	<i>.6256635</i>	<i>GRC-TUR</i>	<i>.6255006</i>	<i>GRC-UKR</i>	<i>.5523894</i>	<i>HUN-RUS</i>	<i>.5850164</i>	<i>HUN-TUR</i>	<i>.551712</i>
<i>HUN-UKR</i>	<i>.5334193</i>	<i>ITA-RUS</i>	<i>.7959356</i>	<i>ITA-TUR</i>	<i>.572157</i>	<i>ITA-UKR</i>	<i>.6492805</i>	<i>ITA-USA</i>	<i>.535962</i>	<i>JPN-GBR</i>	<i>.5003162</i>
<i>JPN-KAZ</i>	<i>.5673377</i>	<i>JPN-KOR</i>	<i>.6720359</i>	<i>JPN-RUS</i>	<i>.5476456</i>	<i>JPN-USA</i>	<i>.6517093</i>	<i>LTU-RUS</i>	<i>.5540285</i>	<i>NLD-RUS</i>	<i>.746981</i>
<i>NLD-TUR</i>	<i>.5729212</i>	<i>NLD-UKR</i>	<i>.652862</i>	<i>NLD-USA</i>	<i>.6366677</i>	<i>POL-RUS</i>	<i>.7364851</i>	<i>POL-TUR</i>	<i>.6401028</i>	<i>POL-UKR</i>	<i>.6904365</i>
<i>POL-USA</i>	<i>.5594306</i>	<i>ROU-RUS</i>	<i>.6112943</i>	<i>ROU-TUR</i>	<i>.6688879</i>	<i>ROU-UKR</i>	<i>.5799432</i>	<i>RUS-ESP</i>	<i>.7384313</i>	<i>RUS-GBR</i>	<i>.8147359</i>
<i>RUS-SWE</i>	<i>.7117395</i>	<i>RUS-TUR</i>	<i>.6154693</i>	<i>RUS-UKR</i>	<i>.7139575</i>	<i>RUS-USA</i>	<i>.6218069</i>	<i>SWE-TUR</i>	<i>.5414885</i>	<i>SWE-UKR</i>	<i>.5944301</i>
<i>SWE-USA</i>	<i>.5331776</i>	<i>TTO-USA</i>	<i>.6760481</i>	<i>TUR-GBR</i>	<i>.6056189</i>	<i>TUR-UKR</i>	<i>.5758041</i>	<i>UKR-GBR</i>	<i>.6583456</i>		

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**Note:** The figures are the associated estimated probabilities of negotiating an STA from the Probit estimation in Column 5 (Table 2)

Table 3: Dyads exhibiting “excessive” preferentialism (n=280)

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ALB-AUT .3394816	ALB-BEL .2227186	ALB-BGR .3834628	ALB-CZE .2909101	ALB-DEU .3373346	ALB-DNK .2337435
ALB-ESP .3022056	ALB-FIN .1503235	ALB-FRA .1943843	ALB-GBR .3213648	ALB-GRC .3900247	ALB-HUN .3377046
ALB-IRL .253518	ALB-ITA .2592226	ALB-LTU .2652707	ALB-NLD .3097778	ALB-POL .3329031	ALB-PRT .2006759
ALB-ROU .3617223	ALB-SWE .2710089	ARG-PRY .4960309	ARG-VEN .3527648	AUS-CHL .0891603	AUS-IDN .0305792
AUS-KHM .0052218	AUS-MYS .0153956	AUS-PHL .0276533	AUS-THA .0171398	AUS-USA .4943056	AUS-VNM .00558
AUT-CHL .0821173	AUT-COL .2285361	AUT-DOM .1213886	AUT-KOR .1693152	AUT-MEX .152108	AUT-PER .2037986
AUT-TTO .1763631	BDI-KEN .0997498	BDI-RWA .1412126	BDI-TZA .0878041	BDI-UGA .0917294	BEL-BGR .4472129
BEL-CHL .0717858	BEL-COL .1508995	BEL-DOM .0692336	BEL-KOR .1874139	BEL-MEX .1497269	BEL-PER .1245611
BEL-TTO .1171765	BGR-CHL .0610479	BGR-COL .1288048	BGR-DNK .4699221	BGR-DOM .1307498	BGR-FIN .3539574
BGR-FRA .410113	BGR-ITA .4649507	BGR-KOR .0900754	BGR-MEX .0575929	BGR-PER .1486043	BGR-PRT .3996082
BGR-TTO .1429612	BHR-USA .0096414	BRA-PRY .3027615	BRA-URY .2527725	BRA-VEN .2984049	CAN-CHL .1049485
CAN-COL .2475127	CAN-PAN .0409915	CAN-PER .1981352	CHL-CHN .0158337	CHL-COL .3742454	CHL-CRI .0383564
CHL-CZE .073893	CHL-DEU .1106026	CHL-DNK .0744666	CHL-ESP .1331781	CHL-FIN .0551355	CHL-FRA .0668133
CHL-GBR .1111771	CHL-GRC .0733949	CHL-GTM .0980022	CHL-HND .0417879	CHL-HUN .0796652	CHL-IRL .0805019
CHL-ITA .0627481	CHL-JPN .0916949	CHL-KOR .0575875	CHL-LTU .0692718	CHL-MEX .0900848	CHL-NIC .042904
CHL-NLD .0893551	CHL-NZL .0972232	CHL-PAN .0043473	CHL-PER .4291661	CHL-POL .0974287	CHL-PRT .0725759
CHL-ROU .0813705	CHL-SWE .0842959	CHL-USA .2097511	CHN-CRI .0057676	CHN-IDN .2200616	CHN-MYS .1264379
CHN-NZL .0157077	CHN-PAK .3074328	CHN-PER .0283177	CHN-PHL .1518293	CHN-THA .1694371	CHN-VNM .1874146
COL-CZE .3405844	COL-DEU .2807534	COL-DNK .165942	COL-ESP .3234821	COL-FIN .096252	COL-FRA .1327514
COL-GBR .288097	COL-GRC .2058247	COL-GTM .2508087	COL-HND .1092298	COL-HUN .2165056	COL-IRL .1698878
COL-ITA .1227859	COL-LTU .1463802	COL-MEX .2008591	COL-NLD .2464357	COL-POL .2583369	COL-PRT .1502477
COL-ROU .2235911	COL-SWE .2362178	COL-USA .4829012	CRI-DOM .2301657	CRI-MEX .2781849	CRI-PAN .0854918
CRI-PER .0657363	CRI-USA .3621816	CZE-DOM .1300981	CZE-FIN .4759774	CZE-KOR .1227521	CZE-MEX .0864925
CZE-PER .1943287	CZE-PRT .4956925	CZE-TTO .1506371	DEU-KOR .2225434	DEU-MEX .3126218	DEU-PER .2621549
DEU-TTO .230544	DNK-DOM .0825411	DNK-KOR .1477791	DNK-MEX .1194977	DNK-PER .1452506	DNK-TTO .1221288
DOM-DEU .1666548	DOM-ESP .2235879	DOM-FIN .0481801	DOM-FRA .0591344	DOM-GBR .232862	DOM-GRC .1039282
DOM-GTM .4697232	DOM-HND .2851547	DOM-HUN .1233463	DOM-IRL .2364771	DOM-ITA .0531452	DOM-LTU .2087243
DOM-NIC .4952163	DOM-NLD .2424529	DOM-POL .2581225	DOM-PRT .0767349	DOM-ROU .1728355	DOM-SWE .1616863
ESP-TTO .2404292	FIN-GRC .489732	FIN-IRL .4383807	FIN-KOR .1116898	FIN-MEX .0997606	FIN-PER .0911799
FIN-PRT .4196983	FIN-ROU .4871558	FIN-TTO .0719794	FRA-KOR .1707282	FRA-LTU .4870101	FRA-MEX .2619535
FRA-PER .1087051	FRA-TTO .1021157	GRC-KOR .1800705	GRC-MEX .1247106	GRC-PER .18072	GRC-TTO .1599387
GTM-MEX .4249384	HND-MEX .2261586	HND-PAN .0566461	HND-USA .3663928	HUN-KOR .1592325	HUN-MEX .1159431
HUN-PER .2025293	HUN-TTO .1554878	IDN-JPN .1552601	IDN-KOR .1471916	IDN-NZL .0109401	IND-JPN .1367459
IND-KOR .1304406	IND-MYS .010156	IRL-ITA .4840032	IRL-KOR .1495507	IRL-MEX .0899191	IRL-PER .191524
IRL-TTO .3411466	ITA-KOR .1639122	ITA-LTU .4711809	ITA-MEX .2488232	ITA-PER .1011334	ITA-TTO .0911465
JOR-USA .0120013	JPN-MEX .2857174	JPN-MYS .1201931	JPN-PER .1422789	JPN-PHL .1419505	JPN-THA .1410456
JPN-VNM .0708263	KEN-RWA .1772948	KEN-TZA .124701	KEN-UGA .0798281	KHM-CHN .0753998	KHM-KOR .085371
KHM-NZL .0050962	KOR-ESP .2125778	KOR-GBR .3020301	KOR-LTU .1090855	KOR-MYS .0893827	KOR-NLD .2229654
KOR-PER .09557	KOR-PHL .1746663	KOR-POL .2304362	KOR-PRT .1313413	KOR-ROU .1839261	KOR-SWE .2038998
KOR-THA .1319187	KOR-USA .3292094	KOR-VNM .0996835	LTU-MEX .0747448	LTU-PER .1680406	LTU-PRT .435878
LTU-TTO .2566926	MAR-USA .1308068	MEX-ESP .3188652	MEX-GBR .3067274	MEX-NIC .2153053	MEX-NLD .2165758
MEX-PER .1581092	MEX-POL .1992445	MEX-PRT .1008354	MEX-ROU .1275183	MEX-SWE .1650739	MYS-NZL .0124209
MYS-PAK .0250798	NIC-USA .4266197	NLD-PER .2468177	NLD-TTO .3520934	NZL-PHL .014855	NZL-THA .0095764
NZL-VNM .00547	OMN-USA .0111826	PAN-PER .0092904	PAN-USA .0993455	PER-ESP .3234374	PER-GBR .2872131
PER-POL .2580765	PER-PRT .1318392	PER-ROU .2243696	PER-SWE .2367958	PER-USA .4289208	POL-TTO .3386045
PRT-TTO .1124643	PRY-URY .2070715	PRY-VEN .098986	ROU-TTO .1969318	RWA-TZA .1060034	RWA-UGA .1757244
SWE-TTO .2242941	TTO-GBR .3436062	TZA-UGA .0396926	URY-VEN .1286946		

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**Note:** The figures are the associated estimated probabilities of negotiating an STA from the Probit estimation in Column 5 (Table 2)

Table 4: Determinants of regulatory divergence in services markets

PPML estimation: Dependent variable DREG							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Remote (-)	-0.034*** (0.004)		-0.038*** (0.004)		-0.033*** (0.004)		-0.037*** (0.004)
Natural (-)	-0.003 (0.018)		0.026 (0.019)		0.001 (0.018)		0.026 (0.019)
SRGDP (+/-)	-0.011** (0.004)		-0.011 (0.008)		-0.014*** (0.004)		-0.014 (0.009)
DRGDP (+)	-0.060*** (0.007)		-0.051*** (0.009)		-0.059*** (0.007)		-0.051*** (0.010)
DPCY (+)	0.042 (0.032)		0.017 (0.034)		0.038 (0.031)		0.016 (0.034)
SQDPCY (+)	0.002 (0.009)		0.008 (0.009)		0.003 (0.009)		0.008 (0.009)
DROWPCY (-)	0.021 (0.027)		0.036 (0.029)		0.027 (0.027)		0.044 (0.029)
BTG (-)		-0.015*** (0.002)	-0.012*** (0.002)			-0.014*** (0.002)	-0.011*** (0.002)
min(Trade <sup>S</sup> ) (+)		0.049*** (0.008)	0.034** (0.012)			0.048*** (0.008)	0.034** (0.012)
max(Trade <sup>S</sup> ) (+)		-0.011 (0.009)	0.012 (0.013)			-0.014 (0.009)	0.012 (0.013)
GTA_1980 (-)		-0.308 (0.191)	-0.127 (0.197)			-0.311 (0.190)	-0.145 (0.195)
Com_lang (-)				-0.120*** (0.032)	-0.061# (0.032)	-0.075* (0.033)	-0.037 (0.033)
Com_col (-)				-0.115* (0.046)	-0.127** (0.045)	-0.121* (0.049)	-0.113* (0.049)
Com_law (-)				0.035 (0.023)	0.031 (0.022)	0.041# (0.024)	0.043# (0.023)
Constant	0.060 (0.251)	-1.136*** (0.209)	-0.488# (0.294)	-0.542*** (0.012)	0.209 (0.261)	-1.043*** (0.216)	-0.377 (0.308)
<b>N</b>	5253	4796	4796	5253	5253	4796	4796
<b>df_m</b>	7	4	11	3	10	7	14
<b>r2</b>	0.045	0.020	0.057	0.005	0.047	0.023	0.059

**Note:** Levels of significance: #10% \* 5% \*\*1% \*\*\*0.1%; standard errors reported in brackets. The signs against the variables denote the expected signs of the coefficients.

Table 5: Explaining the restrictiveness of services regimes in a dyad

PPML estimation: Dependent variable SREG <sup>lev</sup>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Remote	0.009*** (0.002)		0.011*** (0.002)		0.009*** (0.002)		0.010*** (0.002)
Natural	-0.016# (0.009)		-0.006 (0.009)		-0.023** (0.009)		-0.007 (0.009)
SRGDP	-0.012*** (0.002)		-0.027*** (0.004)		-0.009*** (0.002)		-0.021*** (0.004)
DRGDP	-0.024*** (0.003)		0.022*** (0.005)		-0.023*** (0.003)		0.021*** (0.005)
DPCY	0.025 (0.016)		0.035* (0.016)		0.034* (0.016)		0.043** (0.016)
SQDPCY	0.005 (0.004)		0.006 (0.004)		0.003 (0.004)		0.003 (0.004)
DROWPCY	0.121*** (0.014)		0.098*** (0.015)		0.122*** (0.014)		0.098*** (0.015)
BTG		-0.004*** (0.001)	-0.004*** (0.001)			-0.005*** (0.001)	-0.004*** (0.001)
min(Trade <sup>S</sup> )		0.058*** (0.004)	0.100*** (0.005)			0.059*** (0.004)	0.096*** (0.005)
max(Trade <sup>S</sup> )		-0.037*** (0.004)	-0.047*** (0.006)			-0.027*** (0.004)	-0.044*** (0.006)
GTA_1980		-0.321*** (0.060)	-0.333*** (0.073)			-0.341*** (0.058)	-0.346*** (0.071)
Com_lang				-0.009 (0.016)	0.002 (0.016)	-0.015 (0.016)	-0.027# (0.015)
Com_col				0.183*** (0.019)	0.118*** (0.019)	0.209*** (0.020)	0.129*** (0.019)
Com_law				0.054*** (0.012)	0.063*** (0.011)	0.063*** (0.012)	0.067*** (0.011)
Constant	4.339*** (0.124)	3.756*** (0.106)	4.133*** (0.139)	4.009*** (0.006)	4.082*** (0.128)	3.482*** (0.109)	3.829*** (0.146)
<b>N</b>	5253	4796	4796	5253	5253	4796	4796
<b>df_m</b>	7	4	11	3	10	7	14
<b>r2</b>	0.078	0.043	0.141	0.022	0.092	0.07	0.156

Note: Levels of significance: #10% \* 5% \*\*1% \*\*\*0.1%; standard errors reported in brackets.



Table A1: List of countries

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Albania, Argentina, Armenia, Australia, Austria, Burundi, Belgium, Bangladesh, Bulgaria, Bahrain, Belarus, Bolivia, Brazil, Botswana, Canada, Chile, China, Cote d'Ivoire, Cameroon, Congo (Democratic Republic), Colombia, Costa Rica, Czech Republic, Germany, Denmark, Dominican Republic, Algeria, Ecuador, Egypt, Spain, Ethiopia, Finland, France, Great Britain, Georgia, Ghana, Greece, Guatemala, Honduras, Hungary, Indonesia, India, Ireland, Iran, Italy, Jordan, Japan, Kazakhstan, Kenya, Kyrgyz Republic, Cambodia, South Korea, Kuwait, Lebanon, Sri Lanka, Lesotho, Lithuania, Morocco, Madagascar, Mexico, Mali, Mongolia, Mozambique, Mauritius, Malawi, Malaysia, Namibia, Nigeria, Nicaragua, the Netherlands, Nepal, New Zealand, Oman, Pakistan, Panama, Peru, the Philippines, Poland, Portugal, Paraguay, Qatar, Romania, Russian Federation, Rwanda, Saudi Arabia, Senegal, Sweden, Thailand, Trinidad & Tobago, Tunisia, Turkey, Tanzania, Uganda, Ukraine, Uruguay, USA, Uzbekistan, Venezuela, Vietnam, Yemen, South Africa, Zambia, Zimbabwe

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Table A2: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
<b>Geography</b>					
Distance (km)	5253	7619.9	4313.8	139.0	19812.0
NAT	5253	-8.7	0.8	-9.9	-4.9
REM	5253	1.9	3.7	0.0	9.5
<b>Economic</b>					
rgdp_p (USD bn)	5253	291.0	832.0	1.0	5700.0
rgdp_r (USD bn)	5253	206.0	437.0	1.0	5700.0
SRGDP	5253	49.2	2.5	42.2	57.8
DRGDP	5253	2.1	1.5	0.0	8.7
pcrgdp_p (USD)	5253	8210.5	9900.0	404.4	59557.4
pcrgdp_r (USD)	5253	8437.7	9047.7	404.4	59557.4
DPCY	5253	1.5	1.0	0.0	5.0
SQDPCY	5253	3.2	3.9	0.0	24.9
DROWPCY	5253	1.1	0.5	0.0	2.7
<b>Institutional</b>					
stri_r	5253	27.7	15.1	6.2	88.2
stri_p	5253	29.0	14.6	6.2	88.2
DREG	5253	0.6	0.4	0.0	2.7
SREG	5253	6.4	0.7	4.2	8.7
SREG <sup>lev</sup>	5253	56.7	20.9	17.1	153.9
Com_lang	5253	0.1	0.3	0.0	1.0
Com_col	5253	0.1	0.2	0.0	1.0
Com_law	5253	0.3	0.5	0.0	1.0
STA	5253	0.1	0.3	0.0	1.0
<b>Political economy</b>					
Services trade_r (real USD bn)	5091	3.9	8.5	0.0	54.0
Services trade_p (real USD bn)	5060	4.8	10.6	0.0	54.0
BTG (real USD bn)	4799	0.2	1.3	0.0	50.5
GTA_1980	5253	0.002	0.044	0	1
min(Trade <sup>Ser</sup> )	5248	19.7	1.4	16.6	24.7
max(Trade <sup>Ser</sup> )	5248	21.6	1.6	16.6	24.7

Table A3: Robustness results from estimating equation (1)

<b>Probit estimation: Dependent variable STA</b>							
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>
Remote (+)	0.015 (0.012)		0.010 (0.012)		0.031* (0.013)		0.030* (0.014)
Natural (+)	0.167** (0.055)		0.076 (0.061)		0.189** (0.062)		0.133* (0.067)
SRGDP (+)	0.120*** (0.015)		0.048 (0.029)		0.125*** (0.016)		0.016 (0.033)
DRGDP (-)	-0.066* (0.027)		-0.187*** (0.037)		-0.114*** (0.029)		-0.174*** (0.041)
DPCY (+)	0.142 (0.128)		0.057 (0.131)		0.196 (0.136)		0.102 (0.141)
SQDPCY (+)	-0.086* (0.041)		-0.072# (0.041)		-0.067 (0.043)		-0.050 (0.044)
DROWPCY (-)	-0.089 (0.084)		-0.138 (0.092)		-0.021 (0.097)		-0.150 (0.106)
BTG (-)		0.049*** (0.008)	0.041*** (0.009)			0.055*** (0.009)	0.039*** (0.010)
min(Trade <sup>S</sup> ) (+)		-0.033 (0.028)	-0.179*** (0.041)			0.036 (0.030)	-0.039 (0.047)
max(Trade <sup>S</sup> ) (+)		0.012 (0.029)	0.166*** (0.050)			-0.040 (0.032)	0.136* (0.056)
SREG (-)				-0.499*** (0.054)	-0.588*** (0.061)	-0.573*** (0.061)	-0.580*** (0.066)
DREG (-)				-0.532*** (0.100)	-0.497*** (0.107)	-0.508*** (0.108)	-0.477*** (0.111)
Com_lang (+)				0.287** (0.101)	0.275* (0.109)	0.163 (0.107)	0.148 (0.116)
Com_col (+)				-0.123 (0.182)	-0.056 (0.203)	0.057 (0.200)	0.023 (0.216)
Com_law (+)				-0.111 (0.083)	-0.153# (0.092)	-0.117 (0.089)	-0.139 (0.095)
Constant	-6.085*** (0.835)	-1.991** (0.720)	-3.481*** (0.970)	1.589*** (0.332)	-2.356* (0.974)	1.522# (0.852)	0.173 (1.139)
<b>N</b>	4975	4519	4519	4975	4975	4519	4519
<b>df_m</b>	7	3	10	5	12	8	15
<b>Pseudo-r2</b>	0.078	0.047	0.106	0.097	0.175	0.145	0.188

**Note:** Levels of significance: #10% \* 5% \*\*1% \*\*\*0.1%; standard errors reported in brackets. The signs against the variables denote the expected signs of the coefficients. Sample restricted to dyads for which an STA entered in force in the year 2008 and beyond.

Table A4: Robustness results from estimating equation (2)

PPML estimation: Dependent variable DREG							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Remote (-)	-0.030*** (0.004)		-0.033*** (0.004)		-0.029*** (0.004)		-0.032*** (0.004)
Natural (-)	0.015 (0.019)		0.049* (0.020)		0.022 (0.019)		0.051* (0.020)
SRGDP (+/-)	-0.005 (0.004)		-0.008 (0.008)		-0.008# (0.004)		-0.012 (0.009)
DRGDP (+)	-0.064*** (0.007)		-0.057*** (0.009)		-0.063*** (0.007)		-0.057*** (0.010)
DPCY (+)	0.027 (0.032)		-0.002 (0.034)		0.021 (0.032)		-0.005 (0.034)
SQDPCY (+)	0.004 (0.009)		0.010 (0.009)		0.005 (0.009)		0.011 (0.009)
DROWPCY (-)	0.035 (0.027)		0.047# (0.028)		0.043 (0.027)		0.055# (0.028)
BTG (-)		-0.014*** (0.002)	-0.013*** (0.002)			-0.013*** (0.002)	-0.012*** (0.002)
min(Trade <sup>S</sup> ) (+)		0.061*** (0.009)	0.037** (0.012)			0.059*** (0.009)	0.039*** (0.012)
max(Trade <sup>S</sup> ) (-)		-0.006 (0.009)	0.021 (0.013)			-0.011 (0.009)	0.021 (0.013)
Com_lang (-)				-0.121*** (0.033)	-0.075* (0.033)	-0.085* (0.034)	-0.055 (0.034)
Com_col (-)				-0.137** (0.046)	-0.147** (0.046)	-0.130** (0.049)	-0.130** (0.049)
Com_law (-)				0.032 (0.023)	0.031 (0.023)	0.039 (0.024)	0.044# (0.024)
Constant	-0.057 (0.253)	-1.440*** (0.214)	-0.670* (0.296)	-0.518*** (0.013)	0.129 (0.262)	-1.333*** (0.221)	-0.509# (0.309)
<b>N</b>	4975	4519	4519	4975	4975	4519	4519
<b>df_m</b>	7	3	10	3	10	6	13
<b>r2</b>	0.035	0.018	0.047	0.006	0.038	0.022	0.050

**Note:** Levels of significance: #10% \* 5% \*\*1% \*\*\*0.1%; standard errors reported in brackets. The signs against the variables denote the expected signs of the coefficients. Sample restricted to dyads for which an STA entered in force in the year 2008 and beyond.

Table A5: Robustness results from estimating equation (3)

PPML estimation: Dependent variable SREG <sup>lev</sup>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Remote	0.013*** (0.002)		0.016*** (0.002)		0.013*** (0.002)		0.015*** (0.002)
Natural	0.021* (0.009)		0.036*** (0.009)		0.014 (0.009)		0.036*** (0.009)
SRGDP	-0.003 (0.002)		-0.021*** (0.004)		-0.001 (0.002)		-0.018*** (0.004)
DRGDP	-0.028*** (0.003)		0.014** (0.005)		-0.027*** (0.003)		0.014** (0.004)
DPCY	-0.002 (0.016)		0.003 (0.016)		0.005 (0.016)		0.009 (0.016)
SQDPCY	0.009* (0.004)		0.010* (0.004)		0.007 (0.004)		0.009* (0.004)
DROWPCY	0.143*** (0.013)		0.114*** (0.014)		0.143*** (0.013)		0.112*** (0.014)
BTG		-0.003*** (0.001)	-0.005*** (0.001)			-0.004*** (0.001)	-0.005*** (0.001)
min(Trade <sup>Ser</sup> )		0.067*** (0.004)	0.103*** (0.005)			0.069*** (0.004)	0.101*** (0.005)
max(Trade <sup>Ser</sup> )		-0.035*** (0.004)	-0.034*** (0.006)			-0.025*** (0.004)	-0.031*** (0.006)
Com_lang				-0.009 (0.016)	-0.014 (0.016)	-0.024 (0.016)	-0.052*** (0.015)
Com_col				0.167*** (0.019)	0.089*** (0.019)	0.201*** (0.020)	0.105*** (0.019)
Com_law				0.051*** (0.012)	0.057*** (0.011)	0.060*** (0.012)	0.062*** (0.011)
Constant	4.238*** (0.122)	3.510*** (0.107)	3.937*** (0.136)	4.027*** (0.006)	4.046*** (0.126)	3.256*** (0.110)	3.731*** (0.143)
<b>N</b>	4975	4519	4519	4975	4975	4519	4519
<b>df_m</b>	7	3	10	3	10	6	13
<b>r2</b>	0.102	0.051	0.172	0.020	0.111	0.076	0.183

**Note:** Levels of significance: #10% \* 5% \*\*1% \*\*\*0.1%; standard errors reported in brackets. Sample restricted to dyads for which an STA entered in force in the year 2008 and beyond.