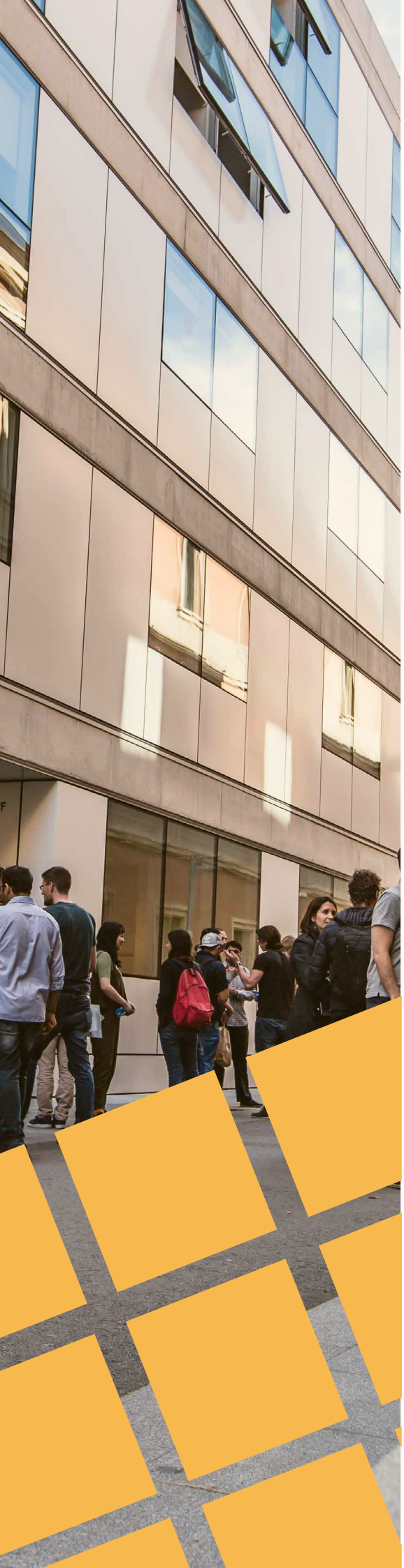

STUDENT PAPER SERIES 13

The Political Economy of EU-Developing Countries Preferential Trade Agreements in Services: The role of transparency, relative factor endowments and bargaining power

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DECLARATION

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ABSTRACT

This dissertation aims to examine some of the factors that might affect the probability of developing countries to join preferential trade agreements in services with the European Union. With this aim the study draws on different approaches within the fields of international political economy and international relations to try to explain why some countries have a higher probability than others to form preferential trade deals. More precisely, the study stresses the role of a developing country's transparency level, its relative factor endowments in human capital and its bargaining power in the probability of signing a preferential trade agreement in services with the EU. The research empirically tests the theoretical arguments using a newly compiled dataset of EU-DCs PTAs in services from 1995 to 2012, and employing a final data of 122 developing countries. The study illustrates that many different political and economic factor affect preferential trade agreements formation. In particular, the regression analysis supports the claim that the level of bargaining power of a developing country, defined as having previously signed a PTA with the US, is decisive and statistical significant in order to sign a PTA in services with the EU. Moreover, it also finds that a country's transparency level is very relevant and positively related to the probabilities of a developing country of forming a PTA in services with the EU. However, no direct relation has been found for the relative factor endowments hypothesis.

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List of Acronyms

CU	Custom Union
DCs	Developing countries
EEC	European Economic Community
EU	European Union
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
GATS	General Agreement on Trade in Services
PTA	Preferential Trade Agreement
RTA	Regional Trade Agreement
US	United States
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

1. Introduction

One of the prominent features of trade diplomacy in recent years has been the huge increase of preferential trade liberalization and rule-making. Since the 1980s the number of bilateral, regional and cross-regional preferential trade agreements (henceforth PTAs) has been proliferating very rapidly.

Currently every country, with the exception of Mongolia[1], is a member of at least one PTA and there are around 300 active agreements around the world[2] (WTO, 2011). This recent boom of PTAs formation is a reflection of changes in certain countries' trade policies and in their perceptions of the multilateral liberalization system of trade.

The European Union in particular has been one of the major forces behind this latest wave of PTAs formation. In fact, trade policy and PTAs has always been one of the principal instruments of foreign policy for the EU (Sapir, 1998). For instance, in the aftermath of the collapse of the Soviet Union trade policy was used as an attempt to stabilize relations with new European democracies, and more recently, it has been used as a way to approach emerging and developing countries.

But not only the number of PTAs has increased significantly in the last three decades, their cover and depth have also extended into much more than just liberalization of tariffs and quotas, adding provisions on enforcement of domestic labour or covering sectors as services and intellectual property right issues.

At the end of the last century the majority of the PTAs dealt exclusively with trade in goods –70 (84%) of the 81 PTAs in force prior to the year 2000 covered only goods (Shingal and Sauvé, 2011)-. However, in the last decade we find a rising trend of PTAs extending provisions on services trade. Precisely, since 2000 more than 85 additional agreements including services provisions have been notified and/or remain to be notified worldwide (Roy, 2011).

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1 Soon there will be no exception since Mongolia is currently studying the feasibility of a PTA with Japan and other countries (Baccini, et. al, 2011).

2 The number of agreements in force changes depending on the source. The WTO counts PTAs that include both goods and services as two notifications, though it is physically one PTA.

1.2) Research question

This recent tendency of including services provisions in PTAs, along with the use of PTAs as a tool to approach developing countries (hereafter DCs) by the EU, is what motivates the current study. In particular, this dissertation will try to answer the following questions: What explains the emerging patterns of including services liberalization in EU's PTAs? Why is there a significant variability on services provisions coverage in EU-DCs PTAs? Do differences in negotiating architectures across PTAs matter? What factors facilitate or hinder PTAs in services between the EU and DCs?

Of course, as any other trade policy, PTA formation is motivated by both economic and political factors. Economists have usually focused on the former, while political scientists on the latter. This study departs from an international political economy point of view - or the idea that politics matter - by looking at the *political economy* determinants of PTA formation and PTA design in the case of services liberalization.

In particular, the main research question will be defined as follows: "What political economy factors help to explain the probability of a developing country of forming a PTA in services with the EU?"

1.2) Research methodology

With the purpose of answering the abovementioned research question, this dissertation will draw on different approaches in international political economy to identify some factors that might affect the probability of DCs to join PTAs with the EU. Thereafter, once the theoretical explanations are established, a statistical regression analysis will be performed in order to check our hypotheses and to ascertain the importance of each of them.

However before proceeding it is worth mentioning the limitations of the study. This research does not seek to give a full explanation of PTA determinants. Nevertheless, it tries to look at the role of some specific factors on the formation of

PTAs in services between the EU and DCs, while controlled by other economic, social and geographical variables.

1.3) Structure of the dissertation

The dissertation is organized as follows. Chapter 2 starts by defining some essential concepts and providing background and contextual information on the service sector and the EU's policy towards PTAs. Chapter 3 briefly covers the existing literature on PTAs formation and on trade in services. Chapter 4 presents the theoretical framework and hypotheses of the investigation, as well as the methodology and dataset used. Chapter 5 displays the data analysis and shows some empirical findings. Finally, Chapter 6 concludes.

2. Background and contextual information

2.1) Definition of Essential Concepts

Preferential Trade Agreement (PTA)

The concepts "preferential trade agreements" (PTAs) and "regional trade agreements" (RTAs) are often used interchangeably in the literature in order to refer to a trade agreement between two or more countries that give preferential access to certain products from the participating countries.

However, some important clarifications are needed. First, that many PTAs today go beyond commodity trade, extending provisions into areas such as services, FDI, national and international standards, domestic policies and regulations, etc. Second, that PTAs (or RTAs) have important institutional differences in terms of memberships and depth. For instance, a Free Trade Agreement (FTA) is a PTA with no internal barriers but neither common barriers facing non-members; while a Custom Union (CU) also has a common external tariff structure. Lastly, despite the fact that the WTO still uses the term RTA when discussing trade agreements in general, many of them are between countries that are not necessarily geographically proximate, i.e. not necessarily "regional agreements" in a narrow sense.

Taking into consideration the explanations above, this dissertation will use the concept *Preferential Trade Agreement* (PTA) as a general term to refer to all of them.

The European Union (EU)

For the purpose of this study the *European Union* is defined as the EU-27[3] (see **Table 1** in Annex A for a full list) and it will count as one member in the signing of the PTAs.

Developing Countries (DCs)

The term of "developing countries" (DCs) used in this study is basically all the countries except the ones that are defined as "developed countries" according to the United Nations 2012 Country Classification (UN-DESA, 2012), which includes all

[3] Since the dissertation covers agreements up to 2012, it has been decided to consider the EU as the EU-27, i.e. before the joining of Croatia in July 2013.

EU-27, other non-EU western European countries (Switzerland, Norway, Iceland), the US, Canada, Japan, Australia and New Zealand (See **Table 2** in Annex A for a complete list).

However, it is important to highlight that the countries in the final group defined as DCs own important differences between them. In fact, some countries that are presumed to be developed (e.g. Greece, Poland) may be considerably poorer than some high-income DCs (Singapore or the United Arabs Emirates). Acknowledging some limitations or drawbacks, this will be the definition used for DCs in the study.

2.2) Trade in services: characteristics and patterns

In the last decades international trade in services has experienced unprecedented growth. According to the *2011 World Development Indicators* the services sector is playing an increasing role in global economy, accounting for almost 71% of global GDP in 2010 (UNCTAD, 2013). In fact, the value of commercial services trade has experienced faster growth than trade in goods in the last thirty years, ranging from US$ 367 billion in 1980 to US$ 4.17 trillion in 2011, i.e. 8.2% per year (WTO, 2013a).

Nevertheless, it is important to stress that services have some unique features that make trade agreements in services different from those in goods. On the one hand, intangibility, nonstorability, differentiation and joint production are some of the typical characteristics of services which may affect their tradability (Hoekman, 2008). On the other hand, the concept of services covers a broad spectrum of heterogeneous activities[4], and there is no international consensus on its definition. However, since the GATS negotiation[5] a conventional classification of trade in services, both in the WTO and in PTAs, covers the following modes of supply:

- Mode 1 or *cross-border supply*: services supplied from the territory of one member into the territory of another.

[4] Services range from telecommunications and transport services to business services - such as accounting, consulting, insurance and legal services -, travel and tourism, construction services, financial and banking sector, health, education, environmental services, among many others.

[5] The General Agreement on Trade in Services (GATS) is a treaty of the WTO that entered into force in 1995 in order to extend the multilateral trading system to the service sector.

- Mode 2 or *consumption abroad*: services supplied in the territory of one member to the consumers of another.

- Mode 3 or *commercial presence*: services provided by foreign suppliers that are commercially established in the territory of another member (e.g. FDI).

- Mode 4 or *presence of natural persons*: services supplied by nationals of one member in the territory of another (temporary move).

This heterogeneity and complexity is one of the reasons that explain why there is so little literature on PTAs in services (Hoekman, 2006).

Services expansion in PTAs

Not only the level of trade in services has increased, but also the number of PTAs including services liberalization has boosted substantially in the last two decades (Shingal and Sauvé, 2011).

Many factors may have contributed to this remarkable increase of trade in services and its expansion in PTAs, but two main aspects should be highlighted: advances in information and communication technologies, as well as reforms in domestic regulations.

Firstly, development in TIC networks and recent technological changes have allowed increasing long-distance, cross-border exchange trade in services, making the condition of geographical proximity not necessary anymore and enabling a major number of transactions.

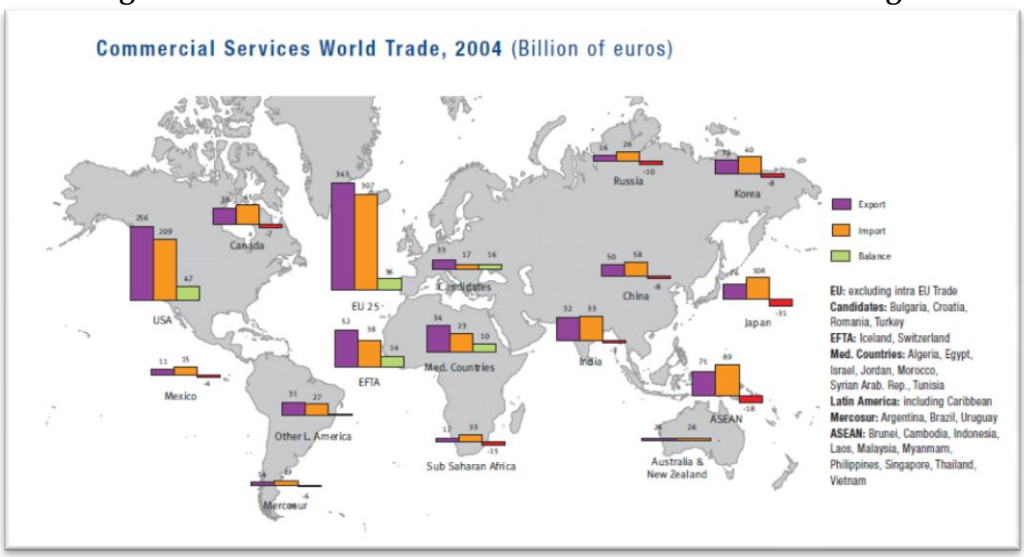
Secondly, reforms in domestic regulation have been proved of high importance when it comes to the negotiation of preferential access to services. Because of services are generally intangible, barriers to trade do not take the form of import tariffs. Instead, trade barriers take the form of prohibitions, quotas, and government regulation. Hence in service markets, access and regulation are closely intertwined and as a result policy reforms improving regulatory institutions and enhancing transparency have been demonstrated key for services liberalization.

The Service Sector for the EU and Developing Countries

The percentage of services in GDP increases along with economic development. It accounts for more than 75% of national income and employment in high-income countries, while it only represents some 35% of GDP in low-income economies (Hoekman, 2006; Hoekman and Mattoo, 2013).

In the case of the EU, it is crucial since the EU is the world's largest exporter and importer of services, with a surplus of € 92.4 billion in 2010 (Eurostat, 2012). According to the 2006 Commission Communication entitled *Global Europe: Competing the World* "services are the cornerstone of the EU economy [...] gradually liberalising global trade in services is an important factor in future economic growth including in the developing world" (EC, 2006, p. 8).

Figure 1 – EU's trade in services with other countries and regions



Source: Global Europe: Competing the World, 2006

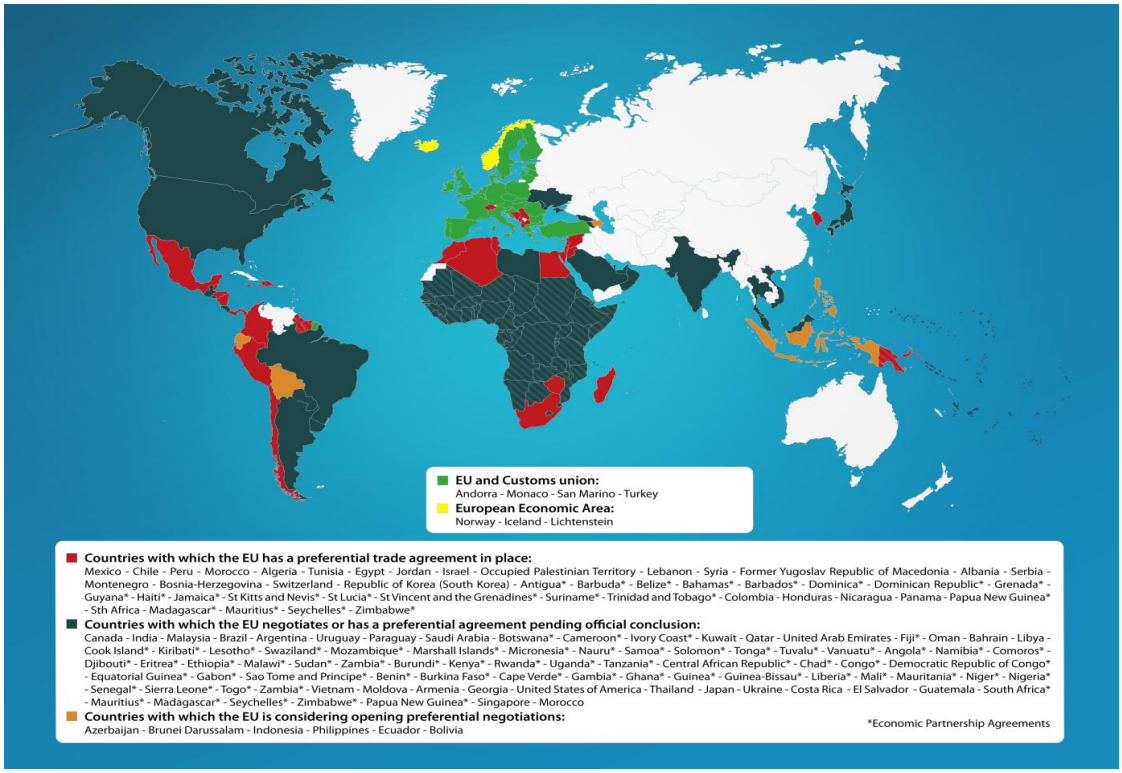
But it is also of fundamental importance for DCs since services are a key determinant for competitiveness. Although services are not a specific part of the pure economic growth function, the growth of intermediation services (transport, financial services, telecommunications, etc.) is essential for the overall economic growth and development, in order to be more competitive in an open economy. In short, modern economies are increasingly dominated by services and as a result issues regarding services liberalization, both at bilateral or multilateral level, are critical for international trade and economy.

2.3) EU's policy towards PTAs

Europe is and has always been a trading continent. Trade and economic integration was the main aim of the initially established European Economic Community (EEC) in 1957 and likewise the EU is currently the world's largest preferential agreement.

However, the EU's regionalism strategy regarding trade policy has changed in the last decades (Sapir, 1998). In the 1990s most of the EU's PTAs were signed with potential EU members and neighbouring countries (e.g. Mediterranean countries) but recently the EU has signed or is in the process of negotiating agreements with many more countries or group of countries, especially with DCs (EC, 2013b).

Figure 2 – EU's PTA – A worldwide map



Source: European Commission, 2013

Europe's PTA can be broadly categorized into four groups according to their prime purpose: (a) PTAs with geographically close neighbours that might be potential candidates to the EU; (b) agreements with bordering or near-bordering countries with the aim to foster stability around the EU borders; (c) PTAs with developing countries with an historical and development focus, mostly with poor countries in Africa, the Caribbean and the Pacific.; and (d) PTAs with other distant countries or

regions where the primary objective of the EU is to neutralize potential discrimination of EU exports due to an FTA between third countries or to secure commercial benefits (Ahearn, 2011, p.3).

Moreover, a number of mixed motives, such as political, commercial and promoting the European model of integration also lie behind each EU initiative (Woolcock, 2007). Unlike the US the EU has no "standard model" of FTA or PTA and they are adjusted according to the partner, which results in a range of different kinds of agreements.

At the moment, the EU is negotiating with many different countries, some of them important middle-sized economies such as India or Canada and with other groupings of countries, such as ASEAN and MERCOSUR. These negotiations may change the strategy of Europe's PTA policy and it is not clear which direction it will take in the future.

♦ ♦ ♦

In order to establish the theoretical propositions of the study, the following chapter 3 will go through the existing empirical and theoretical literature on PTA formation and on trade in services.

3. Literature Review

With the surge of *new regionalism* (Mansfield and Milner, 1999), a vast literature on PTAs developed. Broadly, two types of research have dominated the field: mainly, looking at the potential economic and political effects of PTAs; but also, studying the possible reasons that explain why countries negotiate and sign PTAs.

As mentioned before, this dissertation will focus on the second field of research, looking at the factors that might facilitate PTA formation in the case of services liberalization. For this reason, this chapter will briefly review some of the existing explanations and empirical findings of this subfield of the literature. Moreover, due to the fact that the main focus of the study is the political economy explanation, this dimension will be developed deeply.

3.1) Literature on PTA formation and PTA design

Numerous variables have been suggested as causes or explanations for PTA formation, which can be classified into three broad categories of economic, political and cultural and historical factors.

Economic factors

Economic reasons are often considered the prime cause to negotiate and join PTAs. For instance, Baldwin (1993) offers a domino theory to explain the proliferation of PTAs using a model that focuses on the cost of being excluded from PTAs. More recently, Baier and Bergstrand (2004) developed an econometric model of "pure economic" determinants of PTAs, focusing on the role of economic size and similarity among countries.

Political factors

According to Mansfield and Milner (1999) the propensity of countries to join PTAs is highly related to political conditions. Some recent studies have looked at the role of lobbies and interest group mobilizations (Stoyanov, 2009; Dür, 2007; Baccini and Dür 2012); others stress the role domestic institutions, such as democratization

(Mansfield, Milner and Rosendorff, 2002; Baccini 2012) and transparency (Baccini, 2010); the distribution of power and alliances (Gowa and Mansfield, 1993); electoral concerns (Hollyer and Rosendorf 2011); or the pursue of geopolitical stability (Antkiewick and Momani, 2013), among others.

Cultural and historical factors

Many of the above-mentioned studies have also considered the effects of cultural and historical aspects, such as language, religion and colonial heritage, as important factors affecting the probabilities of two or more countries to partake in a PTA.

Yet, one of the major weaknesses of the empirical literature on PTAs is that they treat all PTAs as equal, despite the fact of significant differences in terms of design and cover. This is one of the main reasons why this dissertation will focus on services provisions, thus reducing the variability of PTAs to one sector.

3.2) Literature on trade in services

Little empirical literature on PTAs in services exist, nevertheless some authors have tried to explain the patterns of international trade in services at different levels.

Grünfeld and Moxnes (2003) estimated a model that identifies the determinants of international trade and foreign affiliate sales in services, finding that corruption and trade barriers have a strong negative impact on service trade. Other authors focused on specific subsectors of the broad category of service sector. For instance, Li, Moshirian and Sim (2005), focusing on the intra-industry trade of the financial services and insurance, empirically demonstrated that the abundance of human and physical capital plays are a key source of comparative advantage for the service sector; so Zhang and Jensen (2007) who also confirmed the importance of factor endowments explaining tourism flows.

More recently, Roy (2009) offered an empirical analysis of multilateral commitments on trade in services, focusing on democracy, relative power, relative endowments and WTO accessions processes.

Other studies have also covered the issue of trade in services, although they did not deal with the issue in an empirical way. For example, Hoekman, Mattoo and Sapir (2007) highlight the importance of national regulatory concerns when it comes to service trade liberalization; and Shingal and Sauvé (2011) assess how "preferential" is preferential treatment of services by looking at different sectors.

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Taking into account the aforementioned explanations, this dissertation will try to delve into some of the political economy factors that might facilitate PTA formation in services between the EU and DCs.

4. Research design: theory, data and methods

This chapter is divided in two sections. The first section presents the theoretical explanations behind the main hypotheses and establishes them. The second section defines the variables under study and the data collection methods.

4.1) Theoretical explanations and hypotheses

This study draws on different approaches in international political economy and international relations in order to examine some of the forces behind international trade agreements, in particular the politics of international trade deals. More specifically, the approach used focuses on the impact of a developing country's transparency level, the role of its factor endowments and its bargaining power in its probability to sign a PTA in services with the EU.

4.1.1) Economic and Political Transparency

Focusing on the role of domestic institutions, this study states that economic and political transparency in DCs has an effect on the probability of forming a PTA in services with the EU.

As reviewed in chapter 2, services have some special characteristics that make regulatory institutions and regulatory concerns of key importance when trading in this sector. As a result, mechanisms that enhance transparency and create adequate regulations are essential – or even sometimes a precondition - for services liberalization (Hoekman and Mattoo, 2013).

This dissertation argues that in countries with a higher level of transparency it is easier to observe whether or not they follow the forms of conditionality and regulations established in a PTA. Since any country has an incentive to back down or cheat in the terms of the agreement, the participants should have instruments to identify and sanction opportunistic behaviours (Baccini, 2010).

Given that it could be assumed that the EU has a higher level of transparency than most of the DCs under study, the analysis will focus on the level of economic

and political transparency of the DCs. The argument is the following: when a developing country is more transparent, its government face higher complications hiding bad actions and opportunistic behaviours. Therefore, the EU is able to better monitor the fulfilment of the agreement. As a result the DC has a higher probability to partake in a PTA in services with the EU.

The formal definition of the hypothesis will be:

H1: In a comparison of developing countries, those countries that are more transparent have a higher probability of forming a PTA in services with the EU than those that are less transparent.

4.1.2) Relative factor endowments

In terms of political economy perspective it is very important to know who gains and who loses from trade liberalization so as to understand why some countries tend to favour protectionism while others have a higher propensity to free trade policies. Some authors have looked at David Ricardo's principle of comparative advantage and the Hecksher-Ohlin model of factor endowments as an attempt to explain international trade in services (Hoekman (2006); Roy (2009); Nyahoho, (2010); Melvin (1989)).

According to Hecksher-Ohlin model, a country's comparative advantage is determined by its relative factor scarcity. Concretely, a country will have an incentive to specialize in the production of a good or service which uses its abundant factor of production intensively. Therefore, under the assumption that there is no impediment to international trade, that country will tend to favour exports in the good or service that employs its abundant factor of production and to import products that use the countries' scarce factor.

In order to know which countries will have more incentives to favour preferential or free trade in services, i.e. more incentives to join PTAs in services, the factors which are intensive in the production of services need to be identified. According to Roy (2009) many services tend to be capital intensive; some are

particularly capital intensive –such as finance or telecommunications–, while others relatively less –e.g. education or professional services-. But what is more important, most services tend to be intensive in skilled-labour, or in other worlds, to be *human-capital intensive*, such as business services or telecommunication (Hoekman, 2008; Roy, 2009; Nyahoho, 2010).

Moreover, Mansfield and Milner (1999) stated that preferences and political influence of diverse societal groups are likely to influence whether or not a country joints PTAs. Since it has been stated that human capital is a critical source of comparative advantage in the service sector, countries with a high level of human capital will have a major number of service firms, which in turn would have major interests to lobby governments to open markets abroad. On the other hand, governments have interests, because of their need of re-election and political support, to listen and wish big interest groups. Consequently, this dissertation will consider that countries rich in human capital (i.e. skilled labour) would be more in favour of the introduction of service commitments in PTAs.

This leads to the second hypothesis:

H2: In a comparison of developing countries, those countries that are better endowed in human capital have a higher probability of forming a PTA in services with the EU than those that are worst endowed in human capital.

4.1.3) Bargaining power:

Many authors have examined the importance of power, relative power and/or distribution of power in relation to trade negotiations, both at bilateral level and in multilateral negotiations (Gowa and Mansfield, 1993; Whalley, 1998; Roy, 2009). A country increases its bargaining power with other countries or regions when it joins a PTA with third countries, because it creates fear of exclusion to the other countries. However, this is only a credible option when the PTA includes a large economic area (Drezner, 2006 cited in Davis, 2009).

For this reason, it will be considered that if the DC has signed a PTA in services with the US in t-1 or before, it will be expected to have a greater bargaining power in the negotiations with the EU, since it has already gained access to a large and very important market, and the probability of including services liberalization will be higher. Moreover, and because of the fear of exclusion, the EU might have also higher interests in signing the PTA in order to neutralize potential discrimination of EU exports in services against the US.

The formal definition of the hypothesis will be:

H3: In a comparison of developing countries, those countries with a greater bargaining power because of a previous PTA in services with the US have higher probability of forming a PTA in services with the EU than those that did not join a PTA in services with the US.

4.2 Variables and data

This section describes the panel data used as well as the sources employed to collect the data.

4.2.1) Outcome or dependent variable:

DV: ***"Probability of forming a PTA in services between the EU-DCs"***

Operationalization

Our outcome variable, defined as $PTA_{ij,t}$, is a dummy variable which equals 1 if the country *i* and the EU are in a PTA in services in year *t* and 0 otherwise. The year *t* considered for the country *i* is the year of signature of the PTA.

Selection of cases

When selecting the sample of agreements under study special care was taken. As stated in chapter 2, the EU has no "model PTA" and PTAs often differ on the specific sectors covered or the modes of supply included. As a result the data available often

show some discrepancies, mainly due to the fact that some authors or resources only cover provisions for specific service sectors or specific modes of supply.

For this reason a variety of sources have been examined and the final selection of cases relies on four main sources or databases: the WTO Regional Trade Agreements database (WTO, 2013b); Dür et. al dataset in PTAs (Baccini et. al, 2011 and Dür et al., 2012); the World Bank Global PTA Dataset (World Bank, 2013a) and the European Commission Trade DG (EC, 2013b; EC, 2013c). Other sources such as Roy's databases on services (Roy, 2011; Roy, Marchetti and Lim, 2009) have also been explored but since they only cover specific services provisions[6] they have not been one of the main sources in the end.

All EU-DCs PTAs have been carefully listed (see Annex B - **Table 3** for a comparative table of the databases) and after eliminating some overlaps the research ends up with more than 45 DCs inside 27 EU–DCs PTAs signed between 1995 and 2012. As abovementioned some disagreements appear between Dür et. al's database and the WTO RTAs database. According to the former, some EU-DCs PTAs such as EU-Morocco 1996 or EU-Serbia 2008 include services liberalization provisions, while in the latter these PTAs are considered as covering only goods liberalization. This is due to the fact that Dür et. al's dataset code agreements on services in a broader sense, i.e. PTAs that include any substantive provisions on the liberalization of trade in services (mainly a national treatment clause) or mentions this liberalization as an objective (Baccini et. al, 2010, p.16) (See Annex B – **Table 4**). For the aim of this study, all PTAs in all databases considered as including services provisions have been included. Moreover, due to the fact that some agreements, for example the SADC Agreement[7], have not been notified to the WTO, the data have been complemented with the World Bank PTAs Dataset and the reviews of EU PTAs of Ahearn (2011) and Brown (2012).

[6] Roy (2011) offers a detailed coding of services provisions (152 sub-sectors for mode 3 and 142 for mode 1) in 67 agreements. Roy et al. (2009) code for 32 agreements whether their services commitments are based on a negative or a positive list approach.

7 The Southern African Development Community (SADC) is formed by Botswana, Lesotho, Namibia, Mozambique, Swaziland and Ghana. In June 2009 Botswana, Swaziland, Lesotho and Mozambique signed an Interim Economic Agreement with the EU.

Two final considerations regarding the selection of cases need to be done. First, all DCs are considered as different cases in the study, no matter if they signed the PTA as a bilateral agreement with the EU or as part of a cross-regional agreement involving more than one country. Second, because small states have specific circumstances that might affect the probability of signing a PTA, all countries with a population below one million habitants have been removed from the study. Annex C - **Table 5** lists the final set of 122 countries that are scrutinised in the study[8].

Finally, it is worth mentioning that the assumptions made in the selection of cases might affect the final results of the study since it covers a newly compiled dataset, but for the purpose of this dissertation this will be the dataset used.

4.2.2) Covariates or independent variable:

IV1: ***"Political and economic transparency"***

Definition

In general terms, "political and economic transparency" refers to the openness and accountability of governments, i.e. the availability of information and to agreed interpretations of the information, in particular regarding expenditure and decision-making. Within the frame of trade policy, the WTO Glossary defines transparency as the "degree to which trade policies and practices, and the process by which they are established, are open and predictable" (WTO, n.d.).

Operationalization

Following Baccini (2010) three different proxies for transparency will be operationalized in order to check the robustness of the test results. The data is retrieved from the "Worldwide Governance Indicators Dataset" in relation to three main indicators: *Government Effectiveness, Rule of Law* and *Control of Corruption* (World Bank, 2013b; Kaufman, Kraay and Mastruzzi, 2010). The indicators range from -2.5 (weak) to 2.5 (strong) in relation to transparency/governance performance. Since all three measures will have correlation between them, three different models will be

[8] Kosovo and North Korea are not considered in the study due to lack of data.

run -each one including one of the three variables- in order to avoid collinearity problems. Since the dataset covers from 1996 to 2011, the most recent data available has been used.

Lastly, a final remark is needed. The regression model uses lagged variables, i.e. year *t-1*, in order to avoid endogeneity problems. All countries that did sign a PTA with the EU, no matter if the PTA includes services liberalization or covers only goods[9], will take the year *t-1* - and *t-2* or *t-3* if the data was not available at *t-1* -. For those countries that did not signed a PTA with the EU the most recent data available has been used –in general that for the year 2011- in consideration of that the most up to date statistics available are the most representative way to explain why that country has not yet joined an agreement in services with the EU.

IV2: ***"Relative factor endowments: Human Capital"***

Definition

As reviewed in the previous section, *human capital* is a key source of comparative advantage in the service sector. However, the term "human capital" can be understood as "human as a labour source" or "human as a creator with knowledge, skills and competences". For the purpose of this dissertation human capital is understood as a "human with knowledge" in the broader sense.

Operationalization

To find a good measurement for human capital is a key aspect of the study. Since the concept of *human capital* that will be considered in the model is the one that stresses on knowledge and skills, educational activities and educational level are crucial to achieve it. Different authors operate distinct measurements as proxies of human capital. For instance, Barro (1991) evaluates the stock of human capital utilizing "school enrolment rates"; Nyahoho (2010) uses the number of graduates from higher education as a percentage of the labour force, as well as the ratio of skilled workers to

[9] In the first case it will have a "0" and in the second one a "1".

the labour forces; or Roy (2009) employs the human capital index from the Human Development Reports.

This dissertation will employ two different measures as proxies of human capital. First, $Edu1_{i,t-1}$ will be the "labour force with tertiary education (as a percentage of total labour force)" from the World Bank Database (World Bank, 2013c). In addition, due to the lack of data available for many countries in $Edu1_{i,t-1}$, the study will consider a second proxy $Edu2_{i,t-1}$, which will be "the gross tertiary enrolment ratio (as percentage of tertiary school-age population)" retrieved from the International Human Development Indicators Database[10] (UNDP, 2013). However, it is important to highlight that this second proxy *Edu2* includes a drawback due to the fact that a student's effectiveness cannot be directly translated into participating in production activities years later.

IV3: ***"Bargaining Power: US.PTA"***

Definition

As the previous section points out the bargaining power is relevant when a DC partakes in a PTA with another large and important market or economic area. For this reason the proxy of a previous PTA in services with the US will be used.

Operationalization

The variable $US\ PTA_{i,t-1}\ in\ services_i$ will be a dummy variable which takes 1 if the DC has signed a PTA in services with the US in t-1 or before, and 0 otherwise. The main source for this variable will be the WTO Regional Trade Agreements Database (WTO, 2013b)

4.2.3) <u>Control variables:</u>

In other to test the main covariates some the control variables need to be identified. These additional variables intend to control for the effects of other systematic aspects,

[10] Tertiary or higher education refers to the categories 5 and 6 from UNESCO's International Standard Classification of Education.

i.e. factors that might affect the phenomenon under study, as well as to help examining other possible explanations for the dependent variable.

The box below provides more details on the theoretical explanations and definitions of the variables, the methodology used and the data sources employed for the statistical analysis[11].

Economic variables	
$GDP_{i,t-1}$	Economic size: the economic level of a country is considered highly relevant during a PTA formation, both in terms of bargaining power and in terms of market access. *Definition:* Log of the $GDP_{i,t-1}$ at constant 2005 US$[12]. *Source:* World Bank Databank – World Development Indicators
$GDPpc_{i,t-1}$	Economic level: the GDP per capita is taken on the assumption that the demand for services will be greater in a country with higher income. *Definition:* Log of the $GDPpc_{i,t-1}$ at constant 2005 US$. *Source:* World Bank Databank – World Development Indicators
Political variables	
Democracy / $Autocr._{t-1}$	Democracy: Some authors have empirically tested that democracies tend to cooperate and trade more between each other (Mansfield, Milner and Rosendorff, 2002; Baccini 2012) *Definition:* based on a 7-point scale that measures the nature of the regime, with one representing the highest degree of political rights/democracy level and seven the lowest. For this reason and in order to ease the interpretation during the analysis the variable has been renamed to $Autocracy_{t-1}$. *Source:* Freedom House Dataset
Geographical variables	
$Distance_i$	Distance: Geographical distance is very important for services, since many services, especially traditional services, are often not storable and their exchange frequently requires the proximity of supplier and consumer. Moreover it also serves as an instrument to isolate the "neighbourhood policy" effect. *Definition:* Log of distance in km between Brussels and the capital of the DCs. *Source:* CEPII database (Mayer and Zignago, 2011)
Other variables	
$WTO_{i,\ t-1}$	WTO member: *Definition:* 1 if the DC has signed a PTA in services with the US in t-1 or before, and 0 otherwise. *Source:* Compiled by the author according to WTO List (WTO, 2013c)

11 The final dataset with all the variables included is available from the author on demand.

12 The Log scale has been used because it makes easier to compare values which cover large ranges. Moreover it also allows us to avoid skewness due to large dispersion and possible outliers.

Other possible control variables

Lastly, it is important to mention that other additional variables could also been taken into account but, at the end, and due to different reasons, they have not included in the final model.

First, the *level of trade in services*$_{t-1}$ between the DCs and the EU has been examined as having some effect on the probabilities of forming a PTA; however, due to the lack of data available and the differences among the sources, the variable has not been included in the model.

Second, drawing on the empirical literature of PTA formation some authors regard the geographical peculiarities of *small islands* as affecting the probabilities of trade agreements. Nevertheless, since the low populated countries (i.e. less than one million habitants) have already been removed from the dataset during the case selection, the author has assumed as already controlling for this factor.

Third, and in regards to the cultural and historical explanation, the *colonial heritage* has also been considered, but since a huge percentage of the DCs under study have been a colony of one of the EU's members at some point, it has been decided not to include this variable (It has been assumed as not having a significant effect in the model).

Finally, other sociological and cultural explanations, such as *ethnicity groups* or *having similar legal systems*, could also have been applied as well. However, these dimensions shall be analyzed in further studies.

♦♦♦

With the aim of empirically test the relevance of the aforementioned factors in the probability of DCs to join PTAs in services with the EU a statistical regression analysis will be performed in the next chapter.

5. Data Analysis

This chapter tests the hypotheses derived from the preceding discussion. To sum up, the key propositions of the study are that a DC's transparency level, its relative endowments in human capital and its bargaining power are positively linked to the probability of signing a PTA in services with the EU, controlled by other possible variables.

The regression model will be defined as follows:

$$\text{Logit PTA}ij,t = \beta_1\text{TRANSP}_{i,t-1} + \beta_2\text{HUM.CAP.}_{i,t-1} + \beta_6\text{US.PTA}_{i,t-1} + \beta_3\text{logGDP}_{i,t-1} + \beta_4\text{logGDPpc}_{i,t-1} + \beta_5\text{DEM}_{i,t-1} + + \beta_7\text{WTO}_{i,t-1} + \beta_8\text{logDISTANCE}_{i,t-1} + \varepsilon$$

But before performing the statistical model, some preliminary data analysis regarding the bivariate relations between the outcome and some of the explanatory variables will be examined.

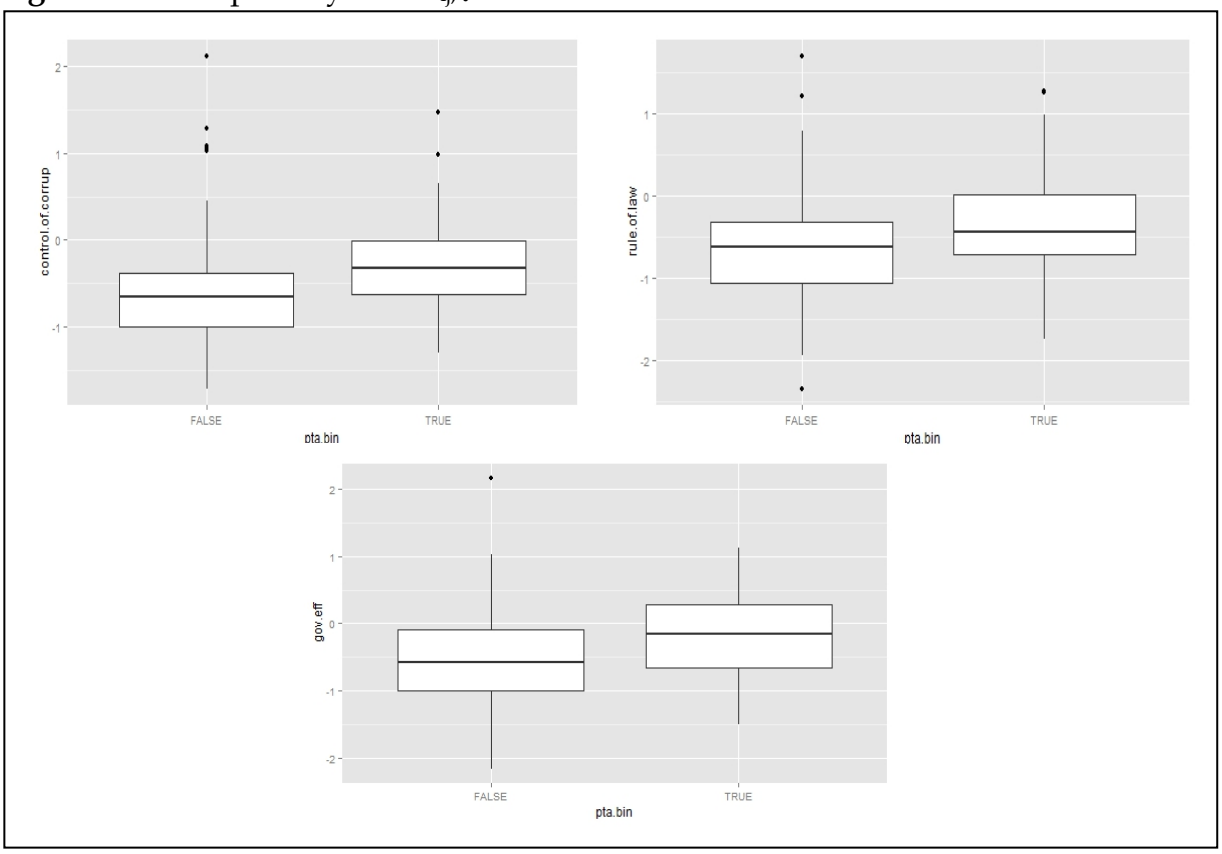
5.1) Bivariate relations: boxplots

This section illustrates some of the bivariate relations via boxplots[13]. This tool has been chosen because it is a suitable way of graphically depict the data through their quartiles. The boxplot denotes the median, the 25th and 75th percentiles, the upper and lower adjacent values and the outliers, which will be represented by the dots. The countries that signed a PTA in services with the EU are denoted by "true" and those that didn't by "false".

Figure 3 illustrates the bivariate relations between $\text{PTA}_{ij,t-1}$ and transparency. In general terms it can be observed that those DCs that joined a PTA with the EU have a higher transparency level for the three indicators used: control of corruption, rule of law and government effectiveness. This supports the expectations of the first hypothesis.

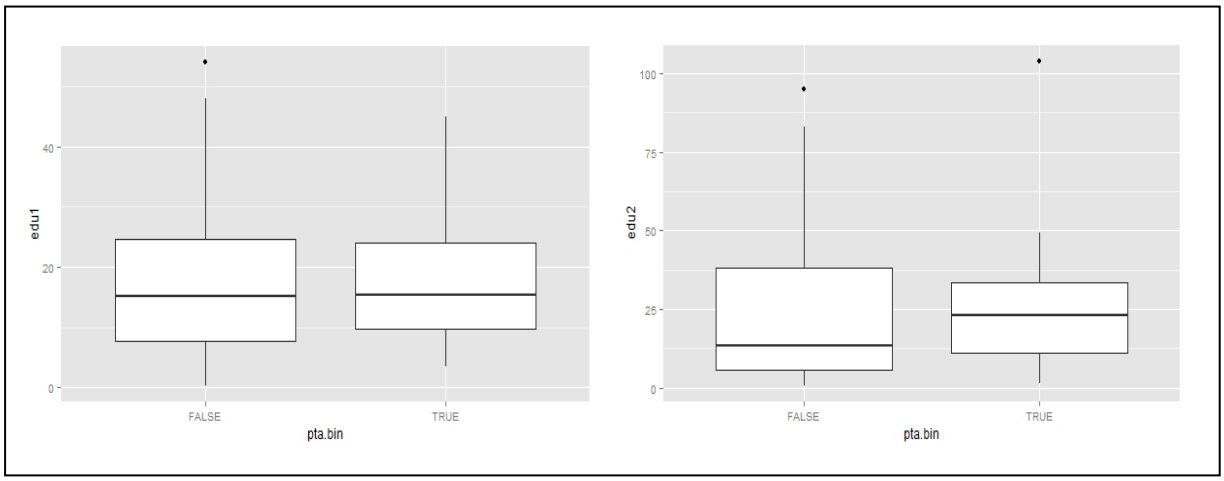
[13] Only the independent continuous variables have been plotted.

Figure 3 – Transparency – $PTA_{ij,\,t}$



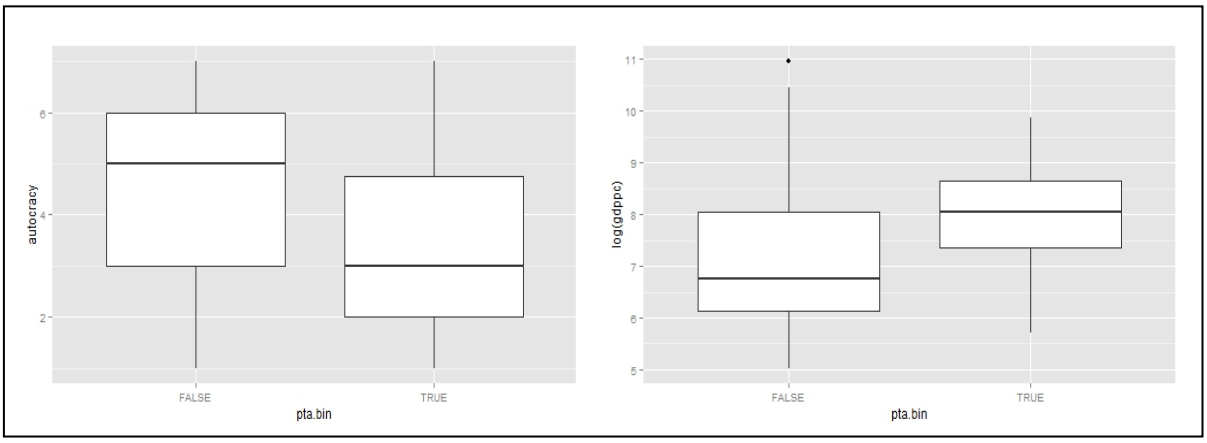
However, when looking at the proxies for factor endowments in human capital, a clear tendency cannot be found. For the proxy *Edu2*, i.e. gross tertiary enrolment ratio, it can be observed that the mean for those that formed a PTA with the EU is higher than for those that did not, which would support the second hypothesis, but for the proxy *Edu1* no significant difference is found. The reasons why no clear tendency appears will be explored in the following sections. **Figure 4** illustrates it.

Figure 4 – Human Capital – $PTA_{ij,\,t}$



To end this preliminary analysis the bivariate relations with two of the most relevant control variables have also been plotted.

Figure 5 – Control variables: Autocracy and GDPpc.



The boxplots above show good consistency with the theory. For instance, we find that democracy (or less autocracy) and the economic level –measured as GDPpc- are both positively related to the probability of a DC to form a PTA with the EU.

However, and despite the fact that it is a very useful informative tool, the bivariate analysis does not provide rigorous statistical test of the hypothesis. Therefore, it is necessary do a regression analysis and to control for other variables to obtain statistical significant results.

5.2) Multivariate regression analysis

This section analyzes the regression model described above. Yet, before proceeding some clarifications need to be done.

First, and as described in the previous chapter, three different proxies for the *transparency* variable have been taken and two for *relative endowments in human capital*. As a result, a variety of "*submodels*" of the main model will be performed in order to check the robustness of the results. Second, the variable of democracy (DEM) has been renamed to "*autocracy*" during the regression analysis to ease the interpretations of the results. Third, the variables have been standardized with the

aim to combine variables that are on different scales and be able to interpret them[14]. And lastly, in order to avoid possible endogeneity problems between transparency and democracy, additional models where the variable autocracy has been dropped have also been run.

Annex D presents the econometric results of the different models. **Table 6** presents the most significant results holding Edu1, i.e. labour force with tertiary education, and for the different proxies of transparency and **Table 7** holding Edu2, i.e. gross tertiary enrolment ratio, and the different proxies of transparency as well. Below the most noteworthy results will be presented. However, the insights and implications of these results will be discussed in the conclusion chapter.

Of the all the variables examined, $US.PTA_{j,t-1}$ in services particularly stands out for the significant impact it has on the probability of a DC of forming a PTA in services with the EU. It is positively linked and statistical significant at 0.001 percent in all the models performed, which allows us to confirm our third hypothesis. However, since in the logit model the value of the coefficients is not meaningful, observing only the sign and the significance of the coefficient do not allow us to know the effects of the explanatory variables. This is why the "odd ratios"[15] have been calculated in order to better interpret the effects. The value of the effect changes depending on the model, but in general, it can be stated that the probability of a DC of forming a PTA in services with the EU is multiplied by ≈ 22-27 if it has already partake in a PTA in services with the US.

Moreover, and in regards to the transparency variable, all three operationalizations (control of corruption, rule of law and government effectiveness) support the argument that they are positively correlated to the probability of forming a PTA with the EU, with coefficients having a positive sign for almost all of the models performed[16], and the odds ratios indicating that this probability increases in the middle of this range (2 standard deviations) by ≈ 2-5 -depending on the model-

[14] In order to be able to work with binary and non-binary covariates at the same time in the standardization process the variables are divided by 2 standard deviations (Gelman et. al, 2008).
[15] (exp(logitCoeff)
[16] With the exception of Model 2.1-A and 2.2-A.

for the three indicators of transparency. However, they are not statistically significant. This suggests that although being positively related, as shown in the bloxplots and in the regression analysis, when controlling for other variables it does not show a direct causation because many other factors also play an important role.

Additionally, among the other control explanatory variables retained, some interesting results can be found. First, that geographical distance is negatively linked and statistically significant at 0.001% or 0.1% in all of the models performed, which supports the argument that geographical proximity is still highly relevant for service trade. Second, that being a democracy or an autocracy also affects your probabilities of forming a PTA in services with the EU; being statistically significant for most of the models and with a negative coefficient for autocracy. Third, looking at the income effect (captured by GDP and GDPpc) only proves significant the GDPpc indicator (economic level), with positive coefficient and significance in most of the models -with the exception of the two first models where the coefficient is the opposite of what it is expected and not statistically significant-. But economic size (GDP) seems to have no effect.

Finally, the variable *relative factor endowments in human capital* has been found not relevant. Controversially, even sometimes it shows the opposite expected coefficient sign. This could be explained for several reasons that will be covered in the following final chapter.

6. Conclusions

6.1 Insights and implications

This dissertation has attempted to examine some of the factors that might facilitate or hinder the probability of a DC of forming a PTA in services with the EU. With this objective the study draws on different approaches within the field of international political economy to try to explain why some countries have a higher probability than others. More precisely, the study stresses the role of a developing country's transparency level, its relative factor endowments in human capital and its bargaining power in the probability of signing a PTA in services with the EU.

In order to test our hypotheses a newly complied dataset of EU-DCs has been created and a regression analysis has been performed. The empirical results offered suggest that the probabilities of a DC of forming a PTA in services with the EU rises significantly when it has previously signed a PTA in services with the US. However, a more qualitative analysis at case study level should be done in order to see if this causation is due to the fact that the DC has a greater bargaining power in the negotiations; or because it is the EU that seeks PTAs in services with countries that previously joined PTAs in services with the US in order to avoid a trade diversion effect.

Moreover, and in regards to the first hypothesis, a positive relation between a DC's transparency level and the probability of forming a PTA in services with the EU has been found. However, the results of the statistical regression indicates that, when controlling for other factors, other explanatory variables such as geographical distance, being a democracy or GDP per capita, have a greater statistical significant effect.

Lastly, no empirical support for the hypothesis of relative factor endowments has been found in the regression analysis. This could mean either that it actually has no effect in the probability of forming the PTA or that the way in which the variable has been operationalized is not the most appropriate one. As reviewed in chapter 4 to find a good measure for human capital is sometimes controversial and complicated. This dissertation has used the level of tertiary education as a proxy for human

capital, but it might not be the most accurate one. Moreover, and as reviewed in chapter 2, the service sector is a very broad sector covering all kinds of activities and subsectors. Therefore, although it is true that technological advances have allowed to increase capital intensive services, such as business services and telecommunications, it could be the case that in the countries under study other non human capital sectors, such as tourism or construction, are more important and as a result the human capital variable is not relevant for those countries. In fact, it denotes that research into the determinants of comparative advantage in services should be more finely targeted and sector-specific. Moreover, it also shows why there is so little empirical literature in services sector, mainly due to the lack of data available and the complexity and large range of sectors covered, which makes it more difficult to compare.

6.2 Limitations and indications for further research

This research has attempted to serve as a first step into the study of the international political economy of trade agreements in services between the EU and the DCs. However, it contains a number of methodological limitations that could be enhanced in further research.

On the one hand, the econometric model could be improved. First, further robustness checks and more advanced econometric methods should be used in order to confirm the results of the study. Second, additional control variables could be included so as to further examine the effect of each of the variables. And third, different indicators to operationalize the variables under the study should be included. Actually, most of the variables used are quite complicated to operationalize and the decision of choosing one or another indicator might change the final statistical results.

On the other hand, regression analysis is a very useful tool in order to estimate unknown parameters and obtaining good results; however, it is very sensitive to outliers. For further research and in order to obtain more accurate results, different categories or subsectors within the broad categories of services sector should be

examined. This way it could be possible to take better proxies for each of the sectors, in particular in regards to the relative factor endowments hypothesis, and to be able to perform a more accurate study.

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APPENDICES

Annex A – Lists of developed countries

Table 1: List of EU-27 Countries (and year of entry)

Austria (1995)	Germany (1952)	Netherlands (1952)
Belgium (1952)	Greece (1981)	Poland (2004)
Bulgaria (2007)	Hungary (2004)	Portugal (1986)
Cyprus (2004)	Ireland (1973)	Romania (2007)
Czech Republic (2004)	Italy (1952)	Slovakia (2004)
Denmark (1973)	Latvia (2004)	Slovenia (2004)
Estonia (2004)	Lithuania (2004)	Spain (1986)
Finland (1995)	Luxembourg (1952)	Sweden (1995)
France (1952)	Malta (2004)	United Kingdom (1973)

Source: Derived from the EU webpage

Table 2: List of Developed countries

Austria	Spain	Romania
Belgium	Sweden	Slovakia
Denmark	United Kingdom	Slovenia
Finland	Bulgaria	Iceland
France	Cyprus	Norway
Germany	Czech Republic	Switzerland
Greece	Estonia	Australia
Ireland	Hungary	Canada
Italy	Latvia	Japan
Luxembourg	Lithuania	New Zealand
Netherlands	Malta	United States
Portugal	Poland	

Source: UN Country Classification 2012

Annex B – Lists of EU Agreements in Services

Table 3: Comparative list on services coverage on EU-DCs PTA according to different databases.

EU-DCs PTA	Year (signature)	WTO RTA Database / WB Database	Coverage according EU - Trade DG	Dür's et al. Database
EU – Albania	2006	Goods and Services	Goods and Services	Services
EU – Algeria	2002	Goods	Only goods	Services
EU - Bosnia Hercegovina	2008	Goods	Only goods	No
EU - Cameroon	2009	Goods	?	No
EU – Central America (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá)	2012	Goods and Services	Goods and Services	Up to 2009
EU – Chile	2002	Goods and Services	Goods and Services	Services
EU - Colombia/Peru	2012	Goods and Services	Goods and Services	Up to 2009
EU – Croatia	2001	Goods and Services	Goods and Services	Services
EU - Côte d'Ivore	2008	Goods	?	No
EU - ESA (Mauritius, Madagascar, Sychelles, Zimabawe)	2009	Goods	Goods	No
EU – Egypt	2001	Goods	Ongoing in services	Services
EU - Macedonia	2001	Goods and Services	Goods and Services	Services
EU – Israel	1995	Goods	Ongoing in services	Services
EU – Jordan	1997	Goods	Goods	No
EU - Rep. of Korea	2010	Goods and Services	Goods and Services	Up to 2009
EU – Lebanon	2002	Goods	Goods	No
EU – Mexico	1997	Goods and Services	Goods and Services	?
EU - Montenegro	2007	Goods and Services	Goods and Services	Services
EU - Morocco	1996	Goods	Ongoing in services	Services
EU – Serbia	2008	Goods	Goods	Services
EU - South Africa	1999	Goods	Goods	Services
EU – Tunisia	1995	Goods	Ongoing in services	Services
EU – Turkey	1995	Goods	Goods	No

EU - SADC (Botswana, Lesotho, Swazilandia, Mozambique)	2009	Not reported WTO	Goods	No
EU – CARIFORUM(*)	2008	Goods and Services	Goods and Services	Services
EU – Faroe Islands	1996	Goods	Goods	No
EU - Papua New Guinea / Fiji	2009	Goods	Goods	No
(*) Bahamas; Barbados; Belize; Dominica; Dominican Republic; Grenada; Guyana; Jamaica; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Suriname; Trinidad and Tobago				
Note: the EU has also PTAs with the following developed countries: EU-Andorra (1991); EU-Iceland (1972); EU-Norway (1973); EU-San Marino (1991); EU-Switzerland/Lichtenstein (1972)				
Note2: The agreements with the Palestinian Authority (1997) and Syria(1977) have not been considered in this study because of their special political circumstances.				

Table 4: List of EC/EU PTAs including substantive services provisions (mainly a national treatment clause) in Dür et. al database (2011)

CARIFORUM EC EPA 2008 Chile EC 2002 Bulgaria EC 1993 EC Hungary 1991 EC Israel Euro-Med Association Agreement 1995 EC Latvia Europe Agreement 1995 EC Lithuania Europe Agreement 1995 EC Macedonia SAA 2001 EC Poland 1991 EC Romania 1993 EC Serbia SAA 2008 EC Slovakia 1993 Albania EC SAA 2006	Czech Republic EC 1993 EC Egypt Euro-Med Association Agreement 2001 EC Estonia Europe Agreement 1995 EC Montenegro SAA 2007 EC Morocco Euro-Med Association Agreement 1996 EC Slovenia Europe Agreement 1996 EC South Africa 1999 EC Tunisia Euro-Med Association Agreement 1995 Algeria EC Euro-Med Association Agreement 2002 Croatia EC 2001

Annex C – Final data

Table 5. Countries under study : 1 if signed a PTA in services with the EU and 0 otherwise.

Afghanistan	0	Guinea-Bissau	0	Panama	1
Albania	1	Haiti	0	Papua New Guinea	0
Algeria	1	Honduras	1	Paraguay	0
Angola	0	Hong Kong	0	Peru	1
Argentina	0	India	0	Philipinnes	0
Armenia	0	Indonesia	0	Puerto Rico	0
Azerbaijan	0	Iran, Islamic Rep.	0	Qatar	0
Bangladesh	0	Iraq	0	Russian Federation	0
Belarus	0	Israel	1	Rwanda	0
Benin	0	Jamaica	1	Saudi Arabia	0
Bolivia	0	Jordan	0	Senegal	0
Bosnia and Herzegovina	0	Kazakhstan	0	Serbia	1
Botswana	0	Kenya	0	Sierra Leone	0
Brazil	0	Korea, Rep.	1	Singapore	0
Burkina Faso	0	Kuwait	0	Somalia	0
Burundi	0	Kyrgyz Republic	0	South Africa	1
Cambodia	0	Lao PDR	0	South Sudan	0
Cameroon	0	Lebanon	0	Sri Lanka	0
Central African Republic	0	Lesotho	0	Sudan	0
Chad	0	Liberia	0	Swaziland	0
Chile	1	Libya	0	Syrian Arab Republic	0
China	0	Macedonia, FYR	1	Tajikistan	0
Colombia	1	Madagascar	0	Tanzania	0
Congo, Dem. Rep.	0	Malawi	0	Thailand	0
Congo, Rep.	0	Malaysia	0	Timor-Leste	0
Costa Rica	1	Mali	0	Togo	0
Cote d'Ivoire	0	Mauritania	0	Trinidad and Tobago	1
Croatia	1	Mauritius	0	Tunisia	1
Cuba	0	Mexico	1	Turkey	0
Dominican Republic	1	Moldova	0	Turkmenistan	0
Ecuador	0	Mongolia	0	Uganda	0
Egypt, Arab Rep.	1	Morocco	1	Ukraine	0
El Salvador	1	Mozambique	0	United Arab Emirates	0
Eritrea	0	Myanmar	0	Uruguay	0
Ethiopia	0	Namibia	0	Uzbekistan	0
Gabon	0	Nepal	0	Venezuela, RB	0
Gambia, The	0	Nicaragua	1	Vietnam	0
Georgia	0	Niger	0	Yemen, Rep.	0
Ghana	0	Nigeria	0	Zambia	0
Guatemala	1	Oman	0	Zimbabwe	0
Guinea	0	Pakistan	0		

Annex D – Econometric analysis

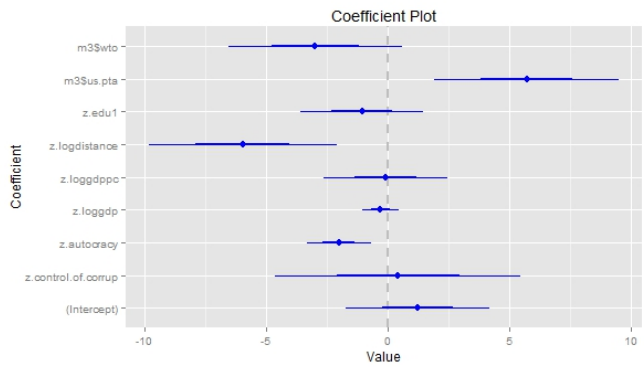
Table 6 – Regression analysis holding Edu1 constant (Model 1.1 is for Control of Corruption; Model 1.2 for Rule of Law; and Model 1.3 for Government Effectiveness)

Model 1.1-A

```
glm(formula = m3$pta ~ z.control.of.corrup + z.autocracy + z.loggdp +
    z.loggdppc + z.logdistance + z.edu1 + m3$us.pta + m3$wto,
    family = binomial("logit"), data = m3)

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-1.39323  -0.39636  -0.08483   0.28079   2.46912

Coefficients:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           1.23970    1.47060   0.843  0.39923
z.control.of.corrup   0.42848    2.52274   0.170  0.86513
z.autocracy          -2.00111    0.65458  -3.057  0.00223 **
z.loggdp             -0.29052    0.37626  -0.772  0.44005
z.loggdppc           -0.07913    1.26920  -0.062  0.95029
z.logdistance        -5.95338    1.93185  -3.082  0.00206 **
z.edu1               -1.05741    1.26809  -0.834  0.40436
m3$us.pta             5.72849    1.89783   3.018  0.00254 **
m3$wto               -2.98053    1.78947  -1.666  0.09579 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```



Model 1.1-B

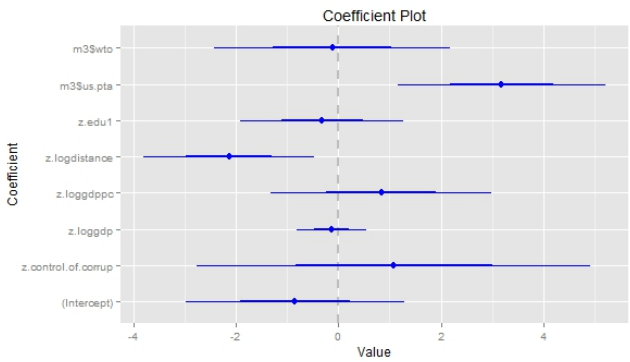
```
glm(formula = m3$pta ~ z.control.of.corrup + z.loggdp + z.loggdppc +
    z.logdistance + z.edu1 + m3$us.pta + m3$wto, family =
binomial("logit"),
    data = m3)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.4632  -0.6746  -0.4614   0.6901   2.0551

Coefficients:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           -0.8501     1.0665  -0.797  0.42542
z.control.of.corrup    1.0770     1.9203   0.561  0.57490
```

```
z.loggdp             -0.1364     0.3423  -0.398  0.69034
z.loggdppc            0.8360     1.0765   0.777  0.43737
z.logdistance        -2.1401     0.8330  -2.569  0.01020 *
z.edu1               -0.3178     0.7965  -0.399  0.68988
m3$us.pta             3.1839     1.0151   3.137  0.00171 **
m3$wto               -0.1238     1.1514  -0.108  0.91434
---

Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```



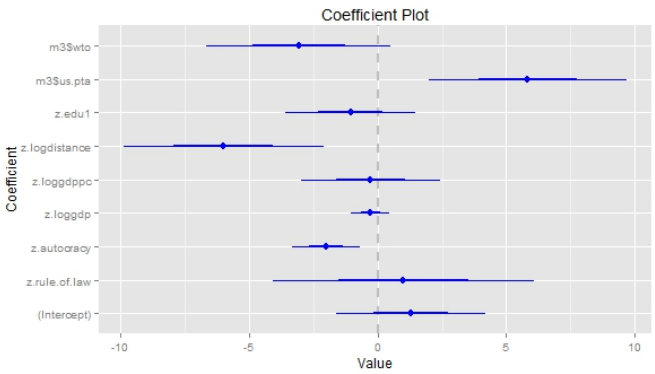
Model 1.2-A

```
Call:
glm(formula = m3$pta ~ z.rule.of.law + z.autocracy + z.loggdp +
    z.loggdppc + z.logdistance + z.edu1 + m3$us.pta + m3$wto,
    family = binomial("logit"), data = m3)

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-1.41182  -0.37619  -0.08334   0.30012   2.45966

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)     1.2797     1.4571   0.878  0.37979
z.rule.of.law   0.9935     2.5397   0.391  0.69566
z.autocracy    -2.0187     0.6561  -3.077  0.00209 **
z.loggdp       -0.2839     0.3757  -0.756  0.44981
z.loggdppc     -0.2831     1.3506  -0.210  0.83396
z.logdistance  -5.9966     1.9408  -3.090  0.00200 **
z.edu1         -1.0574     1.2675  -0.834  0.40412
m3$us.pta       5.8348     1.9262   3.029  0.00245 **
m3$wto         -3.0713     1.7947  -1.711  0.08703 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> exp(logit$coefficients)
  (Intercept) z.rule.of.law   z.autocracy      z.loggdp    z.loggdppc
z.logdistance
 3.595604e+00  2.700586e+00  1.328300e-01  7.528386e-01  7.534329e-01
2.487314e-03
       z.edu1     m3$us.pta        m3$wto
 3.473449e-01  3.420129e+02  4.636155e-02
```



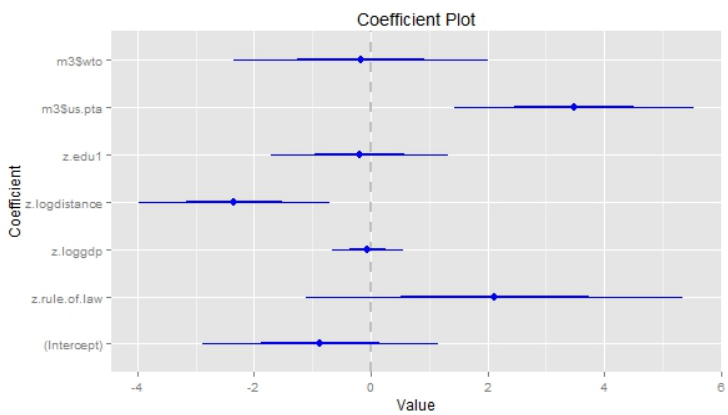
Model 1.2-B

```
Call:
glm(formula = m3$pta ~ z.rule.of.law + z.loggdp + z.loggdp +
    z.logdistance + z.edu1 + m3$us.pta + m3$wto, family =
binomial("logit"),
    data = m3)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.5581  -0.6967  -0.3920   0.7194   1.9492

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   -0.86840    1.01065  -0.859 0.390200
z.rule.of.law  2.11974    1.61458   1.313 0.189227
z.loggdp      -0.05628    0.30709  -0.183 0.854598
z.logdistance -2.33896    0.81622  -2.866 0.004162 **
z.edu1        -0.19238    0.76056  -0.253 0.800312
m3$us.pta      3.48413    1.02470   3.400 0.000674 ***
m3$wto        -0.16426    1.08906  -0.151 0.880110
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> exp(logit$coefficients)
  (Intercept) z.rule.of.law      z.loggdp z.logdistance        z.edu1
m3$us.pta
   0.41962175    8.32894406    0.94527856    0.09642832    0.82499495
32.59399669
       m3$wto
   0.84851937
```

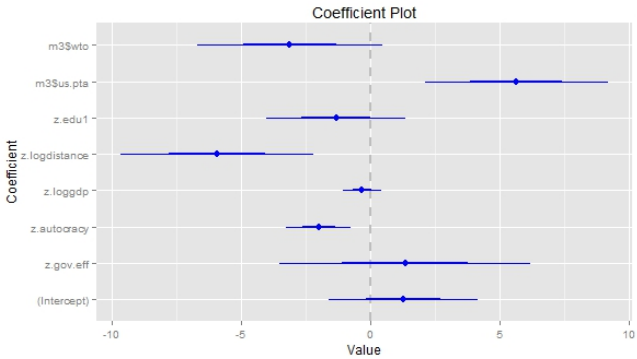


Model 1.3-A

```
Call:
glm(formula = m3$pta ~ z.gov.eff + z.autocracy + z.loggdp + z.loggdp +
    z.logdistance + z.edu1 + m3$us.pta + m3$wto, family =
binomial("logit"),
    data = m3)

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-1.42023  -0.32865  -0.08566   0.32245   2.54666

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)     1.2835     1.4380   0.893  0.37210
z.gov.eff       1.3491     2.4315   0.555  0.57901
z.autocracy    -1.9871     0.6282  -3.163  0.00156 **
z.loggdp       -0.3172     0.3690  -0.860  0.38998
z.logdistance  -5.9114     1.8679  -3.165  0.00155 **
z.edu1         -1.3222     1.3431  -0.984  0.32491
m3$us.pta       5.6613     1.7736   3.192  0.00141 **
m3$wto         -3.1042     1.7900  -1.734  0.08288 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> exp(logit$coefficients)
  (Intercept)     z.gov.eff   z.autocracy      z.loggdp z.logdistance
z.edu1
   3.60926792    3.85386679    0.13709270    0.72818776    0.00270845
0.26655312
    m3$us.pta        m3$wto
 287.52039511    0.04486052
```



Model 1.3-B

```
glm(formula = m3$pta ~ z.gov.eff + z.loggdp + z.loggdp + z.logdistance +
    z.edu1 + m3$us.pta + m3$wto, family = binomial("logit"),
    data = m3)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.3898  -0.7204  -0.4420   0.7129   2.0326

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   -0.89663    1.00611  -0.891 0.372831
z.gov.eff      1.78853    1.82131   0.982 0.326097
z.loggdp      -0.04975    0.31413  -0.158 0.874157
z.logdistance -2.35847    0.82068  -2.874 0.004056 **
z.edu1        -0.18076    0.76691  -0.236 0.813665
m3$us.pta      3.36702    0.98781   3.409 0.000653 ***
m3$wto        -0.09983    1.07867  -0.093 0.926261
```

```
---

Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> exp(logit$coefficients)
  (Intercept)     z.gov.eff      z.loggdp z.logdistance        z.edu1
m3$us.pta
   0.40794377    5.98067558    0.95146600    0.09456514    0.83463556
28.99192574
       m3$wto
   0.90499030
```

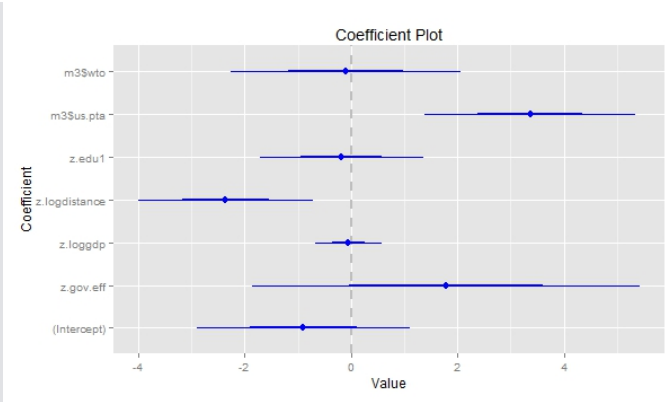


Table 7 – Regression analysis holding Edu2 constant (Model 2.1 is for Control of Corruption; Model 2.2 for Rule of Law; and Model 2.3 for Government Effectiveness)

Model 2.1-A

```
Call:
glm(formula = m1$pta ~ z.control.of.corrup + z.autocracy + z.loggdp +
    z.loggdppc + z.logdistance + z.edu2 + m1$us.pta + m1$wto,
    family = binomial("logit"), data = m1)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.3030  -0.6833  -0.5038   0.6488   2.3694

Coefficients:
                    Estimate Std. Error z value Pr(>|z|)
(Intercept)         -1.13168    0.76884  -1.472  0.14104
z.control.of.corrup -0.17383    1.70208  -0.102  0.91865
z.autocracy         -0.34753    0.18250  -1.904  0.05687 .
z.loggdp            -0.24971    0.23528  -1.061  0.28854
z.loggdppc           1.71420    0.89977   1.905  0.05676 .
z.logdistance       -1.52599    0.60573  -2.519  0.01176 *
z.edu2              -1.13473    0.67080  -1.692  0.09072 .
m1$us.pta            3.16830    0.98727   3.209  0.00133 **
m1$wto               0.02393    0.84063   0.028  0.97729
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> exp(logit$coefficients)
        (Intercept) z.control.of.corrup         z.autocracy
z.loggdp
          0.3224912           0.8404372           0.7064284
0.7790256
         z.loggdppc       z.logdistance              z.edu2
m1$us.pta
          5.5522211           0.2174049           0.3215078
23.7669341
```

```
            m1$wto
         1.0242191
```

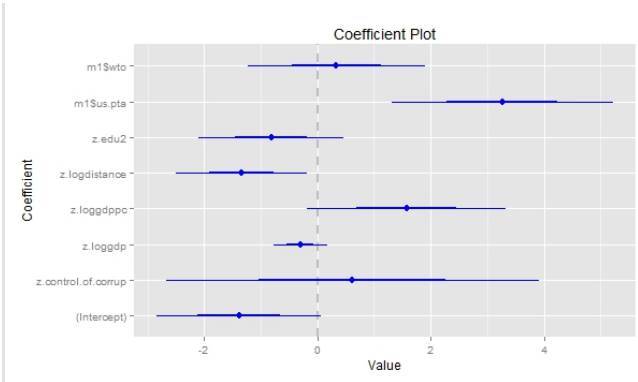
Model 2.1-B

```
glm(formula = m1$pta ~ z.control.of.corrup + z.loggdp + z.loggdppc +
    z.logdistance + z.edu2 + m1$us.pta + m1$wto, family =
binomial("logit"),
    data = m1)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.5990  -0.7624  -0.5255   0.7568   2.0205

Coefficients:
                    Estimate Std. Error z value Pr(>|z|)
(Intercept)          -1.3847     0.7270  -1.905 0.056811 .
z.control.of.corrup   0.6178     1.6474   0.375 0.707645
z.loggdp             -0.3000     0.2379  -1.261 0.207403
z.loggdppc            1.5716     0.8791   1.788 0.073808 .
z.logdistance        -1.3403     0.5764  -2.325 0.020065 *
z.edu2               -0.8174     0.6392  -1.279 0.200967
m1$us.pta             3.2646     0.9787   3.336 0.000851 ***
m1$wto                0.3351     0.7843   0.427 0.669220
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> exp(logit$coefficients)
        (Intercept) z.control.of.corrup           z.loggdp
z.loggdppc
          0.2504034           1.8548870          0.7408509
4.8143020
      z.logdistance              z.edu2          m1$us.pta
m1$wto

          0.2617775           0.4415948         26.1694188
1.3980163
```



Model 2.2-A

```
glm(formula = m2$pta ~ z.rule.of.law + z.autocracy + z.loggdp +
    z.loggdppc + z.logdistance + z.edu2 + m2$us.pta + m2$wto,
    family = binomial("logit"), data = m2)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.2602  -0.6992  -0.5097   0.6404   2.3395

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)    -1.1681     0.7816  -1.495   0.1350
```

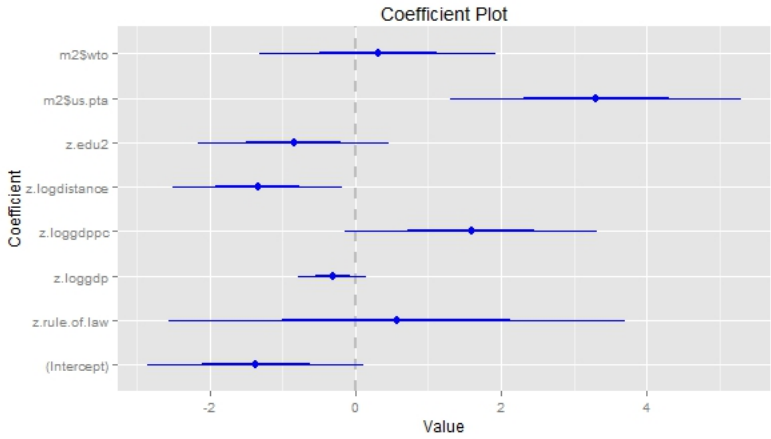
```
z.rule.of.law  -0.4373     1.6519  -0.265   0.7912
z.autocracy    -0.3573     0.1856  -1.925   0.0542 .
z.loggdp       -0.2513     0.2310  -1.088   0.2766
z.loggdppc      1.8002     0.8944   2.013   0.0441 *
z.logdistance  -1.5188     0.6043  -2.513   0.0120 *
z.edu2         -1.1163     0.6700  -1.666   0.0957 .
m2$us.pta       3.1334     0.9987   3.138   0.0017 **
m2$wto          0.0733     0.8600   0.085   0.9321
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> exp(logit$coefficients)
  (Intercept) z.rule.of.law   z.autocracy      z.loggdp    z.loggdppc
z.logdistance
    0.3109572     0.6457719     0.6995469     0.7778106     6.0510972
0.2189659
       z.edu2     m2$us.pta        m2$wto
    0.3274868    22.9530595     1.0760513
```

Model 2.2-B

```
Call:
glm(formula = m2$pta ~ z.rule.of.law + z.loggdp + z.loggdppc +
    z.logdistance + z.edu2 + m2$us.pta + m2$wto, family =
binomial("logit"),
    data = m2)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.6525  -0.7684  -0.5255   0.7622   2.0461

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)    -1.3686     0.7407  -1.848 0.064646 .
z.rule.of.law   0.5677     1.5654   0.363 0.716833
z.loggdp       -0.3104     0.2330  -1.332 0.182773
z.loggdppc      1.5864     0.8652   1.834 0.066708 .
z.logdistance  -1.3409     0.5772  -2.323 0.020185 *
z.edu2         -0.8460     0.6531  -1.295 0.195193
m2$us.pta       3.3011     0.9950   3.318 0.000907 ***
m2$wto          0.3105     0.8095   0.384 0.701240
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> exp(logit$coefficients)
  (Intercept) z.rule.of.law      z.loggdp    z.loggdppc z.logdistance
z.edu2
    0.2544607     1.7642844     0.7331863     4.8862150     0.2616187
0.4291233
    m2$us.pta        m2$wto
   27.1429544     1.3641671
```



Model 2.3-A

```
Call:
glm(formula = m2$pta ~ z.gov.eff + z.loggdp + z.loggdppc + z.logdistance +
    z.edu2 + m2$us.pta + m2$wto, family = binomial("logit"),
    data = m2)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.6336  -0.7432  -0.5190   0.7568   2.0864

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)    -1.3045     0.7357  -1.773 0.076192 .
z.gov.eff       1.1187     1.7014   0.657 0.510860
z.loggdp       -0.3203     0.2322  -1.380 0.167714
z.loggdppc      1.4409     0.8593   1.677 0.093587 .
z.logdistance  -1.3869     0.5866  -2.364 0.018057 *
z.edu2         -0.8799     0.6609  -1.331 0.183057
m2$us.pta       3.3011     0.9796   3.370 0.000752 ***
m2$wto          0.2356     0.8016   0.294 0.768784
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> exp(logit$coefficients)
  (Intercept)     z.gov.eff      z.loggdp    z.loggdppc z.logdistance
z.edu2
    0.2713051     3.0608148     0.7259210     4.2244083     0.2498553
0.4148057
    m2$us.pta        m2$wto
   27.1437549     1.2657157
```