The Determinants of Trade Agreements in Services vs. Goods*

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Abstract

Since Baier and Bergstrand (2004) there has been a focus on empirically testing the economic determinants of signing a free trade agreement (FTA). However, FTAs do not imply an agreement on services; a separate economic integration (EIA) is needed. As trade in services is one of the fastest growing sectors of the global economy, it is important to pay special attention to these agreements. We use the methodology of Baier and Bergstrand (2004) to investigate differences in the determinants of signing an agreement on goods trade and services trade. In addition to the standard economic variables, we include variables for skilled/unskilled labor, and political stability. We find in general, qualitative similarities (though different magnitudes) and some robust specific differences.

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1 Introduction

The Trade literature has widely focused on the impact of signing a trade agreement on the amount of trade in goods between the two countries and consequently the welfare within these countries. However, less attention has been paid to the economic factors that encourage two (or more) countries to sign such trade agreements - and even less towards why countries sign an agreement with respect to services trade. With regards to trade agreements in goods, Baier and Bergstrand (2004), or B-B, were the first to provide empirical evidence indicating which geographical and economic characteristics affect the likelihood of a pair of countries having a free trade agreement (FTA). The predictions of their model are based on a numerical version of the theoretical models of Krugman (1991) and Frankel et al. (1995) and covers agreements that have been signed up to 1996 with a sample of 54 countries. Since 1996, more than 80 agreements have been signed and the economic characteristics of countries may have changed. Though we update the data and analysis of B-B, this is not our main contribution as B-B has already been extended in various contexts.[1] Our main contribution is to compare the determinants of services agreements with goods.

B-B do allow for the trade in services in their theoretical model. However, FTAs do not actually cover services and thus this aspect is missing from their empirical analysis and we will argue that an agreement on services trade is more complex than that of an FTA. In fact, prior to 1996 (the year used in B-B), only five agreements including both goods and services had been signed. If two countries want to liberalize trade in services, a separate agreement is needed; that is, the countries must sign an economic integration agreement (EIA).[2] Since the year 2000, trade in services have increasingly become the subject of bilateral and multilateral trade negotiations (see Figures 1 and 2). For instance, in 2011, there were ten trade agreements signed and 7 of those included services. The need for such agreements stems from a recent increase in services trade. According to the World Trade Organization

[1] See for example, Baier et al. (2011), Baldwin and Jaimovich (2010), Chen and Joshi (2010), Bergstrand et al. (2009), and Egger and Larch (2008).

[2] The terminology we use is based on the World Trade Organization classification of trade agreements.

(WTO), trade in services represent the fastest growing sector of the global economy and account for two-thirds of global output, one-third of global employment and nearly 20% of global trade. Thus, understanding the determinants of agreements on trade in services is an important topic and main contribution of our paper.

There are two important points that need to be made with regard to the distinction between agreements concerning services and goods. The first is that, unlike goods, services are not restricted by tariffs, but by market access. When an agreement is signed, the number of firms allowed in an industry is predetermined, but the quantity provided by each firm is determined by the market. The second point, that will be discussed in more detail later, is that unlike an FTA (that implies zero tariffs on all goods), an EIA does not necessarily translate to full market access for *all* or even one type of service. To understand this, we need to first describe how trade in services are defined. There are four defined ways, or "modes", of trading services:

- Mode 1: Cross-border supply – the possibility for non-resident service suppliers to supply services cross-border into the Member's territory (e.g. bank transfers).
- Mode 2: Consumption abroad – the freedom for the Member's residents to purchase services in the territory of another Member (e.g. tourism).
- Mode 3: Commercial presence – the opportunities for foreign service suppliers to establish, operate or expand a commercial presence in the Member's territory, such as a branch, agency, or wholly-owned subsidiary (e.g. foreign direct investment).
- Mode 4: Presence of natural persons – the entry and temporary stay in the Member's territory of foreign individuals in order to supply a service (expatriates).

It is clear that trade in goods is different than trade in services and though more recent agreements are covering both goods and services, it is not always the case that an FTA and an EIA are automatically signed jointly. For instance, EFTA members and Canada negotiated an FTA in 2009 without an EIA.[3] Yet, the decisions to include goods and services are not necessarily independent either; e.g. Panama and Chile decided to include both goods and services in a bilateral trade agreement signed in 2008. In particular, Lennon (2009) finds

[3]EFTA members are Iceland, Liechtenstein, Norway and Switzerland since 1970.

that bilateral trade in goods explains bilateral trade in services with a positive estimated elasticity close to one. Therefore, in addition to evaluating the economic determinants of trade agreements that cover services, another contribution of this paper is to investigate any interdependence between an FTA and an EIA.

The structure of the paper is as follows. In the next section, we explain in the particulars of an EIA and present the literature related to determinants of trade agreements to provide theoretical intuition of expected results. Section 3 covers the empirical strategy and the data used. In Section 4, we present our estimation results and Section 5 concludes.

2 EIA and Theoretical Background

As mentioned the characteristics of an EIA are very different than that of an FTA. Consequently, it is quite difficult to create one general theoretical model that incorporates all of the nuances of an EIA. Therefore, we first provide some brief historical context an EIA and then rely on various theoretical models to provide the basis for our theoretical predictions.

2.1 Services Under Negotiation

Multilateral negotiations on services started in 1995 with the General Agreement on Trade in Services (GATS) to liberalize trade in services amongst WTO members.[4] During negotiation participating countries decide which principles they want to apply and which sectors will be covered. In general, not all sectors are covered in each country and the covered sectors are not identical across countries. For example, in 2005, developed countries had an average of 106 sub-sectors committed, while developing countries had an average of 42 out of 160 possible sub-sectors (see Adlung and Roy, 2005). In fact, even within country groups, the average number of sub-sectors committed varies significantly; from 87 to 117 for developed countries and from 1 to 123 for developing economies. Therefore, it is clear there is a lot of

[4]The entire legal text is available on http://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm.

variation in the GATS commitments amongst WTO members. Furthermore, despite good intentions, the degree of liberalization achieved by the GATS is relatively modest, letting untapped gains for developing and developed countries that bilateral and multilateral EIAs try to capture. Though countries negotiate outside of the GATS framework, the content of an EIA is very similar to that of the GATS with regard to market access, national treatment, most-favored nation, local presence requirement, right of establishment, among others.

As shown in Figures 1 and 2, there has been a clear tendency to include services in negotiations. In only fifteen years (from 1995 to 2010), the number of EIAs increased to 65 agreements in force that took more than thirty years for FTAs/CUs. Despite this tendency, some trading partners, even recently, still choose to not negotiate over services, but only focus on goods trade. For instance, the growth has been faster in terms of agreements including services, without preventing countries from signing pure FTAs. In particular, Figure 2 illustrates that as a share of agreements signed, services are playing a more prominent role, however there are still agreements signed that only include goods. This indicates, that there are economic variables driving the decision to negotiate over trade in goods and/or services and it is not simply an artifact of the times.

2.2 Related literature

We base our approach on B-B in which they provide a theoretical framework to explain the signature of FTAs between countries. In a six-country model with imperfect competition, B-B extends Krugman (1991) and Frankel et al. (1995) models. The set up is a basic Heckscher-Ohlin model characterized by two factors of production and two activities (goods and services). All firms have the same technology and maximize profits. The goods sector is capital intensive, while services are labor intensive. In each country, a representative consumer with Dixit-Stiglitz preferences maximizes utility. These six countries are located on three continents (two countries on each). Each country has to face intercontinental but also intracontinental trade costs which are null in Krugman (1991) and Frankel et al. (1995)

frameworks. They assume that trade within a given continent costs less than trade between continents.

Several testable predictions arise from B-B's simulations. The determinants of FTAs are geographical (based on the difference between intra-continental and intercontinental trade costs), economic (based on the difference in country sizes) and rely on the differences in factor endowments between partners but also between the partners and the rest of the world. Using cross-section data for the year 1996 and 1,431 country-pairs, B-B confirm their predictions. In fact, for 80% of country-pairs, their model predicts correctly the signature of FTA (or the absence thereof). To provide an appropriate comparison, we maintain their model but extend our analysis to consider all FTAs and EIAs signed in or before 2012. We also consider political variables as an explanatory variable. This is motivated by Baldwin and Jaimovich (2010) which finds that in addition to economic and geographical determinants, political and a contagion index explain FTA formations.[5]

Similar to FTAs, other agreements such as preferential trade agreements (PTAs) and bilateral investment treaties (BITs), tend to be caused by analogous determinants. Bergstrand et al. (2011) examine the timing of the formation and enlargement of PTAs. They find that geography through distance and contiguity, and the economic size of signatories determine the successful conclusion of a PTA. By introducing the minimum geographical distance and the number of members of the nearest PTA, Baier et al. (2011) highlight that regionalism is endogenous and a hump-shaped relationship exists between the number of members of the nearest PTA and the timing of PTAs. According to Bergstrand and Egger (2011), the decision to sign a BIT is more likely to occur when countries are similar and large in terms of economic size, relatively close geographically without having a common border and language. Political stability and capital-labor ratios are also found to be important factors in determining the probability to have a BIT. Therefore, we examine economic, geographic, and political determinants in our empirical analysis to determine the FTAs and EIAs negotiations.

[5] The spread of regionalism is related to the domino theory developed by Baldwin (1993).

Turning to the issue of services, there have been various theoretical models. Markusen and Strand (2008, 2009) adapt the knowledge-capital model (Markusen, 2004) that allows three types of multinational firms (national, horizontal and vertical) to examine the impacts of liberalizing trade and investment in business services. Markusen and Strand's work highlight that liberalizing services is mostly welfare-improving for both countries. However, smaller gains are experienced when trading partners differ widely in terms of economic size and factor endowments. Therefore, as with FTAs, we would expect differences in GDP and capital-labor ratios to have a negative impact on the signing of EIAs.[6] Egger and Shingal (2013) examine the role of regulation in services trade as an EIA determinant. Furthermore, Egger and Lanz (2008) find that large countries and countries involved in FTAs have a higher relative GATS commitment coverage. This indicates that the decision to sign a trade agreement covering services may depend on the decision to have signed a trade agreement covering goods. We address this possible dependency in our robustness checks.

3 Empirical strategy

3.1 Specifications

Discrete choice models allow us to conveniently test why a country-pair has a trade agreement (see McFadden 1975, 1976). The probability that a given country-pair opts for a particular alternative is based on the comparison of different utilities relative to each alternative. The alternative that provides the highest utility amongst all other alternatives will be chosen. When a country-pair decides to sign a bilateral trade agreement, it means that each signatory will be better off, in expectation, from this partnership than otherwise. In this framework, the utility is modeled as a latent variable, y^*, which is unobservable.

$$y^* = \beta_0 + x\beta + e \tag{1}$$

[6] B-B actually predict a quadratic relationship between capital-labor ratios and find a positive relationship.

where x is the vector of explanatory variables; β, the vector of unknown parameters and e is a normally distributed error term. However, the outcome variable, EIA, is observed

$$EIA = \begin{cases} 1 \text{ if } y^* > 0 \\ 0 \text{ if } y^* \leq 0 \end{cases} . \tag{2}$$

Therefore, the general form of the response probability that a country-pair chooses the alternative $EIA = 1$ or $EIA = 0$ is as following:

$$\begin{cases} P(EIA = 1) = P(y^* > 0) \\ P(EIA = 0) = P(y^* \leq 0) \end{cases} . \tag{3}$$

Following B-B's specification, for the country-pair ij, the vector x is defined by two geographic 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. This latter variable is defined as:

$$Remote_{ij} = dcont_{ij} \times \left\{ \frac{\left[\log \left(\sum_{k=1,k\neq j}^{N} \frac{d_{ik}}{(N-1)} \right) + \log \left(\sum_{k=1,k\neq i}^{N} \frac{d_{jk}}{(N-1)} \right) \right]}{2} \right\} \tag{4}$$

where $dist$ is the bilateral distance in kilometers and $dcont_{ij}$ is equal to one if i and j are located on the same continent, zero otherwise. Economic country sizes are controlled for with $RGDP_{ij}$ and $DRGDP_{ij}$ variables. The former corresponds to the sum of the logs of real GDP of country i and j, while the latter is absolute value of the difference between the logs of real GDP of both countries.

The variable DKL_{ij} is the absolute value of the difference between the logs of capital-labor ratios of country i and j and the variable $SQDKL_{ij}$ is DKL_{ij} squared. To compare with the rest of the world endowments, $DROWKL_{ij}$ is introduced and calculated as the absolute value of the difference between the logs of capital-labor ratios of country i and

country j and the rest of the world's capital-labor ratio,

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

The capital-labor ratio permits us to evaluate what each country produces and to what extent its trading partners are specialized in similar activities. We also use variables constructed of skilled-unskilled labor ratio since capital-labor ratios can be less relevant in the case of services, as services are more likely to be labor intensive activities.

We test several specifications, some of which assumes that the decision to sign a trade agreement on services (EIA) is dependent on (or at least correlated with) the decision to conclude a trade agreement on goods. In this case, a two-step procedure is an appropriate empirical framework where the first step consists of whether or not a country-pair is involved in a bilateral FTA. The second step is estimated and corresponds to whether or not this country-pair additionally signs an EIA. In the two-step estimation of a bivariate Probit, ϵ and ϵ' are jointly normally distributed with correlation of ρ. The second step can be written as the following:

$$y' = \beta'_0 + x'\beta' + \epsilon'.$$

Thus, the two outcomes observed are:

$$FTA = \begin{cases} 1 \text{ if } y^* > 0 \\ 0 \text{ if } y^* \leq 0 \end{cases} \qquad EIA = \begin{cases} 1 \text{ if } y' > 0 \\ 0 \text{ if } y' \leq 0 \end{cases}. \tag{5}$$

As previously noted, x' is the vector of explanatory variables including $Natural_{ij}$, $Remote_{ij}$, $RGDP_{ij}$, $DRGDP_{ij}$, and the two alternative measures of factor endowments. We assume that the decision to sign an FTA and the decision to sign an EIA can be mainly explained by the same variables. However, we expect that some explanatory variables play a different role in both decisions.

3.2 Data

We use the Regional Trade Agreements Information System (RTA-IS) from the World Trade Organization (WTO) to build our variables of regional trade agreements (RTAs).[7] There are several types of RTAs that are notified to the WTO; i.e. Preferential Trade Agreement (PTA), Free Trade Agreement, Economic Integration Agreement, FTA-EIA, PSA-EIA, Custom Union (CU) and CU-EIA.[8] To have a comparable baseline in terms of degree of liberalization in trade in goods, we only consider FTAs and CUs. In general, the aim of both FTAs and CUs is that "*each Party shall progressively eliminate its customs duties on originating goods*". The dummy FTA is equal to 1 if two countries are involved in a bilateral FTA (or CU) in 2012 and 0 otherwise. Additionally, the variable EIA is equal to 1 if two given countries have signed an agreement covering services and 0 otherwise.[9] We lag time-varying variables such as real GDP and factor endowments to avoid issues of endogeneity. We do not consider agreements signed before the year in which we use our lagged economic data. This poses a selection issue for our FTA analysis which we address futher in our Results section. However we are not too concerned since all but four EIAs were signed before the year our data comes from.

From the Penn World Tables, we have collected the real GDP for the year 1995.[10] Using this data, we calculate the difference between GDP and the sum of GDP for a given country-pair. However, we have to deal with the fact that some countries are involved in a common custom union and negotiate as a bloc with other countries. This is the case for the European Union, but also of the European Free Trade Association (EFTA).[11] Note that EFTA is not a custom union but the members have signed 18 agreements as bloc since conception. In

[7] See http://rtais.wto.org/UI/PublicAllRTAList.aspx.

[8] Henceforth, PSAs are called Partial Scope Agreement.

[9] Note that a country pair could be involved in both an FTA and EIA in 2012, but each of these were signed in different years. This is a side-effect of our "static" model.

[10] We also complete our analysis with data gathered in the year 2000. There is a trade off here in that we use data closer to the year of signing, but lose observations of agreements signed between 1995 and 2000. The results are qualitatively similar and are available upon request.

[11] European Union composed of 15 countries is Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom.

these specific cases, the decision process and welfare comparison is different as countries do not negotiate one by one, but one versus a bloc of countries. To account for these blocs, we generate aggregate countries which represent EU and EFTA by taking the sum of individual country's GDP and constructing an average distance.[12]

Following the methodology of the Extended Penn World Tables, capital-labor ratios are computed from the estimated capital stock and the number of workers.[13] The calculation of the estimated capital stock is based on Perpetual Inventory Method (PIM):[14]

$$K_t^{stock} = \sum_{i}^{T} (1-d)^{T-i} \; I_{T-i} \tag{6}$$

with

$$I_t = Pop_t \; RGDP_t^{pc} \; k_t^i. \tag{7}$$

The investment term, I_t, corresponds to the real investment in year t, obtained from real investment share of GDP (k_t^i), real GDP per capita in constant dollars (chain index) noted $RGDP_t^{pc}$, and population (Pop_t) provided by Penn World Tables (PWT).[15] By assumption, the asset life is 14 years, the depreciation rate, d is 7.5%, and K_t^{stock} is the cumulated depreciated sum of the past investments. The capital-labor ratio is then the estimated capital stock, K_t^{stock}, divided by the number of workers, N_t. From the PWT, the number of workers variable is determined as:

$$N_t = \frac{Pop_t \; RGDP_t^{pc}}{RGDP_t^{w}} \tag{8}$$

with $RGDP_t^w$, real GDP per worker in constant dollars. From here, two variables are generated following B-B: DKL_{ij} and $DROWKL_{ij}$.

[12] Note that the GDP of EU is the sum of its first 15 members. The two last enlargements are not considered as most of agreements have been signed after 1995. Baier and Bergstrand (2004) deal with this bloc issue by considering the share of world GDP of the countries composing a given bloc.

[13] Extended Penn World Tables are available online. See http://homepage.newschool.edu/~foleyd/epwt/.

[14] This procedure is detailed in OECD (2001) page 100.

[15] Penn World Table version 7.0: http://pwt.econ.upenn.edu/php_site/pwt70/pwt70_form.php.

CEPII provides geographic distances between capital cities, used to generate our *Natural* and *Remote* variables. We use the percentage of tertiary schooling attained in population and the percentage of no schooling, primary and secondary schooling attained in population, provided by Barro-Lee educational attainment dataset, to proxy the share of skilled and unskilled workers respectively.[16] Finally, the institutional variable State Fragility Index (SFI) is provided by the Center for Systemic Peace for the year 1995. It is a general index, composed by the security, political, economic and social effectiveness and legitimacies.[17] A high SFI is indicative of important state fragility. Our *Polity* variable is a dummy variable equal to one if the indices of both countries is below the median of the SFI and zero otherwise.

4 Results

In this section we present our results in four main subsections. The first section is our baseline model that assumes the decision to sign an EIA is completely independent of the two countries having an FTA. Then we move on to assuming that FTA is in some sense a "prerequisite" to signing an FTA. Next, we run a seemingly unrelated model allowing for the two decisions to be correlated. Finally, we distinguish countries into two groups: developed and developing.

4.1 Baseline Results

In Table 1, we present our baseline results. We take the potentially naïve assumption that the decision to sign an EIA is completely independent of the decision to sign an FTA and run a Probit model in which the choice variable is whether to sign an EIA or not. For comparison, we include the coefficient signs for an FTA found by B-B. All of our independent variables are taken from the year 1995 and our dependent variable represents all agreements signed between 1996 and 2012.

[16] See http://www.barrolee.com/.

[17] More details are available on http://www.systemicpeace.org/SFImatrix2009c.pdf.

Our first specification in Table 1 corresponds to the main specification in B-B. Though the signs of all our coefficients except DKL match the signs for an FTA, *Remote* and $DRGDP$ are insignificant. The fact that the coefficient for DKL is negative and significant, this does not necessarily contradict the typical theory for an FTA as B-B predicted a quadratic relationship and we could be on the other side of the parabola.[18] We then include a variable for incorporating the State Fragility Index in our next two specifications. The coefficient for *Polity* is positive and significant for both specifications and DKL becomes insignificant but still negative. We conclude from this that countries tend to select politically stable partners which is particularly important for the enforcement of EIAs as negotiations on services do not deal with observable tariff cuts but with market access for foreign suppliers.[19]

Perhaps it is more appropriate to be concerned with the differences in the ratio of skilled to unskilled labor when considering an EIA. Therefore, we replace DKL and $DROWKL$ with $DSKUSK$ and $DROWSK$ for our last specification. With the exception of *Remote* which becomes significant, the results for our coefficients that are present in all three specifications in Table 1 are robust. Similar to our variable DKL, our results suggest that differences in countries' skilled-unskilled labor ratio lessen the gain for signing an EIA. However, the difference between the rest of the world is now positive.

There are various ways to determine how well a model fits reality. Generally, actual and fitted values are compared to determine goodness of fit of a model. The standard metric used is the model predicts correctly if the predicted probability is above 0.5 (or below) and an EIA is actually (not) signed. Thus, all country-pairs involved in an EIA are correctly classified if the associated predicted probability is such as $P \geq 0.5$ and incorrectly classified if $P \leq 0.5$. The different options for a given country-pair can be summarized as follows:

[18] As in B-B, the coefficient on the square of capital-labor differences is insignificant and we do not report it.

[19] When we run all the specifications without including the variable *Polity*, we obtain very similar results with the exception of $DROWSK$, which becomes insignificant for signing an FTA.

	Actual	
Predicted	*EIA*	*no EIA*
EIA	1	2
no EIA	3	4

If instead of considering a 0.5 cut-point, we select a cut-point of 0.4, we of course would have different count values in each category, and this would be true of any cut-point chosen. Though a predicted probability of 0.5 is standard, we want to provide a richer picture. Indeed, Cameron and Trivedi (2005) highlight that a probability of 0.5 may be not appropriate depending on the sample.[20] Suppose a sample with most of country-pairs involve in an agreement, all predicted probabilities are likely to be above 0.5 (and classified accordingly). Thus, a range of cut-points have to be considered in order to avoid arbitrary thresholds. We follow other studies that use the area under the receiver operating characteristic curve (AUROC) to compare the predictive accuracy of several models.[21] Basically, for each possible cut-point, there is a sensitivity measure (number of true positives over the number of true positives and false negatives) and a specificity measure (number of true negatives over the number of true negatives and false positives). The receiver operating characteristic curve is generated from these measures. A perfect cut-point would classify subjects such as sensitivity and specificity would equal one (that is a ROC curve that passes through the upper left corner).

In Figure 3, we plot the ROC curves that correspond to specification (1), (2) and (3) in Table 1. We also run the specifications (1) and (2) to predict FTA signatures. Since the ROC areas (0.891 and 0.866) is higher in case of specification (2), it seems that this model performs better than others to predict FTA and EIA signatures.[22] Although specifications (1) and (2) generate similar predictions, the ROC curve resulting from specification (2) outperforms the

[20] See page 474.

[21] The receiver operating characteristic analysis is generally utilized in medecine. See also Schularick and Taylor (2012) for an application on financial crises. Note that these curves can be generated from probit and logit predictions.

See Cleves (2002) for more details.

[22] To discriminate between several models, it is recommended to use the same set of observations. Thus, the sample is reduced to similar observations (4272).

other ones indicating that the political determinant is an important determinant of trade agreements.[23]

We began this subsection stating that we are making a "potentially naïve" assumption that the decision to sign an EIA is completely independent of the decision to sign an FTA. On the one hand, this is not very far fetched as there is no formal requirement that links the two decisions. Two countries (or groups of countries) can legally sign an EIA without an FTA and they have certainly signed FTAs without having an EIA. However, what is done in practice (according to the data) is that an EIA is not signed unless an FTA has also already been signed or at least signed in conjunction with an EIA. We account for the possible interdependence in the next three subsections.

4.2 FTA as a Prerequisite

As mentioned, there is no legal requirement to sign an FTA before signing an EIA, yet this is prevalent in the data. That is, when two countries decide to sign an EIA, either an FTA has been previously signed between the two countries or the two agreements are signed jointly. This seems reasonable as there is a fixed cost to learn how to negotiate and build relationships with different countries. Moreover, since goods trade has historically been and still is the bulk of trade value, it makes sense that countries would start with an FTA. Therefore, we ask the question: given that two countries have an FTA, what are the characteristics that would make them more likely to sign an EIA? We present our results for this question in Table 2.

There are few interesting changes in our results to point out. The first is that our coefficient for $Natural$ is now negative and significant. This means that *given* two countries have already signed or are signing an agreement on goods, relatively close countries are less likely to additionally sign an EIA. This result needs to be taken with caution as countries that geographically close to each other tend to sign an FTA; i.e. we are analyzing a set of

[23] We run the tests of equality of ROC areas. Our results indicate that we reject the null-hypothesis suggesting that the three specifications differ in their predictive ability.

already "natural" trading partners. The same logic needs to be taken into account when interpreting the change in sign for our $RGDP$ and $DRGP$ variables as these coefficients are not significant in all specifications. The signs for our other variables are consistent with our previous findings and fairly robust. Note that our ability to correctly predict signatures is not significantly different than in Table 1. The ROC curves are presented in Figure 4.

4.3 Seemingly Unrelated

Though informative, it is not clear that reducing the sample size and focusing only on the country pairs that have already signed an FTA is the best approach. Therefore, we next consider the situation in which the decision to sign either an EIA or FTA are separate but we allow for the possibility that the errors of the two decisions are correlated. In Table 3, we present the results of a Bivariate Probit. These results are very similar and in some cases nearly identical to our baseline results in Table 1. The determinants in both stages are similar. When countries differ in terms of economic size, they tend to sign an FTA, while the remoteness discourages them. However, these two variable seem to have no impact on the signature of an EIA. The coefficient for the *Polity* variable is positive and significant in both stages. The coverage of trade negotiations expands with the political stability of both countries. Note that this stability may be particularly important for EIAs as negotiations on services do not deal with observable tariff cuts but with market access that the non-application can be more difficult to prove.

As the test that ρ is equal to zero is rejected, we can conclude that the decision to sign a FTA and the decision to sign an EIA are interrelated in all specifications. Thus, it is appropriate to be interested in the joint probabilities rather than both probabilities independently, though it does not appear to have a significant effect on our coefficients.[24]

[24] We also run an ordered Probit in which the outcome is zero if no agreement is signed, one if the two countries sign an FTA and two if both FTA and EIA are signed. We obtain results in line with what we observe in Table 3, except that the variable *Remote* turns significant in all specifications. Results are available upon request.

4.4 Agreement composition

In Table 4, we distinguish countries according to their incomes into two groups: developing countries and developed countries. We run a Bivariate Probit when one country is in the developing countries group and the other is a developed country and another specification when both countries are developing countries. Note that we cannot present the results of a Bivariate Probit for trade agreement signed between two developed countries, as we have too few observations, and almost all variables turn insignificant. Our results indicate that trade agreement signatures between developing and developed countries depend on political stability, economic sizes as well as difference in incomes. When both countries are developing countries, the coefficient of $Natural$ is large and highly significant, highlighting the importance of geographical determinants. Developing countries tend to favor neighbored trading partners. In addition, we find evidence of interdependent decisions for all sub-samples.

5 Conclusion

Our goal was to highlight that trade in services is different than trade in goods and this needs to be accounted for when trying to understand why countries sign agreements for services trade. Over the past decade, trade in services and consequently trade agreements in services have become increasingly important. We take the differences in trade in goods and services seriously and investigate if these differences translate into differing economic determinants. Though we expect and find similarities, we also find differences. In particular, geography seems to be less important to determine the signatures of trade agreements on services; but economic determinants remain significant for both types of trade agreement. We find that smaller gains are experienced when trading partners differ widely in terms of economic size and factor endowments which is line with Markusen and Strand (2008, 2009). Though we find a similar result for signing FTAs, B-B find a positive effect for differences

in capital-labor ratios with a different data set. Furthermore, we find that differences in skilled-unskilled labor ratio with the rest of the world is positive and significant for EIAs but insignificant for FTAs.

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Figure 1: Total Number of Trade Agreements

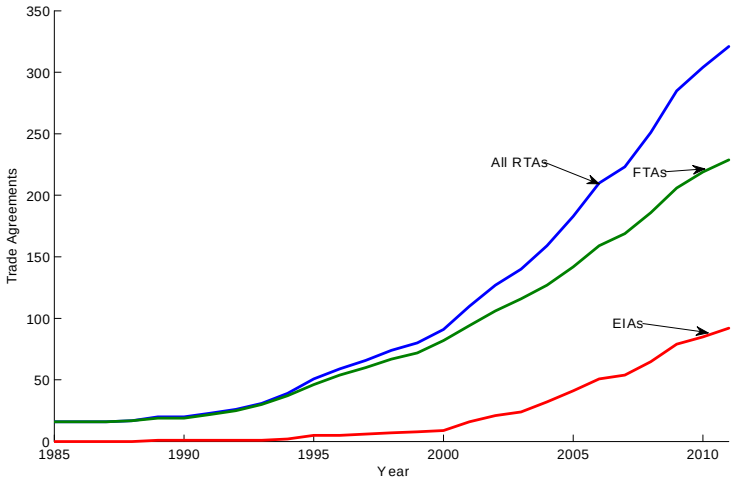

Figure 2: Share of Trade Agreements Signed That Include Services

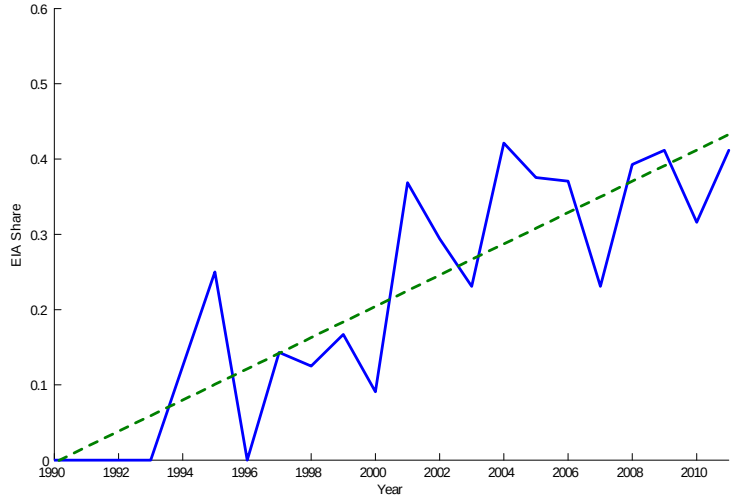

Table 1: Probit – Baseline

		(1)	(2)	(3)
	FTA	EIA	EIA	EIA
Natural	(+)	0.397***	0.307***	0.344***
		(0.04)	(0.05)	(0.04)
Remote	(+)	0.009	0.017	0.022***
		(0.01)	(0.01)	(0.01)
RGDP	(+)	0.020**	0.103***	0.061***
		(0.01)	(0.02)	(0.02)
DRGDP	(–)	-0.011	-0.018	-0.014
		(0.02)	(0.02)	(0.02
DKL	(+)	-0.143***	-0.055	
		(0.04)	(0.05)	
DROWKL	(–)	-6.344***	-3.636***	
		(0.37)	(0.51)	
DSKUSK				-0.031
				(0.04)
DROWSKUSK				0.060**
				(0.02)
Polity			0.573***	0.895***
			(0.10)	(0.08
Observations		8122	5772	6099
Pseudo R^2		0.224	0.249	0.205
Log pseudolikelihood		-1006.22	-565.42	-834.81

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$.
Independent variables taken from 1995.

Figure 3: ROC curves (based on Table 1)

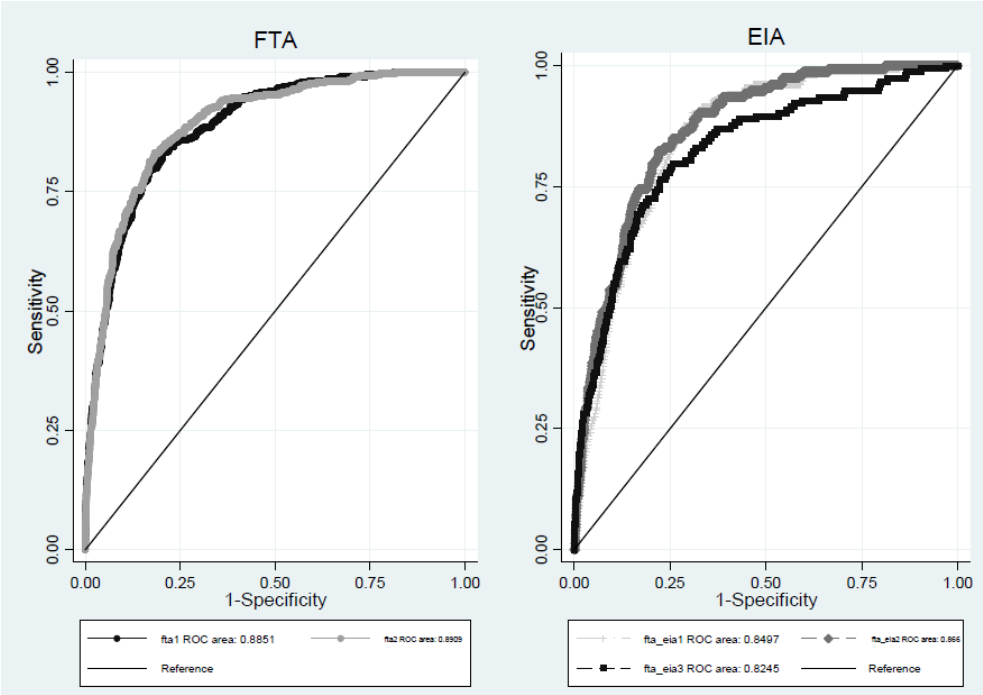

Figure 4: ROC curves (based on Table 2)

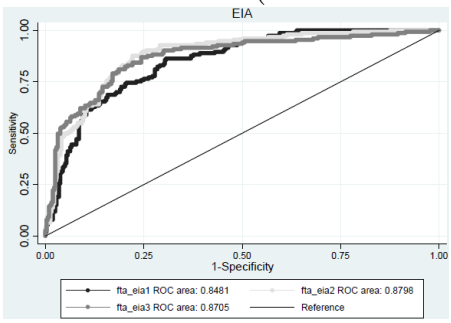

Table 2: Probit for an EIA given an FTA

	(1) EIA	(2) EIA	(3) EIA
Natural	-0.404***	-0.477***	-0.458***
	(0.069)	(0.100)	(0.086)
Remote	0.047**	0.054***	0.071***
	(0.017)	(0.021)	(0.019)
RGDP	-0.051**	0.054**	0.015
	(0.016)	(0.027)	(0.027)
DRGDP	0.121***	0.100**	0.108**
	(0.032)	(0.046)	(0.050)
DKL	-0.123*	-0.050	
	(0.066)	(0.081)	
DROWKL	-9.105***	-4.266***	
	(0.690)	(0.799)	
DSKUSK			0.026
			(0.080)
DROWSKUSK			0.179
			(0.117)
Polity		1.074***	1.601***
		(0.163)	(0.132)
Observations	846	623	708
Pseudo R^2	0.354	0.409	0.324
Log pseudolikelihood	-357	-214	-311

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$.
Independent variables taken from 1995.

Table 3: Bivariate Probit

	(1)		(2)		(3)	
	FTA	EIA	FTA	EIA	FTA	EIA
Natural	0.814***	0.322***	0.927***	0.380***	0.965***	0.395***
	(0.039)	(0.044)	(0.0479)	(0.056)	(0.053)	(0.064)
Remote	-0.023***	-0.004	-0.020**	0.011	-0.030***	0.002
	(0.008)	(0.008)	(0.009)	(0.011)	(0.010)	(0.013)
RGDP	0.077***	0.064***	0.107***	0.116***	0.115***	0.115***
	(0.008)	(0.009)	(0.012)	(0.015)	(0.013)	(0.017)
DRGDP	-0.060***	-0.016	-0.081***	-0.045*	-0.080***	-0.039
	(0.014)	(0.015)	(0.020)	(0.024)	(0.023)	(0.027)
DKL	-0.123***	-0.194***	-0.069**	-0.095**	-0.013	
	(0.027)	(0.034)	(0.032)	(0.045)	(0.030)	
DROWKL	-3.380***	-4.629***	-2.768***	-2.472***	-1.546***	
	(0.319)	(0.364)	(0.423)	(0.605)	(0.410)	
DSKUSK						-0.052
						(0.048)
DROWSKUSK						0.059***
						(0.011)
Polity			0.245***	0.558***	0.352***	0.700***
			(0.080)	(0.097)	(0.087)	(0.089)
Log likelihood	-1610		-1143		-991	
ρ	1.00		0.998		1.00	
LR test of $\rho = 0$	1211***		711***		659***	
Observations	7776		5533		4136	

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$. Independent variables taken from 1995.

Table 4: Bivariate Probit: North-South versus South-South agreements

	Developing/Developed countries		Developing/Developing countries	
	FTA	EIA	FTA	EIA
Natural	0.653***	0.229**	1.112***	0.439***
	(0.075)	(0.088)	(0.063)	(0.074)
Remote	-0.009	0.026	-0.021*	0.026
	(0.016)	(0.019)	(0.012)	(0.017)
RGDP	0.123***	0.132***	0.086***	0.087***
	(0.019)	(0.022)	(0.018)	(0.027)
DRGDP	-0.078***	-0.056*	-0.122***	-0.009
	(0.027)	(0.029)	(0.033)	(0.037)
DKL	-0.257***	-0.286***	-0.093*	-0.308***
	(0.065)	(0.073)	(0.048)	(0.089)
DROWKL	-0.345	1.293	-2.201***	-4.381***
	(1.141)	(1.243)	(0.550)	(1.078)
Polity	0.100	0.448***	0.108	0.405***
	(0.11)	(0.126)	(0.129)	(0.128)
Log likelihood	-493		-530	
ρ	1.000		1.000	
LR test of $\rho = 0$	367***		250***	
Observations	1458		3959	

Standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Independent variables taken from 1995.