# The Politics of Trade Agreement Design: Depth, Scope and Flexibility

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**Abstract**

Over the last twenty years, countries around the world have signed a large number of preferential trade agreements that differ strongly in their design, namely their depth, scope and flexibility. We contend that variation in the relative strength of the demands voiced by import-competitors and exporters explain this variation in the design of trade agreements. The balance of lobbying, in turn, is a function of the degree to which bilateral trade relations are shaped by intra-industry and intra-firm trade. Moreover, the strength of demands voiced is also partially endogenous to the design of an agreement, making the various design aspects interdependent. We test our arguments using an original database on the design of 357 trade agreements signed between 1990 and 2009. The paper contributes to the literatures on the rational design of international institutions, international cooperation and the political economy of international trade.

**Key Words**: rational design, trade agreements, flexibility, intra-industry trade, lobbying.

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# Introduction

International agreements strongly vary in their design. Committing to some agreements requires member states to make major changes to domestic policies, while other agreements are so shallow that member states only have to make minimal policy changes. Some agreements straddle several policy fields, while others focus on a single, narrow issue. Finally, some agreements are very rigid, leaving member states little scope to adjust to shocks and to accommodate changed preferences. Others, by contrast, exhibit a large degree of flexibility, for example through the inclusion of escape clauses. What explains this variation across international agreements in terms of depth, scope and degree of flexibility?

We concentrate on international cooperation in the field of economic policy, and in particular bilateral and regional trade agreements, in responding to this question. The last twenty years have seen a rapid increase in the number of such agreements. These preferential trade agreements (PTAs) are an attractive focus for our study as they are a worldwide phenomenon and as we observe large variation across agreements in terms of design. We explain this variation with reference to differences across countries in the relative strength of key societal constituencies. Import-competitors, if they are unable to block the entry into force of an agreement that liberalizes trade, prefer shallow, narrow and flexible agreements. Exporters, by contrast, benefit from improved and secure trade relations and thus back deep, broad and rigid agreements. With governments trying to maximize support and minimizing opposition to their policies, the design of an agreement then depends on the relative importance of lobbying by import-competitors and exporters.

The twist to our story is that we stress both *exogenous* and *endogenous* determinants of this balance of lobbying. On the one hand, the relative strength of the two constituencies is a function of the extent to which bilateral trade relations are shaped by intra-industry (IIT) and intra-firm trade (IFT). IIT and IFT reduce the number of potential losers from trade liberalization, increase the number of actors that potentially gain from open markets, and make it more difficult for import-competing sectors to mobilize and engage in lobbying. As the percentage of trade between two countries that is of an IIT or IFT nature increases, we thus expect exporter lobbying to become stronger relative to lobbying by import-competitors. Our first expectation hence is for agreements to increase in depth, scope and rigidity, the more trade relations between two countries are shaped by IIT and IFT.

On the other hand, we also propose that the relative strength of lobbying is partly endogenous to the design of an agreement. The deeper and broader an agreement, the stronger we expect import-competing lobbying to be, creating a situation in which governments have to choose between depth and breadth, on the one hand, and rigidity on the other. Our hunch is that they will opt for depth and breadth, as exporters can be expected to value depth and scope more highly than rigidity. Our second expectation therefore is that while the direct effect of IIT and IFT is to increase rigidity, their expected indirect effect (via depth and scope) is to decrease rigidity. Importantly, this second argument suggests that governments decide upon different aspects of the design of agreements, namely depth, scope and degree of flexibility, *simultaneously*.

We test these expectations on a novel database of 357 trade agreements signed between 1990 and 2009 (Baccini et al. 2011). These agreements vary widely with respect to depth, scope and flexibility. Since we expect governments to decide on depth, scope and flexibility at the same time, we use a simultaneous equation model to estimate these design aspects simultaneously. Relying on coarsened exact matching allows us to deal with the selection effect that arises in virtue of the decision of two countries to sign a trade agreement being endogenous to our explanation. The empirical results confirm our theoretical expectations. IIT and IFT increase the depth, scope and rigidity of PTAs. At the same time, the indirect effect of IIT and IFT via depth and scope is to increase flexibility.

Our results are of major importance to the literature on the design of international institutions (Koremenos et al., 2001). In particular, we show that different design features are clearly interdependent.[2] Treating an aspect of institutional design in isolation from other aspects seems problematic in view of this finding. Moreover, our study is one of only a few studies that assess the flexibility of international agreements (Koremenos et al., 2001: 1060; Rosendorff and Milner, 2001; Rosendorff, 2005; Kucik, 2011).[3]

[2]Haftel (2011) is one of the few who makes a similar point when relating the scope of agreements to variation in the institutionalization and design of dispute settlement mechanisms in twenty-eight regional economic organizations. Johns (2011) also relates depth and rigidity, but does not attempt to empirically test the argument.

[3]Hicks and Kim (2009) develop an indicator of flexibility for preferential trade agreements formed by 57 Asian countries. However, their focus is on the impact of flexibility on trade liberal-

The paper also makes a contribution to the literatures on trade and the political economy of PTAs (Mansfield et al., 2002; Chase, 2005; Baccini and Dür, 2012). In this regard, our results are suggestive of the role of societal interests in shaping preferential trade agreements in general, and their design in particular. Following recent studies in economics (Hausmann et al., 2005), we also provide further evidence that *what* a country trades matters for cooperation.[4] Specifically, by dampening adjustment costs, IIT and IFT allow countries to design not only more predictable agreements, but also agreements including provisions that go beyond what is regulated by the World Trade Organization (so called WTO-plus).

In the following sections, we first develop our argument (Section 1) and then discuss our approach to empirically testing the resulting theoretical expectations (Section 2). Sections three and four present the empirical findings and robustness checks.

# 1 Theory and Hypotheses

To develop our argument, we first discuss interest group preferences with respect to the design of PTAs and how these will translate into government policies. We then show how intra-industry and intra-firm trade influence the relative strength of different societal demands. Finally, we argue that governments take decisions on the depth, scope and flexibility of a PTA *simultaneously*.

## 1.1 Interest group demands and government preferences

Trade policy has major distributional consequences. PTAs, in particular, require countries to adjust their trade and trade-related policies toward each other. These adjustments benefit some groups, but harm some others. That is why interest groups are crucial determinants for understanding trade policy in general (Milner, 1988; Grossman and Helpman, 1995; Dür, 2010) and PTAs, in particular (Baldwin, 1993; Mansfield et al., 2007; Manger, 2009; Baccini and Dür, 2011).

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ization.

[4]Peterson and Thies (2011) and Manger (2011) also look at the relationship between IIT and trade agreements. However, both papers abstract from issues of the design of trade agreements.

We distinguish two major camps that try to influence trade policy-making: import-competitors and exporters. Import-competitors expect losses from an increase in imports and thus oppose trade liberalization, including the liberalization stemming from the formation of preferential trade agreements. Exporters, by contrast, gain from better foreign market access and hence support domestic trade liberalization that is linked to a reciprocal opening of other markets. Such reciprocal liberalization can be the result of both multilateral (within the World Trade Organization) and preferential trade negotiations. Exporters may prefer preferential to multilateral liberalization since the former improves their market access not only in absolute terms but also relative to competitors from countries excluded from a preferential trade agreement.

In implementing trade policies, governments that want to remain in office are sensitive to the preferences of politically mobilized interest groups (Rogowski, 1988; Milner, 1988; Gilligan, 1997; Chase 2005). Governments do not adhere to a "winner-takes-all" logic, however. Aiming to maximize the chances of staying in power, to the extent possible, they try to satisfy all sides in a policy debate, in this case import-competitors and exporters. They can do so by including or excluding certain provisions from trade agreements. Trading entities such as the European Union, Japan and South Korea protect their agricultural sectors when agreeing to free trade agreements. Similarly, the US insists on the inclusion of environmental chapters that benefit import-competitors in its trade agreements. Governments thus do not face a dichotomous choice between signing or not signing a PTA, but a choice among many options ranging from no agreement to a very deep, broad and rigid agreement, with agreements with varying degrees of depth, scope and flexibility in between.[5]

Depth refers to the extent to which an agreement liberalizes trade, for example, the average tariff cuts across all tariff lines or the number of services sectors opened to foreign competition. Scope relates to the number of trade and trade-related measures that are covered by an agreement. A narrow agreement only deals with tariffs on goods, whereas a broad agreement may contain provisions on trade in services, intellectual property rights, public procurement and foreign direct investments. Flexibility, finally, is a set of devices included in an agreement that allow states to anticipate or to respond to protectionist pressures or to adjust their

[5]Governments can also decide to equip an agreement with more or less enforcement capability (Haftel, 2011). We ignore this dimension here (but see the robustness checks) as we consider enforcement to be mainly a function of the depth of an agreement.

policies for other purposes without violating the terms of an agreement. A flexible agreement is one that permits the use of trade remedies with sufficient government discretion as to the establishment of injury and the choice of countervailing measures, and includes low triggers to use escape clauses.

The two trade policy constituencies distinguished above have opposite preferences on these three aspects of institutional design. First, exporters support deep agreements and import-competing interests shallow ones. The more liberalization, the better for exporters, as they can expect to gain market shares as their products gain competitiveness when exporting more cheaply to the foreign country. Second, exporters want broad and import-competitors narrow PTAs. A liberalization of procurement policies, for example, benefits exporters that are not able to bid for public contracts and hurts import-competing interests that now face greater foreign competition. Equally, exporters gain from the protection of intellectual property rights as this reduces competition from producers of counterfeited goods in the foreign market (whereas import competitors lose as they now find it more difficult to catch up in terms of know how and technology with their foreign competitors). Third, we expect exporters to support rigid agreements as they have a preference for trade stability, that is, little fluctuation over time (Mansfield and Reinhardt 2008; Kucik 2011). They thus ask for constraints on the use of safeguard measures, provisions that restrict the arbitrary application of national trade remedy laws and rules that address subsidies that negatively affect the market position of exporters. Import-competing interests, by contrast, will take the opposite stance. An agreement that has few strings attached to the imposition of antidumping and countervailing duties makes it possible for import competitors to ask for targeted and temporal protection at the same time as other sectors are liberalized. Equally, escape clauses that allow for the suspension of certain steps towards trade liberalization and long transition periods for tariff cuts can appease the concerns of import-competitors.

Illustratively, in the negotiations for the Korea-US free trade agreement, which was signed in June 2007 and is expected to enter into force in 2012, exporters and import-competitors fought over the design of the agreement. In the U.S., exporter associations demanded a deep agreement that is "comprehensive in scope".[6] Ko-

[6]For example, Statement of Tami Overby, President and Chief Executive Officer, American Chamber of Commerce in Korea, on behalf of the U.S. Chamber of Commerce, the U.S.-Korea Business Council, and the U.S.-Korea FTA Business Coalition, Hearing Before the Subcommittee on Trade of the Committee on Ways and Means, U.S. House of Representatives, 110th Congress,

rean exporters that had been the targets of a large number of US antidumping and countervailing duty cases defended a rigid agreement. At the same time, US import-competing interests from sectors such as agriculture, furniture and steel, organized in form of the Committee to Support U.S. Trade Laws, adamantly pushed for flexibility provisions in the agreement. They even opposed limited US concessions with respect to U.S. antidumping procedures.[7]

We assume that governments decide upon the scope, depth and flexibility of an agreement with the aim of maximizing support and minimizing opposition from societal interests. This assumption seems plausible as governments depend on business support for re-election and the formulation and implementation of policies (for example, Hall and Deardorff 2006; Wright 1996). In a re-election effort (or the efforts of an autocratic government to stay in power), supportive business can provide campaign financing or invest resources in influencing public opinion. With respect to the formulation and implementation of policies, supportive business actors can be expected to offer information on technical and political feasibility that is important for the viability of a proposal.

Governments' preferences concerning the design of PTAs thus depend on the exact constellation of societal interests. Given the previous discussion, the probability of a government pursuing a deep, broad and rigid agreement can be expected to be larger, the stronger exporter interests are relative to import-competing interests. By contrast, if import-competing lobbying dominates over exporter lobbying, a government will either fail to sign a trade agreement or conclude a shallow, narrow and flexible agreement. The negotiations for an agreement between the EU and MERCOSUR, for example, have been stalled for several years owing to strong import-competing lobbying and weak backing from European exporters and multinational companies.

What we have not yet tackled is the question of how government preferences translate into negotiated trade agreements. Our intuition here is that trade agreements will only be signed if all parties defend similar interests. If there are differences, the country with the preferences closest to the status quo can be expected to have most bargaining power. Since trade negotiations are always about moving from a no-agreement situation to a situation with an agreement, or from a

1st Session, March 20, 2007.

[7]Committee to Support U.S. Trade Laws, Letter to Ambassador Kirk, February 2, 2011.

less far-reaching to a more far-reaching agreement, in general the country in which import-competitors are strongest will thus determine the final outcome. Since we mainly concentrate our analysis on intra-industry and intra-firm trade (see below), which have the same effect on both sides, this is of subordinate importance to our study.

## 1.2 Intra-industry and intra-firm trade and interest group demands

What determines the strength of the lobbying effort by the various groups? We argue that an important determinant of the balance of interests is the extent to which bilateral trade relations are shaped by intra-industry and intra-firm trade. IIT measures the extent to which country A exports to and imports from country B the same goods and services. The so-called new trade theory explains such trade as a result of product differentiation motivated by consumers' taste for variety and economies of scale (Krugman, 1981; Helpman, 1981). Economies of scale make convenient that each brand of good is produced by only one firm. Because of economies of scale, new companies entering into the market decide to produce new brands rather than to compete with incumbent industries on an existing brand. In addition, economies of scale limit the variety of goods produced domestically and so trade creates variety gains. According to Milner (1999), IIT accounts for between 55 percent and 75 percent of global trade.

IFT captures flows of goods and services across borders within the same firm, that is, between a parent company and its affiliates or among affiliates of the same parent company. It is the result of the development of regional or global production chains. Firms locate different steps of the production process in different countries, depending on local trade and production costs, and then trade goods and services within the same company. IFT represents up to a third of the exports of member countries of the Organization for Economic Cooperation and Development (Lanz and Miroudot, 2011). The levels of IIT and IFT are highly correlated because IFT tends to lead to high values of vertical IIT.[8]

[8]Vertical IIT is defined as trade in similar goods produced by the same industry, but differentiated by the unit value of the goods.

Importantly, IIT and IFT influence the balance of demands addressed to decision-makers by both reducing protectionist pressures and increasing demands for greater trade openness. With high IIT, trade partners do not specialize and companies are less likely to be driven out of business by other companies with comparative advantage for a given good. Because consumers like variety and because goods have different brands, demand in open markets can support all existing companies. Put differently, consumers' tastes act as a barrier that allows all the companies to remain in the market. With high IFT, imports no longer threaten import-competing companies, but are necessary inputs for production processes.

In fact, rather than stimulating protectionist pressures, IIT and IFT actually increase the number of actors with an interest in open foreign markets. Under conditions of inter-industry trade, only sectors with a comparative advantage export goods and services to a foreign country. By contrast, with IIT potentially all sectors export and import goods and services and IFT has the same effect at the firm level. Firms thus become dependent on trade openness.

The changes in firm preferences also have an effect on interest aggregation within a given industry. As IIT increases in a sector, an increasing number of firms will have ambiguous trade preferences. The resulting divergence in views as to the amount and intensity of lobbying will hamper sector lobbying. The position of the European automobile industry in the negotiations between the EU and South Korea is illustrative of this point. The European luxury car sector had export interests while the producers of small and medium-sized cars feared competition from South Korea. These diverging interests made it difficult for the European car industry to take a common stance. Intra-firm trade that resulted from joint ventures such as Renault Samsung Motors further contributed to the automobile industry's problem of finding a common position.

Evidence that IIT and IFT change the balance of demands addressed to decision-makers abounds. For instance, several authors contend that north-north integration has been eased by the increase of IIT over the past 60 years (Balassa, 1966; Adler, 1969; Hufbauer and Chila, 1974; Aquino, 1978; Lipson, 1982; Gowa and Mansfield, 2004). In addition, Gawande and Hansen (1999) claim that EU-US trade relations are less problematic than the US-Japan ones because the amount of IIT is considerably larger between the former trading partners than between the latter. Alt et al. (1996) develop a similar argument to explain the unproblematic US-Canada trade

relations versus the problematic US-Mexico trade relations.[9] Similarly, it has been shown that trade liberalization is easier in the presence of IFT (for example, Lipson, 1982: 421; Blanchard, 2007).

At this stage it is worth considering two counter-arguments to our line of reasoning. First, not everyone gains from IIT and IFT. As Krugman (1981) argues, workers employed in sectors that produce "scarce factor" goods will suffer wage reductions under conditions of IIT. This salary cut might not be always mitigated by variety gains. However, as IIT grows, the negative effect on wages declines and the positive effect on variety gains increases (Kono, 2009: 899). Moreover, our argument does not depend on the complete absence of any losers. The key element for us is that IIT and IFT reduce the costs of trade *relative* to inter-industry trade.

Second, Gilligan (1997) argues that since a tariff on a brand protects only monopolistic producers, product differentiation may imply a greater demand for protectionism than trade in homogeneous goods. While he concedes that IIT has smaller distributional consequences than inter-industry trade, the fact that the collective action problems faced by monopolistic producers are smaller than those faced by producers of homogeneous products may offset this factor. At the product level Gilligan's claim indeed seems valid. What allows us to maintain our argument about intra-industry trade and lower relative protectionist demands is that not only import-competitors but also exporters face smaller collective action problems. Moreover, the smaller collective action problems should mainly apply to measures that only affect a specific good or sector, but not to the question of the design of a trade agreement that affects many sectors.

In sum, IIT and IFT strengthen demands for open markets relative to demands for protectionism. With more IIT and IFT, there should be less opposition to trade liberalization in general, and the formation of trade agreements, in particular. Once a PTA is planned, domestic producers have less incentive to lobby for shallow, narrow and flexible PTAs. We hence expect *intra-industry and intra-firm trade to be*

[9]The empirical economic literature suggesting that IIT decreases the probability of protectionism is extensive. Among others, see Sazanami (1984), Marvel and Ray (1987), Ray (1991), and Greenaway and Milner (1986). Using industry level data, a few articles find evidence against the "easier adjustment hypothesis" related to IIT, raising doubts about the validity of the factor homogeneity assumption within industries (Finger, 1975; Rayment, 1976; Lundberg and Hansson, 1986).

*associated with PTAs that are deep, broad and rigid* (Hypothesis 1). Since there is variation across dyads in the degree to which trade is of an IIT and IFT character, we expect variation in the design of PTAs signed by different dyads.

## 1.3 Endogenous determinants of PTA design

So far, we have only analyzed the exogenous determinants of the relative importance of import-competing and exporting interests. There is also an endogenous component to this, however. Plans for deeper and broader agreements should engender more lobbying by import-competing interests than plans for narrower and shallower agreements. The more far-reaching an agreement is, the greater the threat to import-competitors, and thus the greater the incentive for them to engage in lobbying. Sectors that may be unaffected by a narrow agreement are pulled into the political battle as plans for a broad agreement are unveiled.

We therefore expect that as governments face exporter pressure for a broader and deeper agreement, they will be confronted with increasingly loud demands for flexibility from import-competitors. Governments that are unwilling to override the protectionist pressures then face a trade-off: should they offer exporters a shallow, narrow but rigid agreement, or a deep, broad and flexible one? In general, we expect exporters to prefer a flexible agreement to a shallow and narrow one, even though increased flexibility is costly for them. It seems plausible that for exporters depth is the most important aspect of a trade agreement; without depth no liberalization and thus no concern about flexibility. Greater scope and depth should therefore be associated with more flexibility, controlling for other factors that have an impact on the relative balance of lobbying in a country. While the *expected direct effect of intra-industry and intra-firm trade on flexibility thus is negative, the expected indirect effect via depth and scope is positive* (Hypothesis 2).

An example illustrates this mechanism: when eleven Caribbean countries signed the Caribbean Free Trade Area in 1965, they designed a narrow and rather shallow agreement that only covered trade in goods (the aim of liberalizing trade in services was mentioned in the agreement, but without asking member states to take concrete steps). The agreement can be considered rather rigid, as it asked member states to consider the rules of the international trading system when imposing antidumping duties and only included a limited number of escape clauses. A few

years later, when the Caribbean states decided to create the Caribbean Community, a broader and deeper agreement, they also made the agreement more flexible by adding a provision explicitly allowing the imposition of antidumping duties. The revised agreement from 2001, which was broader still, includes an additional escape clause to even further increase the agreement's flexibility.

Another illustration is offered by the EU-South Korea trade agreement that was ratified in 2011. Associations representing exporter interests such as the Confederation of British Industry and the European Dairy Association supported a broad, deep and rigid agreement. Illustratively, Businesseurope, a trade association that mainly represented exporter and MNC interests, demanded "an ambitious EU-Korea FTA covering goods, investments, services, and trade rules" (Businesseurope, 2007). To reduce flexibility, it asked for the negotiations to tackle Korean "anti-competitive" practices such as subsidies and "favourable tax treatments". Given this pressure for a deep, broad and rigid agreement, sectors such as the consumer electronics technology and the car industries feared significant losses and lobbied for greater flexibility in the agreement. In particular, the car industry demanded a special bilateral safeguard duty (escape clause) in the event of sudden surges in car imports (Elsig and Dupont, 2011). The outcome was a broad and deep agreement that also included provisions aimed at ensuring flexibility in response to import-competitors' demands.

# 2 Research Design

In carrying out the empirical analysis, we rely on an original dataset on the scope of 357 PTAs signed between 1990 and 2009. We have coded agreements for a total of ten broad sectors of cooperation, encompassing market access, services, investments, intellectual property rights, competition, public procurement, standards, trade remedies, non-trade issues, and dispute settlement. For each of these sectors, we have coded a significant number of items, meaning that we have about 100 data points for each agreement. The coding has been carried out manually, with the results cross-checked against existing databases that partially overlap with ours. To the best of our knowledge, our study constitutes the most extensive and detailed analysis on the rational design of international institutions to date. We explain our research design in detail below.

## 2.1 Econometric Strategy

Our unit of observation consists of undirected dyads (for models that include IIT) and directed dyads (for models that include our proxy for IFT) involving the 156 trading enmities for which we were able to obtain data.[10] We consider the EU as a single actor, since in the EU trade policy authority is pooled at the supranational level. This means that, for instance, Germany cannot form a PTA with Egypt unless the European Commission negotiates an agreement with that country on behalf of all member states of the EU. The analysis covers the design of 357 PTAs signed from 1990 to 2009. A quarter of the dyads form more than one PTA; 90 PTAs are not the first PTA signed by a dyad. In these cases we analyze not only the first PTA, but also all subsequent agreements.

The empirical estimation presents a major challenge. Our theory explicitly states that the depth, scope and flexibility of a PTA affect each other simultaneously. Empirically, we need to model this theoretical insight with three equations in which depth, scope and flexibility of a PTA appear alternatively on the left hand-side and on the right hand-side. Put differently, each endogenous regressor, i.e. depth, scope and flexibility is the dependent variable from the other equation in the system. Ordinary Least Squares regression (OLS) cannot be used to estimate these models, because the relationship specified by the equations violates the OLS assumption of zero covariance between the disturbance term and the independent variables. Indeed, errors are clearly correlated. Estimation of such models via OLS will lead to biased and inconsistent estimates of the coefficients.

To overcome these problems, we implement a simultaneous equation model (SEM) estimation.[11] In doing so, the three equations have contemporaneous cross-equation error correlation, i.e. the error terms in the regression equations are correlated. In other words, SEM allows us to estimate the reduced-form equations that result from substituting the expression for each component of the design into the other two components. We use robust standard errors. More formally, we estimate the following models:

[10] Trading entities reduces to 141 after the last EU enlargement.

[11] We estimate this model in Stata 12 using the method of full information maximum likelihood (FIML).

$$Depth_{ij} = \alpha_1 + \beta_1 FDI/IIT_{ij} + \beta_2 Flex_{ij} + \beta_3 Scope_{ij} + \beta_4 X_{ij} + \beta_5 Z_{1,ij} + \epsilon_1. \quad (1)$$

$$Scope_{ij} = \alpha_2 + \beta_6 FDI/IIT_{ij} + \beta_7 Depth_{ij} + \beta_8 Flex_{ij} + \beta_9 X_{ij} + \beta_{10} Z_{2,ij} + \epsilon_2. \quad (2)$$

$$Flex_{ij} = \alpha_3 + \beta_{11} FDI/IIT_{ij} + \beta_{12} Depth_{ij} + \beta_{13} Scope_{ij} + \beta_{14} X_{ij} + \beta_{15} Z_{3,ij} + \epsilon_3. \quad (3)$$

where *Depth*, *Scope* and *Flexibility* are dependent variables in one equation each as well as the main independent variables in the other two equations. FDI and IIT are the main explanatory variables. $X_{ij}$ are vectors of control variables, $Z_{1,ij}$, $Z_{2,ij}$, and $Z_{3,ij}$ are instruments, $\beta_1$, $\beta_2$, ..., $\beta_{12}$ are the coefficients, $\alpha_1$, $\alpha_2$, and $\alpha_3$ are constants, and $\epsilon_1$, $\epsilon_2$ and $\epsilon_3$ are the error terms. Below we discuss dependent variables, main explanatory variables, and control variables in detail.

## 2.2 Dependent Variables

In our models, we have three dependent variables: *Depth*, *Scope*, and *Flexibility*. Depth refers to the amount of liberalization achieved by an agreement. It is conceptually independent from scope, as an agreement can be broad (it covers many policy instruments) but shallow (the commitments entered into by governments for each of these instruments are not very far-reaching). We use exploratory factor analysis on a total of 52 variables that we coded for each agreement (covering such aspects as services liberalization, trade-related investment measures, intellectual property rights and standards) to arrive at a measure of depth. Factor analysis is the appropriate method in this case, as many of the items that we coded are highly correlated with each other. Moreover, not all items seem to be of equal importance in establishing the extent of countries' commitments. Simply creating an additive score thus would not be appropriate.

We implemented factor analysis as follows. First, we convert the seven categorical variables that we included in the operationalization of depth into dummies.[12]

[12]For instance, the categorical variable Investment Coverage was converted into four dummies:

Second, we extracted two factors from the items and used oblique rotation to ensure high factor loadings.[13] The choice of extracting two factors is ultimately discretionary. However, the rule of thumb is to check the plot of score variables to detect the number of factors (Costello and Osborne, 2005). Figure 1 shows that two factors appear to be a sensible choice. Third, we use the first of the two factors that we extract as a measure of depth, as it is highly correlated with a simple additive score across the variables that we used in the factor analysis ($CoarseDepth$).[14] Finally, the factor scores that we use as measure of depth are calculated using the regression method. Put simply, we multiply each factor loading with its respective item and we take the sum of all these products. We label this variable $Depth$.

Figure 1 About Here

To assess whether our operationalization of depth make sense, we compare the measure of depth that we obtain using factor analysis with the variable $CoarseDepth$. Figure 2 shows that the correlation is quite high ($\rho = 0.9$), confirming that our operationalization is a refinement of $CoarseDepth$ without being a completely different variable. Next to a graph with all the PTAs (on the right side) we show a graph (on the left side) with only those PTAs that have high values for both indicators of depth. This should simplify the reading of the graph. Moreover, the correlation between $Depth$ and $Scope$ is 0.5. Thus, although these two variables are (not surprisingly) highly correlated, they seem to capture two different dimensions of the design of PTAs. Figure 3 shows this relationship for PTAs formed between 1990 and 1994 and between 2005 and 2009.

Figure 2 About Here

Figure 3 About Here

general statement on investment protection (one if present), investment protection based on BIT (one if present), investment protection in the services chapter (one if present), and separate chapter for investment (one if present).

[13]We drop those items that have a low correlation, i.e. between $-0.3$ and $+0.3$. By using oblique rotation we assume that the angle between the two factors is not rectangular. This makes sense since depth and scope are not exogenous, as we show in this paper.

[14]We obtain similar results if we exclude five items with a high value (that is, higher than 0.7) on "uniqueness" in the factor loadings table (Kim and Mueller, 1978).

Moving from depth to scope, we define an agreement's scope as the number of policy instruments that are covered by the agreement. A narrow agreement only tackles tariffs, whereas broad agreements also cover services, investments and other issues. We use a measure that ranges from agreements that only deal with tariffs to agreements that also include provisions on services, investments, intellectual property rights, public procurement, technical barriers to trade, and sanitary and phytosanitary measures (*Scope*).

We use two measures to capture the flexibility of an agreement. The first measure (*Flexibility*) captures the degree to which an agreement allows governments to react to domestic policy pressures after the implementation of an agreement. We establish an index based on three components. The first component includes so-called classical escape instruments that enable governments to temporarily suspend some of their obligations. These escape clauses comprise safeguard measures, structural adjustment programmes, and balance of payments provisions. The degree of flexibility is measured by counting the absolute number of escape clauses.

The second component includes anti-dumping provisions. The more countries are restricted in their use of the anti-dumping instrument, the lower the degree of flexibility of an agreement. Agreements with low flexibility prohibit the imposition of anti-dumping duties. Reference to the WTO agreement on antidumping is an additional provision which controls for the arbitrary use of this trade remedy instrument. Agreements that do not restrict countries' use of anti-dumping duties score high on flexibility.

The third component of this index focuses on the use of subsidies (domestic support and export subsidies) which is a policy instrument that allows states to directly compensate import-competing groups and support exporters. We capture flexibility with a dichotomous variable which scores 0 if states allow the use of subsidies (high flexibility) and 1 if agreements foresee the banning of certain types of subsidies (low flexibility). We combine these three components in a single measure that we normalize so that it ranges from 0 (no flexibility) to 1 (full flexibility).

A second flexibility measure (*Tariff Flexibility*) we use relates to the speed of tariff liberalization in market access. The longer the transition period, the more flexibility exists for import-competing groups to adjust to increased competition. Phase out periods for tariff liberalization range between 0 years (all tariffs are lib-

eralized at the date of entry into force of an agreement) and 20 years (usually for a selected number of sensitive products). We coded the maximum length of the transition period to capture the degree of flexibility granted. We take the natural log of this variable to make it approximately normally distributed.

Below we plot the variables *Depth* and *Tariff Flexibility* for all the bilateral PTAs signed since 1990 (Figure 4). The relationship between these two variables is positive as expected based on the theory. As PTAs become deep, they produce high adjustment costs for import-competing industries. These industries have to be bought of with flexibility in the implementation of tariff cuts. Interestingly, but not surprisingly, North-South PTAs, e.g. PTAs between the U.S. and developing countries, have both high depth and high flexibility, i.e. a long phase-out period.

Figure 4 About Here

## 2.3 Main Explanatory Variables

Our first independent variable captures the degree to which exports and imports take place in the same sector. To measure this variable, we rely on commodity-level dyadic trade data from COMTRADE at the 2-digit level according to the Standard International Trade Classification (SITC).[15] We replace missing values of imports and exports with 0 before calculating the Grubel-Lloyd (1971) measure for each commodity with the following equation:

$$GL^{ij} = 1 - \left[ \frac{\sum_g |X_g^{ij} - M_g^{ij}|}{\sum_g (X_g^{ij} + M_g^{ij})} \right] \tag{4}$$

where X and M are respectively exports and imports from country $i$ to country $j$ and $g$ is the commodity. GL is equal to zero in the absence of intra-industry trade and to one in the absence of inter-industry trade. Thus, if the bilateral GL index is relatively large for a set of trade flow data, it can be inferred that a relatively large proportion of bilateral trade in this data set is associated with two-way trade in differentiated products. We label this variable $IIT$.

Using the Grubel and Lloyd index to measure IIT ensures that our operationalization of IIT is as close as possible to the new trade theory, which constitutes the

[15] Data can be downloaded at *http* : *//comtrade.un.org/db/*.

basis of our theoretical framework. Indeed, Krugman (1981) employs this index to calculate the welfare effects of trade. As such, the theoretical relationship between this indicator and adjustment costs is straightforward. Moreover, in political science this index is the most popular measure of IIT (see, for example, Kono, 2009). Nevertheless, measuring IIT is not uncontroversial. Famously any indicators are sensitive to different levels of disaggregation. Therefore we use the index developed by Bergstrand (1983), who adapts the Grubel and Lloyd indicator, as an alternative way of capturing IIT. In addition, we drop missing values instead of treating them as zeros.

Our second independent variable captures the amount of IFT between two countries. Since no good data on intra-firm trade for a large number of countries are available, we rely on bilateral stocks of foreign direct investments (FDI) to approximate the concept ($FDI$). Intra-firm trade requires foreign investments; and while not all foreign investments lead to IFT, FDI should highly correlate with IFT.[16] The data that we use are from UNCTAD. Since these data have many missing values, we use the values for FDI inward stocks from B in A as values of the outward stocks of B to A. Missing data are assumed to be 0. Finally, as mentioned above, since bilateral FDI is a monadic variable, i.e. $FDI_{ab} \neq FDI_{ba}$, we use directed dyads in the models that include this covariate.[17]

## 2.4 Control Variables

We add several control variables to take into account confounding factors. For monadic variables, we always take the smaller value between the two countries in a dyad. Table 1 summarizes the descriptive statistics for all of these variables. Regarding economic variables, we add GDP per capita ($GDPpc$) and total GDP ($GDP$) to capture the income level and economic importance of a country. Larger and richer countries might be able to negotiate a higher degree of flexibility compared to poorer or smaller countries. Moreover, we include economic growth ($GDP\ Growth$) to capture whether a country is risk-adverse, which is claimed to be an important variable in explaining flexibility (Koremenos, 2005). Specifically, countries that experience low economic growth are supposed to be more risk-acceptant than countries that

[16] To avoid a multicollinearity problem we include IIT and FDI separately in our models.

[17] Our results are not sensitive to this choice, i.e. an analysis with indirected dyads produces similar findings.

experience an economic upturn.[18] Finally, we add $Trade$, which is the log of the value of exports between the two countries in the dyad. For instance, the amount of trade is expected to influence the number of anti-dumping clauses, which are a component of our operationalization of flexibility.[19]

Regarding political variables, we include a democracy score ($Regime$), which comes from Cheibub et al. (2010).[20]. Our expectation is that democracies should make more rigid commitments than autocracies. Moreover, we add a variable that captures if a country has undergone a transition from autocracy to democracy ($Democratization$). This variable scores one if a country has become a democracy over the past five years using Polity IV as indicator. The sign of this variable is difficult to predict. On the one hand, democratizing countries might bargain more rigid agreements to enhance their credibility in the international system. On the other hand, democratizing countries might require more flexibility since they face high levels of uncertainty about future states of the world. Furthermore, we include the number of $VetoPlayers$ from Heinisz (2000). As the number of veto players increases, so does the opposition to PTAs (Mansfield et al., 2007; Peterson and Thies, 2011). Thus, countries are expected to bargain PTAs with a high degree of flexibility.

Furthermore, we include a measure of geographic distance ($Distance$), for two reasons. On the one hand, distance captures the commercial and strategic salience of a country for the other country in the dyad. On the other hand, monitoring is easier for countries that are close to another compared to countries that are far away. We also add a dummy that scores one if a country is a WTO member ($WTO$). Indeed, WTO member countries have *ad hoc* flexibility provisions upon which they can rely. In addition, WTO members tend to implement trade policies that differ from countries that are not part of this international organization (Mansfield and Reinhardt, 2003). Moreover, we include the flexibility, depth, and scope of an agreement (if any) that was previously negotiated by the dyad. Furthermore, the number of member countries of a PTA ($No.Members$) is another control variable.

[18]The argument is that leaders who anticipate losing office due to an economic downturn are more likely to implement adventurous policies. Koremenos (2005) uses a different operationalization of risk-aversion, distinguishing between mid-growth and low-high growth. As robustness check, we also try her specification obtaining similar results.

[19]The correlation between $Trade$ and $IIT$ is .4.

[20]Results do not change if we use other measures of regime such as Freedom House and Polity IV.

Finally, we include variables capturing the level of flexibility, depth, and scope of PTAs formed by direct competitors. We operationalize competition as a function of PTA type (for which we distinguish three types, namely bilateral, plurilateral among countries from the same region and plurilateral among countries from different regions) and level of development (namely, North-North, North-South and South-South). Concretely, these variables capture the idea that in reacting to PTAs previously signed countries care especially about agreements signed by competitors (usually neighboring countries) and about far-reaching agreements (being north-south PTAs usually more far-reaching than south-south PTAs). More generally, the depth, scope and flexibility competition variables (labeled as *DepthDiffusion*, *ScopeDiffusion*, *FlexibilityDiffusion* and *Tariff FlexDiffusion*) control for the fact that the formation and design of a PTA has an impact on the formation and design of other PTAs (Baccini and Dür, 2012). Table 1 summarizes the descriptive statistics of the dependent and independent variables.

Table 1 About Here

Since each of these variables appear in only one of the three equations (e.g. *DepthDiffusion* in *Depth*), they allow for the model to be identified. Each of these instruments is a strong predictor of the respective dependent variable. Specifically, the correlation between *Flexibility* and *FlexibilityDiffusion* is 0.67, the correlation between *Tariff Flexibility* and *Tariff FlexDiffusion* is 0.75, the correlation between *Depth* and *DepthDiffusion* is 0.53, and the correlation between *Scope* and *ScopeDiffusion* is 0.90. Conversely, each of these instruments is weakly correlated with the other two dependent variables in which it is not included. For instance, correlation between *Depth* and *Tariff FlexDiffusion* is 0. Finally, each of these instruments is weakly correlated with the error term of the other two dependent variables. For instance, *Depth* and *Tariff FlexDiffusion* is 0.1.[21]

That said, we cannot completely rule out the possibility that any of these instruments is correlated with another dependent variable because our paper makes an argument about the endogenous design of PTAs. However, we contend that the causal chain would be so indirect that we can be confident that the exclusion restriction holds across our models. Moreover, interviews with policy-makers and

[21]Relevant tests show that (1) models are not under-identified; (2) models are not weakly identified; (3) our instruments are not weak, i.e. the orthogonality conditions are valid.

negotiators highlight that in bargaining the depth of a PTA countries are often concerned about the depth of other PTAs formed by competitors and/or neighboring countries, but rarely take into account other dimensions of these competing PTAs, e.g. their degree of flexibility.[22]

# 3 Baseline Analysis

We start by presenting the results for the baseline analysis. In the next section we will implement further analyses to take into account issues related to the correct identification of our models. Tables 2, 3, 4, and 5 show the results of the baseline model respectively without and with region fixed effects. The findings support our hypotheses.

Tables 2, 3, 4 and 5 About Here

Regarding *Depth* as dependent variable, $IIT$ has the expected positive sign in every estimation, although it is statistically significant (at least) at the 90 percent level only in models with *Tariff Flexibility*. Moreover, and importantly, *Flexibility* and *Tariff Flexibility* always have a positive (and statistically significant) effect on the probability of designing deep PTAs. This finding is in line with the predictions of John's (2011) formal model. Finally, we find a positive and statistically significant impact of *Depth* on *Scope*. This result makes sense and adds plausibility to our operationalization of these two variables.

Regarding the effect of IIT on flexibility, the variable $IIT$ has the expected negative sign for both the variables *Flexibility* and *Tariff Flexibility* and is statistically significant (at least) at the 95 percent level. The coefficient for $FDI$ has a negative sign for both *Flexibility* and *Tariff Flexibility*, but it is statistically significant at the conventional level only in the former model. Moreover, *Depth* has a positive and statistically significant (at least at the 95 percent level) impact on both *Flexibility* and *Tariff Flexibility*. Finally, regarding the impact of *Scope* on flexibility, results are not in line with our expectations. Indeed this variable has a negative effect on both *Flexibility* and *Tariff Flexibility*, though it is not always statistically significant. Below we will get back to this result to offer possible explanations.

[22]Interviews carried out by the authors in December 2011 and in January 2012.

Finally, the dependent variable *Scope* produces problematic results. Only *Flexibility* and *Tariff Flexibility* have the expected positive sign and are statistically significant at the conventional levels. By contrast, both $IIT$ and $FDI$ have a negative sign and are not statistically significant. Moreover, *Depth* has a positive impact on *Scope* as expected, but this effect is not statistically significant. These findings seem to indicate that between depth and scope, exporters tend to prefer and prioritize the former component of the design of PTAs. Since PTAs that regulate several sectors without including strict and detailed provisions are likely to be toothless, this result does not come as a surprise.

The large majority of the control variables have the expected sign when they are statistically significant. A comparison with previous studies is difficult since we are the first ones to analyze different dimensions of the design of such a large set of PTAs. Nevertheless, for the equations explaining flexibility a good point of reference for us is Kucik's (2011) paper. In fact, our results for the control variables in these models are very similar to those presented in that paper. This is very encouraging since both our study and Kucik's one rely on the manual coding of a large number of PTAs. Therefore, if they are present, errors in the manual coding seem randomly distributed at least for the flexibility indicators. Finally, results on the covariance of the errors lead us to reject the hypothesis that the three equations are independent from each other. Indeed, the coefficients in the error covariance matrix are statistically significant.[23] This suggests that in explaining the design of a PTA, the results from models that fail to simultaneously estimate different dimensions of a treaty may be biased.

## 3.1 Direct Effects vs. Indirect Effects

The results of the baseline analysis thus support our argument. However, since we deal with several variables, which are both dependent and independent variables at the same time, we need to explore the indirect effect of these variables to assess our hypotheses. Specifically, the indirect effect of a variable $x$ on the endogenous variable $y$ is produced by all the variables simultaneously estimated in $x$ and $y$ (excluding the direct effect of $x$ on $y$).[24] For instance, according to our theory and

[23]Stability analysis shows that all the eigenvalues lie inside the unit circle, i.e. SEM satisfies the stability conditions.

[24]The direct effect of a variable $x$ on an endogenous variable $y$ is the change in $y$ attributable to a unit change in $x$, conditional on all other variables in the equation. The direct effect ignores

our estimations, IIT has a direct (negative) effect on *Flexibility* and an indirect (positive) effect on *Flexibility* through *Depth*. The total effect is the direct effect plus the indirect effect.

We report the results of the indirect effects of the main variables in Tables 6 and 7. In discussing the indirect effects, we focus on the impact of $IIT$ and $FDI$ on *Flexibility*, *Tariff Flexibility*, and *Depth*. In particular, $IIT$ and $FDI$ have a positive indirect effect on *Flexibility* and *Tariff Flexibility*, though only $FDI$ is statistically significant at the conventional level. This backs our hypothesis that as IIT and IFT increases, so does the strength of exporters that lobby for deeper agreements. However, these agreements need to be flexible to afford such increasing levels of depth. That is where the positive indirect effect of $FDI$, and to a lesser extent of $IIT$, on flexibility comes from.

Tables 6 and 7 About Here

The indirect effect of $IIT$ and $FDI$ on *Depth* tells a similar but somewhat complementary story. In particular, as $IIT$ and $FDI$ increases, exporters are able to lobby for rigid PTAs since their redistributive impact is smaller than with a high level of inter-industry trade. However, if PTAs become rigid, they also need to be shallow so that cooperation can be sustainable in the long run. As such, the indirect effect of $IIT$ and $FDI$ on *Depth* is negative. It may seem surprising that $IIT$ does not have a statistically significant positive indirect effect on flexibility, whereas $IIT$ has a a statistically significant negative indirect effect on depth. The fact that governments prefer rigidity over depth deserves further investigation.

Table 8 lists PTAs among countries with a high level of IIT that have low flexibility and low depth on the one hand and high flexibility and high depth on the other. We define *high* values as those that belong to the top $90^{th}$ percentile and *low* values as those that belong to the bottom $10^{th}$ percentile. The list shows, first, that with the exception of Estonia and Norway, all the PTAs that show a preference for rigidity over depth are among southern countries. By contrast, the dyads that prefer depth over flexibility usually comprise a northern and a southern country. Second, dyads including the US have a particularly high probability to choose depth over rigidity. This might be explained by the fact that a large country finds it easier to

any simultaneous effects, i.e. coefficients shown in the tables above.

enforce an agreement even in the presence of high flexibility. Third, the rigid and shallow PTAs are usually among democratizing countries (e.g. the Central European Free Trade Agreement) or new nation states (e.g. former Soviet countries that are members of the Common Economic Zone). The rigidity of PTAs can also be explained by the lack of previous cooperation.[25]

More importantly, several of the PTAs with low flexibility and low depth are plurilateral, i.e. among at least three countries (marked with †). Indeed if we drop the plurilateral PTAs, the indirect effect of $IIT$ on flexibility becomes statistically significant (and remains positive). By inflating the number of dyads, member countries of plurilateral PTAs, which are not independent observations, are responsible for the fact that the positive indirect effect of IIT on flexibility is not statistically significant at the conventional levels.[26]

Tables 8 About Here

## 3.2 Substantive Effects

Both the direct and indirect effects offer considerable support for our hypotheses. In Tables 9 and 10, we summarize the magnitude of the substantive effects of our key variables.[27] Specifically, we report the total effect on the dependent variables of moving from the minimum to the maximum value of the main explanatory variables. The total effect of a variable $x$ is the change in an endogenous variable $y$ attributable to a unit change in $x$ after accounting for all the simultaneity in the system. In other words, the total effects are the coefficients in the reduced form specification.

Tables 9 and 10 About Here

[25] An explanation that we cannot rule out is that for rigid and shallow PTAs rigidity is only "on paper" or *de jure*. If this is the case, these PTAs would be contracts that simply include shallow commitments and produce limited liberalization.

[26] In the robustness checks we make sure that our main results hold by dropping plurilateral PTAs.

[27] For the sake of conciseness, we show only the values of variables that are statistically significant and whose results are in line with out theory.

Tables 9 and 10 show that the substantive effect of our main variables is large. Indeed it should be noted that the range of *Flexibility* and *Scope* is between zero and one, the maximum value of *Tariff Flexibility* is 4, and the maximum value of *Depth* is 20. Thus, in relative terms these are large numbers. It is worth pointing out that the endogenous-design variables generally outperform $IIT$ and $FDI$. Moreover, $FDI$ has a stronger impact on Depth than $IIT$ does. Since our operationalization of depth includes provisions that regulate investment, services, and intellectual property rights, this result is not surprising. Multinational companies that engage in IFT are likely to benefit more from investment protection and services liberalization than traditional exporters. In sum, in explaining the design of PTAs a model that neglects the role of $IIT$, $FDI$ and of the different components of treaties suffers from serious missing variable problems.

# 4 Additional Evidence

## 4.1 Matching Analysis

Our theory suggests that IIT and IFT predict not only the design of a PTA, but also the formation of PTAs. This being the case, our analysis is hampered by selection bias. When cooperation is too costly due to high adjustment costs, we might not observe the formation of a PTA irrespective of decisions on its design. For instance, dyads with a very low level of IIT might decide not to form a PTA since they anticipate that cooperation is not sustainable even when designing a very narrow agreement with a high degree of flexibility. If the level of IIT and of FDI is substantially higher for dyads with a PTA than for dyads without one, treated group and control group have different characteristics. Thus we need to correct for this bias by *balancing* our sample with respect to (at least) IIT and FDI between two countries in a dyad.[28] Concretely, we need to drop from the analysis dyads with PTA that are very different from dyads without PTA with respect to our main variables $IIT$ and $FDI$ and other variables that might impact both the probability of forming a PTA and its design.

We correct for nonrandom assignment using a matching technique. Matching deals with the crucial problem of causal inference: we can only observe each unit

[28]Herein we mean balancing across dyads and not within each dyad.

in either the treated or control condition, but not both. Matching overcomes this problem by finding for a treated unit a non-treated unit with similar characteristics. We can then estimate our models using the non-treated unit as the imputed control for the treated unit. Three main matching techniques exist: Mahalanobis distance matching (MDM), propensity score matching (PSM), and coarsened exact matching (CEM). Recent studies point out that the use of PSM is often problematic. In a recent paper King et al. (2011) show that PSM "increases variance and reduces balance (between the treated and control groups) on average compared to not matching at all." Moreover, simulations show that CEM outperforms MDM in several applications related to social science and medical studies (King et al., 2010). Given these recent findings, we opt for CEM, which is also relatively easy to implement.

Matching requires a series of discretionary decisions. First, which variables should be selected to match between the treatment group and the control group? We follow two criteria. We select variables that are (1) important drivers of PTA formation and (2) theoretically correlated with flexibility, depth, and scope. To begin with, we match on $IIT$ and $FDI$ for the reasons explained above. Moreover, we match on $Distance$, $Trade$, $GDPpc$, and $BIT$. Previous studies show that these variables are crucial predictors of the formation of PTAs (Baier and Bergstrand, 2004; Baccini and Dür, 2012) and logically related to the design of an agreement.

In addition to these economic variables, we match on two important political variables. First, we use the variable *Regime* because previous research indicates that democratic countries have stronger incentives to engage in trade cooperation with other democracies (Mansfield et al., 2002) and to design more rigid PTAs (Kucik, 2011). Second, we match on $BIT$, a variable that scores one if two countries are member of the same BIT. Indeed, Baccini and Dür (2012) show that countries that formed a BIT are more likely to sign a PTA that includes strict regulations on investment and investment-related sectors, i.e. a deeper PTA. Third, we match on WTO membership because WTO members have already previously liberalized their trade policies, so they can form PTAs at a lower cost. Since the WTO includes flexibility clauses and provisions on investments, services, and intellectual property rights, WTO members may also have a greater propensity to include such provisions into PTAs.

The second discretionary decision is: which coarsening should be chosen for these variables? To choose the coarsening, we examined the distribution of these

variables. $IIT$, $FDI$, $GDPpc$, and $Trade$ are skewed on the right, i.e. there are few rich big countries. Thus, we chose to coarsen these variables at their mean and one standard deviation above the mean. Conversely, *Distance* is skewed to the left, i.e. there are few countries very close to another. Thus, we coarse this variable at its mean and one standard deviation below the mean. The main advantage of doing so is that we can place outliers, i.e. rich and big countries, in the same bin. The *Regime*, $BIT$, and $WTO$ variables cannot be coarsened since they are dummies. Figure 5 shows the distribution of the continuous variables and the values at which coarsening has been chosen.

Figure 5 About Here

Third, we identify those observations that contain at least one treated and one control unit and we drop all the others. To do so, we match our original number of dyads with the dyads that did not form a PTA. These dyads without PTAs come from all the possible dyadic combinations of the original 156 trading entities, i.e. $\frac{156\times155}{2} = 12,090$. Owing to matching, we lose 166 dyads and 57 PTAs.[29] For instance, we lose some bilateral agreements signed by the EU and the European Free Trade Association with East European countries. Among plurilateral trade agreements, we lose a few dyads from the Caribbean Community (CARICOM),the Central American Free Trade Agreement (CAFTA), the Central European Free Trade Agreement (CEFTA), and the Gulf Cooperation Council (GCC). Figure 6 shows the reduction in imbalance for each covariate looking both at the difference between the means and the ratio of the variances. As the figure shows, the matching dramatically improves this balance, and thus enhances our ability to identify effects in the data.

Figure 6 About Here

Fourth, we again run the estimation on this subsample including all the control variables of the main model. Since with coarsening some imbalance remains in the matched data, we include also the covariates that we used to balance the treatment group and the control group (Blackwell et al., 2009). Results remain unchanged and if anything, they improve.

[29]The number of dyads that we lose doubles when we use directed dyads.

## 4.2 Endogeneity

The matching analysis has already reassured us against the risk that dyads entering into PTAs are substantially different from those that do not. Another statistical concern is the possible endogeneity between IIT and FDI on the one hand, and the formation as well as the design of PTAs, on the other. Indeed, PTAs in general, and deep and rigid PTAs in particular, might increase the levels of IIT and FDI among member countries. This concern is a serious one since Egger et al. (2006) find that PTA formation leads to increases in IIT and Büthe and Milner (2008) that PTAs increase FDI flows.

To rule out the possibility that endogeneity hampers our results, we implement a two-stage estimation using data on IIT from 1970 and human capital as instruments for IIT and FDI from 1980 and human capital as instruments for FDI.[30] These variables are good predictors of the levels of IIT and FDI (e.g. correlation between IIT from 1970 and IIT is 0.6 and correlation between human capital and IIT is 0.5), but logically and theoretically exogenous to the presence of PTAs.[31] Using the Anderson canonical test, we reject the null hypothesis that models are underidentified. Moreover, both the Kleibergen-Paap Wald F statistic and the Stock and Yogo test (2002) lead us to reject the null hypothesis that the equations are weakly identified. Finally, the Hansen test does not reject the full specification of the model at the conventional level, i.e. our instruments are uncorrelated with the error terms.

Since we run simultaneous equation models, we manually implement the two-stage estimation. First, we regress the level of IIT (FDI) in the 1990s on the level of IIT in 1970 (FDI in 1980) and on the variable human capital. Second, we obtain the predicted values from these OLS regressions and we place them on the right-hand side of the SEM models. We label these variables $\hat{IIT}$ and $\hat{FDI}$. As a further test, we report the p-value of the coefficient for the residuals from the first stage in the second-stage equation (labeled *Resid*). This coefficient does not need to be statistically significant for the residuals being orthogonal to the dependent variable, i.e. for the instrumental variable analysis being meaningful. Tables 15, 16, 17 and 18 show that this is the case.[32] In addition, it shows that the impact of $IIT$ and $FDI$ on

[30] Data on human resources are from the Human Development Index (*http* : *//hdr.undp.org/en/statistics/hdi/*).

[31] Baccini and Urpelainen (2011) shows that negotiations of north-south PTAs last less than three years on average.

[32] We report results without matching. Results do not change if we use a matching analysis.

*Depth*, *Flexibility* and *Tariff Flexibility* remain unchanged, i.e. positive for *Depth* and negative for the latter two variables. Moreover, the level of significance remains the same with the exception of the impact of $IIT$ on *Tariff Flexibility*, which is no longer statistically significance at the conventional level. In sum, although there is evidence of endogeneity, our results are only marginally affected by this.

Tables 15, 16, 17 and 18 About Here

## 4.3 Robustness Checks

We perform several other tests to check the robustness of our findings. First, we implement the main analysis after disaggregating the EU into single countries, i.e. including each EU member in the analysis. Second, we run SEM models with only two equations, i.e. flexibility and depth as well as flexibility and scope. Similarly, we use bivariate ordered probit regression having transformed the flexibility variables into categorical variables. Fourth, we estimate the previous models using seemingly unrelated models (SUR). Fifth, we replace the indicator of depth obtained by using factor analysis with the coarse indicator of depth described above. Sixth, we add provisions regulating dispute settlement mechanism (DSM) to the variable *Depth*. Seventh, we replace the Grubel-Lloyd index with the Bergstrand index when operationalizing IIT. Eight, we drop plurilateral PTAs from the analysis to avoid inflating our results. Doing so substantively improves our findings. Ninth, we include region fixed effects in some estimations. For this, we distinguish among five broad regions (Europe, Asia, Africa, the Americas and Oceania) and cross-regional agreements. These fixed effects allow us to account for unobservable regional differences. Moreover, we include year fixed effects, i.e. the year of signature of a PTA. The time trend variables account for the fact that PTAs become deeper and broader over time. Tenth, we drop from the analysis the second, third, etc. PTAs formed by the same dyad. For all these checks results are similar to the main ones reported above and are available upon request.

Finally, we exclude from the analysis EU and US PTAs. Some recent studies suggest that these PTAs are not motivated by trade interests, but are signed by governments in developing countries to advance economic reforms (Baccini and Urpelainen, 2011). In line with this argument, the effect of $IIT$ on flexibility and depth increases when EU and US PTAs are excluded from the sample. Moreover,

we find that $IIT$ has a stronger impact on depth and flexibility in south-south PTAs than in north-south PTAs.

# 5 Conclusion

This paper addresses variation in the design of international trade agreements in respect to depth, scope and flexibility. We have put forward a political-economy argument based on lobbying by societal interests. We argue that the balance between import-competing and exporter interests predicts a governments' decisions on how to design trade agreements. The main explanatory variables for our study are the extent to which trade relations between two countries are shaped by IIT and IFT. We argue that the higher IIT and IFT between two trading partners, the more exporters' interests will gain influence over decision-makers within a domestic political system to the detriment of import-competing groups. This empowerment of export interests will lead to deeper, broader and more rigid trade agreements. As depth, scope and flexibility are endogenous, however, we explicitly model the trade-off between these three aspects of institutional design in the empirical analysis.

We test our propositions drawing from a newly compiled data set on the design of trade agreements (Baccini et al. 2011). The results of the base-line analysis support our propositions. In addition, we apply matching techniques to address selection bias, control for the effect of electoral institutions, cope with endogeneity related to the direction of causality, and run a number of robustness checks. The empirical tests provide strong support for our theoretical expectations as to the effects of IIT and IFT on depth and flexibility in terms of overall direction and in magnitude. While the findings are very encouraging, some puzzling results need further attention. In particular, the impact of IIT and especially IFT on scope is not in line with our expectations.

Our findings have broader implications. Among others, we provide an explanation as to why the new regionalism is challenging multilateralism as an instrument of trade liberalization. Following our argument, we expect protectionist demands to be stronger in the WTO because many dyads in that institution are characterized by a low degree of IIT and IFT. Governments also find it easier to design flexibility provisions that accommodate protectionist demands in bilateral or minilateral agreements than in an agreement among more than 150 member countries. Study-

ing the design of international trade agreements thus is essential to get a better understanding of the international political economy.

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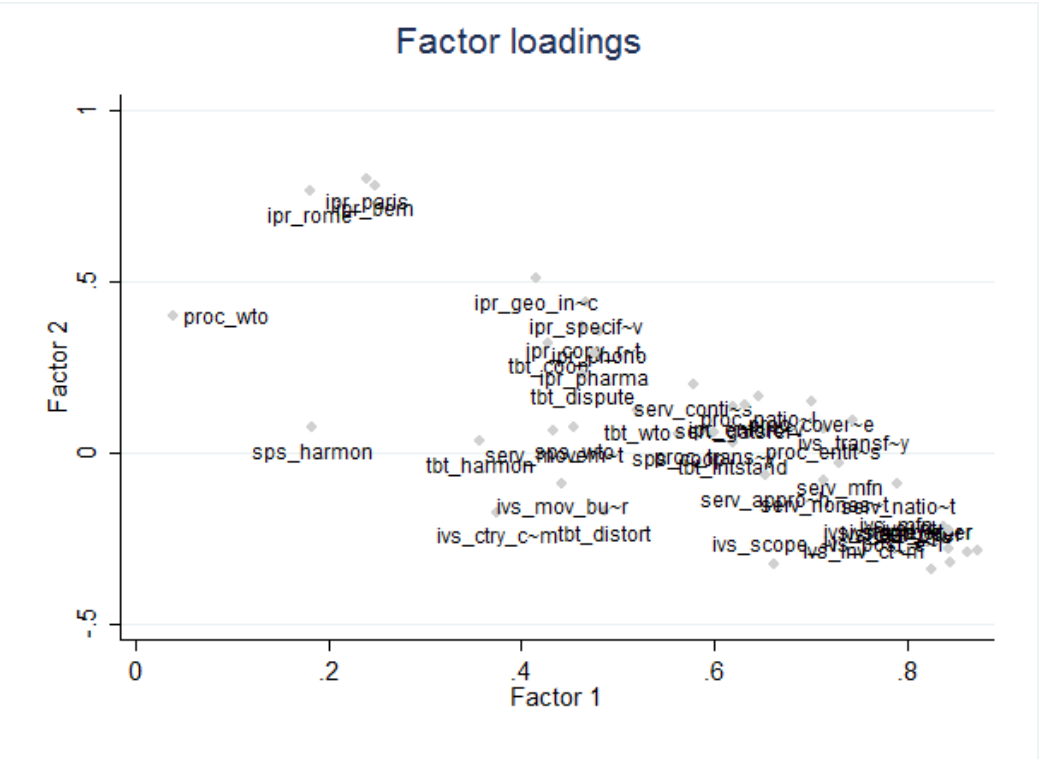


Figure 1: Plot of the score variables with two factors.

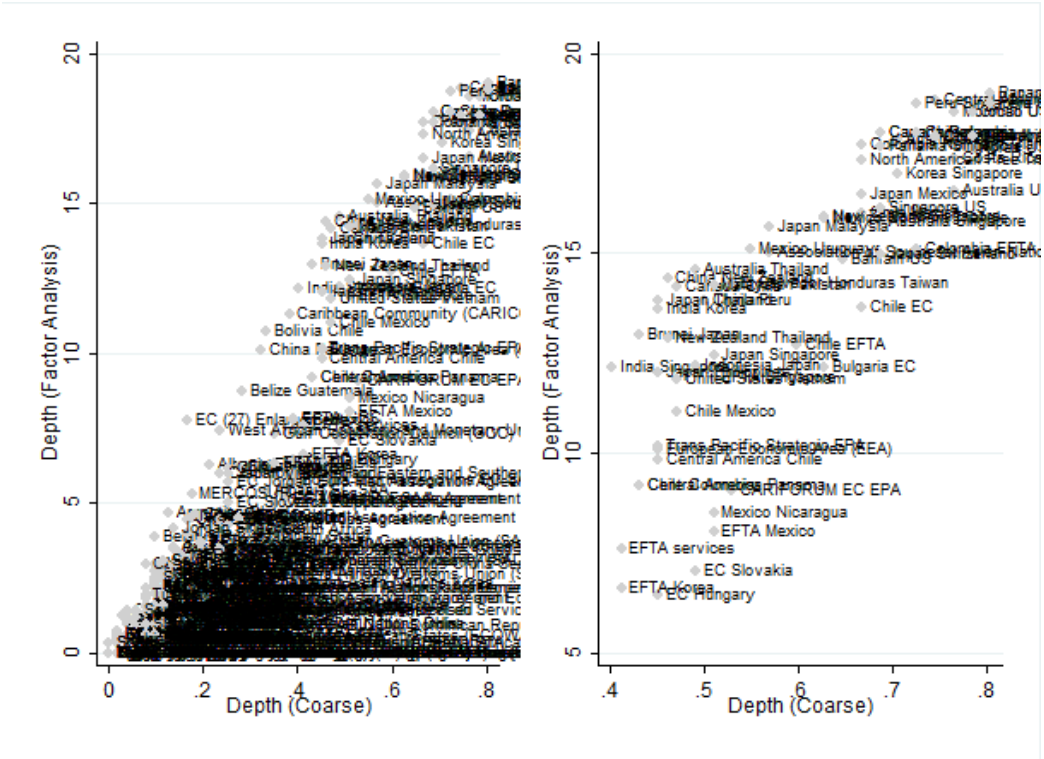


Figure 2: Depth with factor analysis versus $CoarseDepth$.

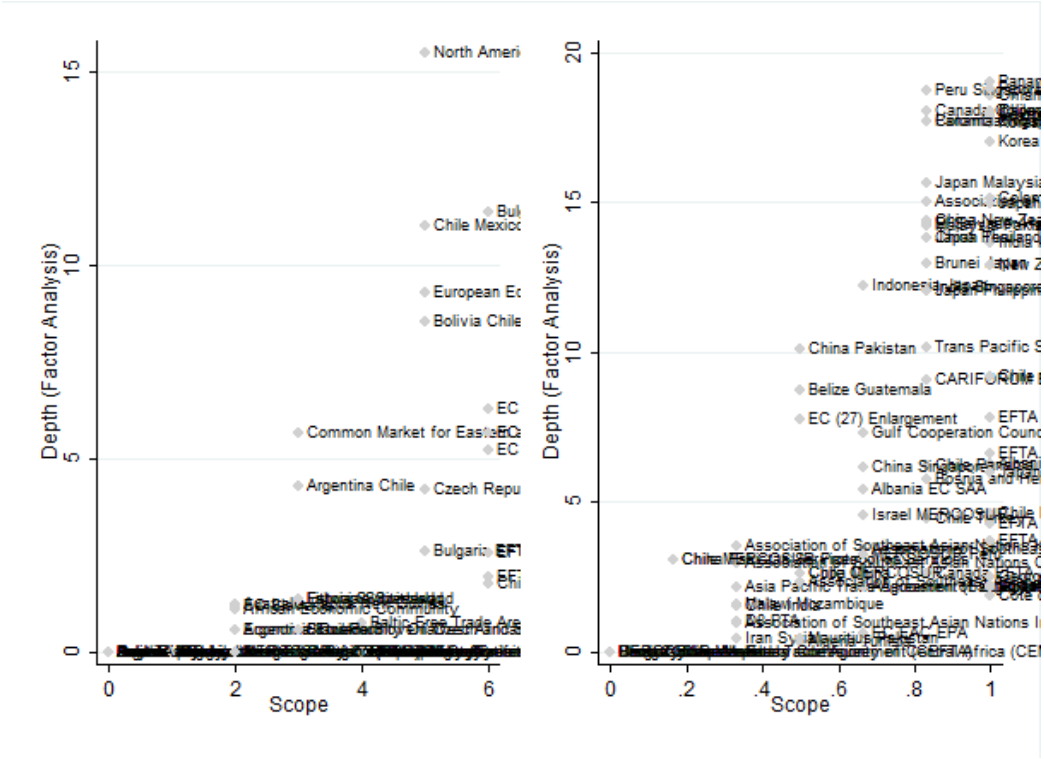


Figure 3: Depth with factor analysis versus *Scope* for PTAs formed between 1990-94 (right side) and between 2005-09 (left side).

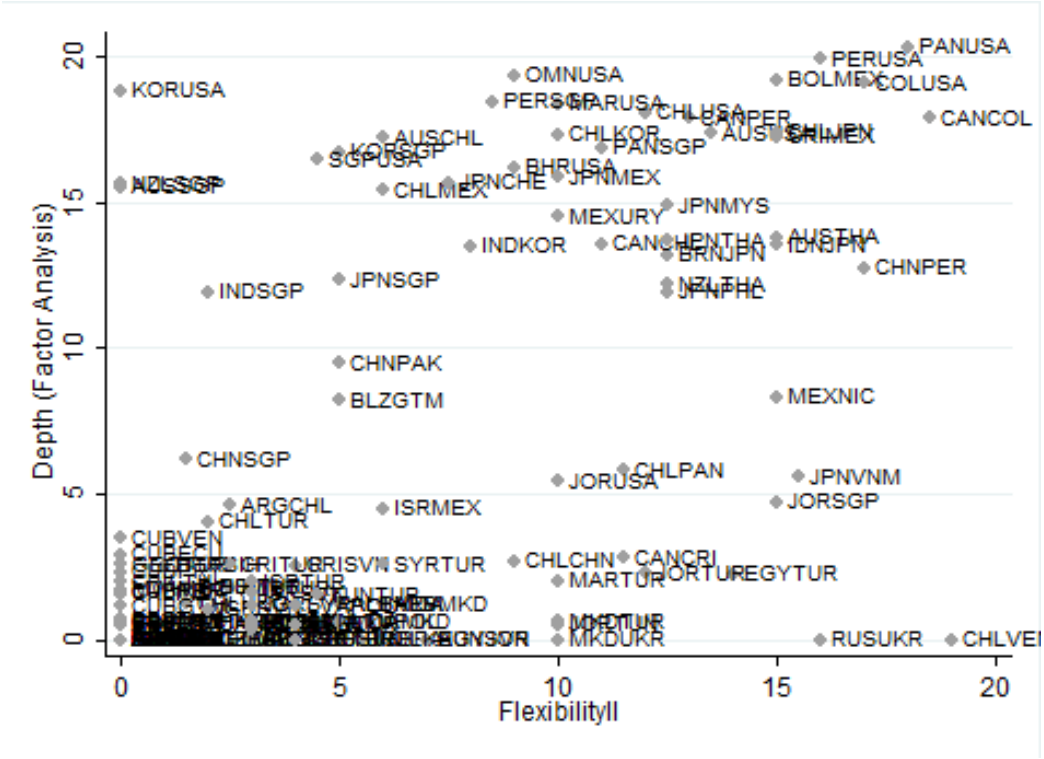


Figure 4: Depth with factor analysis versus $TariffFlexibility$ for bilateral PTAs formed between 1990-2007.

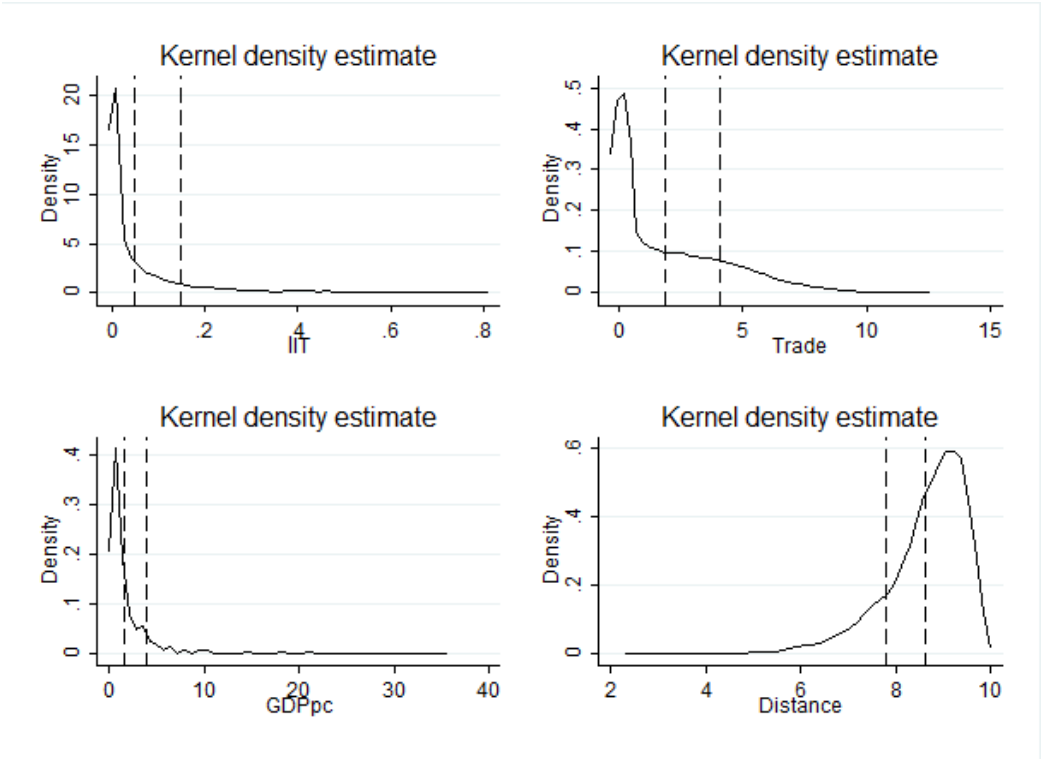


Figure 5: Coarsening of continuous variables for the matching analysis.

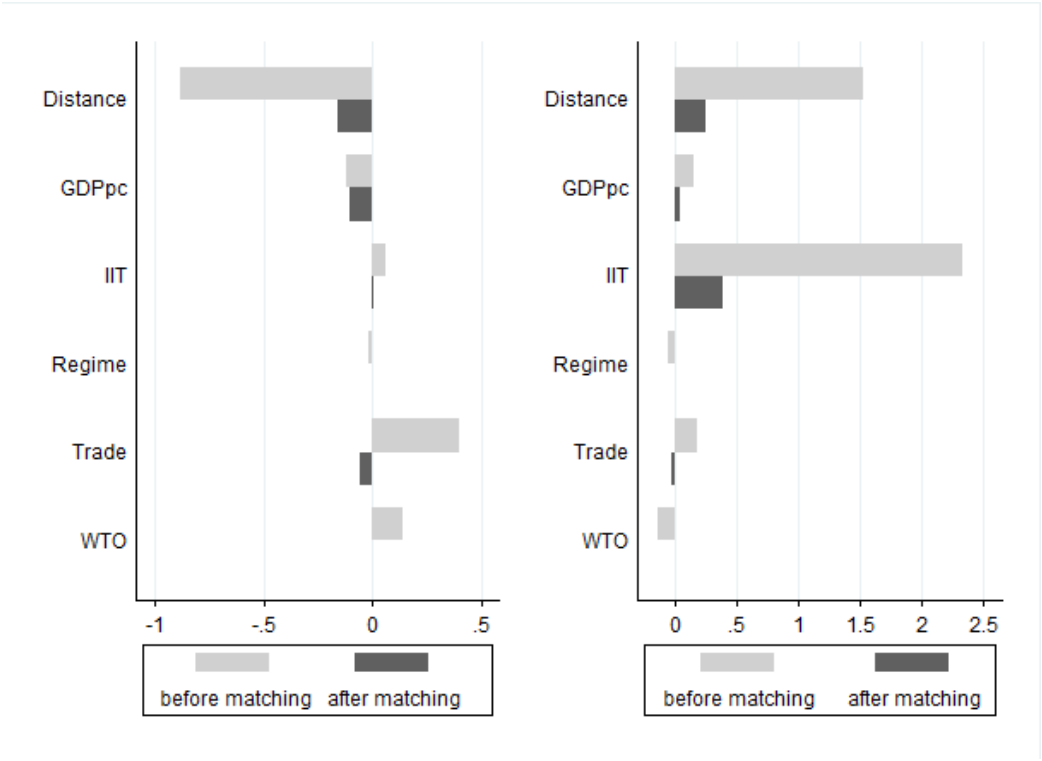


Figure 6: The balance of mean and variance between treated and untreated observations in the data, before and after matching.

Table 1: Descriptive statistics.

| Variables | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|
| Flexibility | .70 | .33 | 0 | 1 |
| Tariff Flexibility | 3.12 | 1.09 | 0 | 3.93 |
| Depth | 2.19 | 2.86 | 0 | 16.75 |
| Scope | .52 | .33 | 0 | 1 |
| PreviousFlex | .15 | .34 | 0 | 1 |
| PreviousTariffFlex | 1.05 | 1.61 | 0 | 3.93 |
| PreviousDepth | 2.38 | .84 | .94 | 15.1 |
| PreviousScope | .61 | .32 | .26 | 1 |
| FlexIDiffusion | .15 | .34 | 0 | 1 |
| TariffFlexDiffusion | 2.76 | .74 | 1.16 | 3.63 |
| DepthDiffusion | .30 | 1.38 | 0 | 16.56 |
| ScopeDiffusion | .07 | .17 | 0 | 1 |
| IIT | .10 | .14 | 0 | .70 |
| GDPpc | 1.27 | 2.71 | .09 | 35.62 |
| GDP | 1.43 | 1.12 | .20 | 6.50 |
| GDP Growth | .97 | 3.61 | -8.9 | 9.5 |
| Trade | 2.16 | 2.40 | 0 | 12.25 |
| Democracy | .23 | .42 | 0 | 1 |
| Democrat. | .10 | .30 | 0 | 1 |
| VetoPlayers | .14 | .17 | 0 | .65 |
| WTO | .54 | .70 | .46 | 1 |
| Distance | 7.99 | .99 | 4.47 | 9.87 |
| No. Members | 40.7 | 30.8 | 2 | 91 |

Table 2: SEM Models with errors clustered by dyads (Flexibility and IIT).

| VARIABLES | (1) Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Flexibility | | 0.20** | 5.05*** |
| | | (0.08) | (1.19) |
| PreviousFlexibility | -0.06*** | | |
| | (0.01) | | |
| FlexibilityDiffusion | 0.88*** | | |
| | (0.05) | | |
| Scope | -0.10*** | | 3.31*** |
| | (0.02) | | (0.59) |
| PreviousScope | | -0.05*** | |
| | | (0.02) | |
| ScopeDiffusion | | 1.03*** | |
| | | (0.04) | |
| Depth | 0.01*** | 0.00 | |
| | (0.00) | (0.00) | |
| PreviousDepth | | | 0.63*** |
| | | | (0.04) |
| DepthDiffusion | | | 0.54*** |
| | | | (0.09) |
| IIT | -0.07*** | -0.02 | 1.00 |
| | (0.03) | (0.05) | (0.75) |
| GDP | 0.01** | -0.00 | 0.10 |
| | (0.00) | (0.01) | (0.07) |
| GDPpc | -0.00 | -0.00** | 0.14*** |
| | (0.00) | (0.00) | (0.05) |
| GDPGrowth | 0.00 | -0.00** | 0.04*** |
| | (0.00) | (0.00) | (0.02) |
| Trade | -0.00 | 0.00 | 0.09*** |
| | (0.00) | (0.00) | (0.03) |
| Distance | -0.00 | 0.01 | 0.61*** |
| | (0.00) | (0.01) | (0.08) |
| WTO | -0.00 | 0.05*** | 0.14 |
| | (0.01) | (0.01) | (0.11) |
| Regime | 0.00 | -0.03** | 0.23 |
| | (0.01) | (0.01) | (0.19) |
| Democratization | 0.00 | 0.01 | -0.17 |
| | (0.01) | (0.02) | (0.19) |
| VetoPlayers | 0.06*** | 0.12*** | -0.15 |
| | (0.02) | (0.03) | (0.40) |
| No. Members | 0.00*** | -0.00*** | -0.03*** |
| | (0.00) | (0.00) | (0.00) |
| Constant | 0.07 | -0.15** | -8.34*** |
| | (0.04) | (0.06) | (0.86) |
| Observations | 1,913 | 1,913 | 1,913 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: SEM Models with errors clustered by dyads (Tariff Flexibility and IIT).

| VARIABLES | (1) Tariff Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Tariff Flexibility | | -0.01 | 1.48*** |
| | | (0.03) | (0.35) |
| PreviousTariffFlex | -0.07*** | | |
| | (0.02) | | |
| TariffFlexDiffusion | 0.53*** | | |
| | (0.07) | | |
| Scope | -0.37 | | 7.38*** |
| | (0.38) | | (1.58) |
| PreviousScope | | -0.03 | |
| | | (0.02) | |
| ScopeDiffusion | | 0.62*** | |
| | | (0.06) | |
| Depth | 0.08*** | 0.01 | |
| | (0.02) | (0.00) | |
| PreviousDepth | | | 0.43*** |
| | | | (0.05) |
| DepthDiffusion | | | 0.34*** |
| | | | (0.10) |
| IIT | -0.57** | -0.10 | 1.82* |
| | (0.28) | (0.07) | (1.05) |
| GDP | 0.20*** | -0.03*** | 0.03 |
| | (0.03) | (0.01) | (0.13) |
| GDPpc | -0.03** | 0.00 | 0.13** |
| | (0.01) | (0.00) | (0.05) |
| GDPGrowth | -0.01 | 0.00 | 0.03 |
| | (0.01) | (0.00) | (0.02) |
| Trade | 0.02** | 0.00 | 0.08* |
| | (0.01) | (0.00) | (0.05) |
| Distance | -0.08** | 0.02*** | 0.61*** |
| | (0.03) | (0.01) | (0.14) |
| WTO | -0.00 | 0.06*** | -0.32 |
| | (0.06) | (0.01) | (0.20) |
| Regime | 0.10 | 0.03 | -0.51 |
| | (0.09) | (0.02) | (0.32) |
| Democratization | 0.19** | -0.04** | 0.42 |
| | (0.09) | (0.02) | (0.30) |
| VetoPlayers | -0.32 | 0.24*** | -0.90 |
| | (0.22) | (0.05) | (0.81) |
| No. Members | 0.03*** | -0.00*** | -0.05*** |
| | (0.00) | (0.00) | (0.02) |
| Constant | 0.69* | 0.07 | -9.45*** |
| | (0.37) | (0.09) | (1.05) |
| Observations | 1,028 | 1,028 | 1,028 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: SEM Models with errors clustered by dyads (Flexibility and FDI).

| VARIABLES | (1) Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Flexibility | | 0.16*** | 5.74*** |
| | | (0.06) | (1.20) |
| PreviousFlexibility | -0.05*** | | |
| | (0.01) | | |
| FlexibilityDiffusion | 0.90*** | | |
| | (0.04) | | |
| Scope | -0.11*** | | 3.43*** |
| | (0.02) | | (0.52) |
| PreviousScope | | -0.04*** | |
| | | (0.01) | |
| ScopeDiffusion | | 1.08*** | |
| | | (0.03) | |
| Depth | 0.01*** | 0.00 | |
| | (0.00) | (0.00) | |
| PreviousDepth | | | 0.58*** |
| | | | (0.03) |
| DepthDiffusion | | | 0.54*** |
| | | | (0.10) |
| FDI/GDP | -0.03* | -0.02 | 1.13*** |
| | (0.02) | (0.03) | (0.33) |
| GDP | 0.00 | -0.00 | 0.12** |
| | (0.00) | (0.00) | (0.05) |
| GDPpc | -0.00* | -0.01*** | 0.12*** |
| | (0.00) | (0.00) | (0.04) |
| GDPGrowth | -0.00 | -0.00** | 0.02** |
| | (0.00) | (0.00) | (0.01) |
| Trade | 0.00 | 0.00 | 0.06*** |
| | (0.00) | (0.00) | (0.02) |
| Distance | 0.00 | 0.00 | 0.54*** |
| | (0.00) | (0.00) | (0.06) |
| WTO | -0.01*** | 0.03*** | 0.09 |
| | (0.00) | (0.00) | (0.07) |
| Regime | 0.00 | -0.02** | 0.26* |
| | (0.00) | (0.01) | (0.14) |
| Democratization | 0.00 | 0.00 | -0.26* |
| | (0.00) | (0.01) | (0.14) |
| VetoPlayers | 0.03** | 0.07*** | 0.19 |
| | (0.01) | (0.02) | (0.27) |
| No. Members | 0.00*** | -0.00*** | -0.03*** |
| | (0.00) | (0.00) | (0.00) |
| Constant | 0.06* | -0.12*** | -7.99*** |
| | (0.04) | (0.04) | (0.74) |
| Observations | 7,542 | 7,542 | 7,542 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: SEM Models with errors clustered by dyads (Tariff Flexibility and FDI).

| VARIABLES | (1) Tariff Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Tariff Flexibility | | -0.03 | 1.73*** |
| | | (0.02) | (0.28) |
| PreviousTariffFlex | -0.08*** | | |
| | (0.01) | | |
| TariffFlexDiffusion | 0.56*** | | |
| | (0.05) | | |
| Scope | -1.23*** | | 4.91*** |
| | (0.11) | | (0.71) |
| PreviousScope | | -0.01 | |
| | | (0.01) | |
| ScopeDiffusion | | 0.96*** | |
| | | (0.05) | |
| Depth | 0.09*** | 0.00 | |
| | (0.01) | (0.00) | |
| PreviousDepth | | | 0.45*** |
| | | | (0.04) |
| DepthDiffusion | | | 0.44*** |
| | | | (0.09) |
| FDI | -0.01 | -0.05*** | 1.85** |
| | (0.19) | (0.02) | (0.83) |
| GDP | 0.05*** | -0.01** | 0.12 |
| | (0.02) | (0.00) | (0.07) |
| GDPpc | -0.01* | -0.00* | 0.11** |
| | (0.01) | (0.00) | (0.05) |
| GDPGrowth | -0.01* | -0.00 | 0.03** |
| | (0.00) | (0.00) | (0.01) |
| Trade | -0.01** | 0.00 | 0.10*** |
| | (0.01) | (0.00) | (0.03) |
| Distance | -0.04* | 0.01* | 0.52*** |
| | (0.02) | (0.01) | (0.09) |
| WTO | -0.01 | 0.04*** | -0.15 |
| | (0.03) | (0.01) | (0.10) |
| Regime | 0.06 | -0.01 | -0.11 |
| | (0.06) | (0.02) | (0.23) |
| Democratization | 0.09* | -0.00 | -0.13 |
| | (0.05) | (0.02) | (0.19) |
| VetoPlayers | -0.23* | 0.14*** | 0.45 |
| | (0.12) | (0.03) | (0.45) |
| No. Members | 0.02*** | -0.00 | -0.06*** |
| | (0.00) | (0.00) | (0.01) |
| Constant | 1.11*** | 0.54*** | 5.83*** |
| | (0.19) | (0.07) | (0.81) |
| Observations | 3,591 | 3,591 | 3,591 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: SEM Models with errors clustered by dyads (indirect effects).

| | (1) | (2) | (3) |
|---|---|---|---|
| VARIABLES | Flexibility | Scope | Depth |
| Flexibility | 0.01 | 0.02*** | 0.80*** |
| | (0.01) | (0.01) | (0.22) |
| Scope | 0.02*** | -0.01** | 0.43*** |
| | (0.00) | (0.00) | (0.09) |
| Depth | -0.00 | 0.01*** | 0.04** |
| | (0.00) | (0.00) | (0.02) |
| IIT | 0.01 | -0.01 | -0.44* |
| | (0.01) | (0.01) | (0.20) |
| VARIABLES | Tariff Flexibility | Scope | Depth |
| Tariff Flexibility | 0.13*** | 0.01*** | 0.22 |
| | (0.02) | (0.00) | (0.20) |
| Scope | 0.60*** | 0.06*** | 0.75 |
| | (0.14) | (0.01) | (0.67) |
| Depth | 0.01*** | 0.01*** | 0.19*** |
| | (0.00) | (0.00) | (0.05) |
| IIT | 0.06 | 0.01 | -1.44** |
| | (0.08) | (0.01) | (0.69) |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: SEM Models with errors clustered by dyads (indirect effects).

| | (1) | (2) | (3) |
|---|---|---|---|
| VARIABLES | Flexibility | Scope | Depth |
| Flexibility | 0.03*** | 0.03*** | 0.81*** |
| | (0.01) | (0.01) | (0.17) |
| Scope | 0.02*** | -0.01** | 0.55*** |
| | (0.00) | (0.00) | (0.09) |
| Depth | -0.00 | 0.01*** | 0.06*** |
| | (0.00) | (0.00) | (0.02) |
| FDI/GDP | 0.01* | 0.01 | -0.18** |
| | (0.00) | (0.01) | (0.07) |
| VARIABLES | Tariff Flexibility | Scope | Depth |
| Tariff Flexibility | 0.21*** | 0.01*** | 0.22*** |
| | (0.04) | (0.00) | (0.07) |
| Scope | 0.25*** | 0.04*** | -1.48*** |
| | (0.08) | (0.00) | (0.22) |
| Depth | 0.01*** | -0.01*** | 0.19*** |
| | (0.00) | (0.00) | (0.03) |
| FDI/GDP | 0.24*** | 0.00 | 0.17 |
| | (0.06) | (0.00) | (0.24) |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: PTAs among countries with high level of IIT.

| Low Flex & Low Depth | High Flex & High Depth |
|---|---|
| Central American Integration System† | Australia-US |
| Central European Free Trade Agreement† | Chile-Peru |
| Common Economic Zone† | Chile-US |
| Economic and Monetary Community of Central Africa† | Colombia-US |
| Eurasian Economic Community† | Japan-Malaysia |
| Gulf Cooperation Council† | Peru-Singapore |
| Argentina-Uruguay | Peru-US |
| Armenia-Georgia | Singapore-US |
| Armenia-Iran | |
| Bolivia-Uruguay | |
| Brazil-Suriname | |
| Bhutan-Uruguay | |
| Bhutan-India | |
| Estonia-Norway | |
| Georgia-Kazakhstan | |
| Guatemala-Mexico | |
| India-Nepal | |
| Israel-Jordan | |
| Jordan-Lebanon | |
| Jordan-Libya | |
| Kazakhstan-Kyrgyzstan | |
| Kyrgyzstan-Russia | |
| Laos-Thailand | |
| Paraguay-Venezuela | |
| Turkmenistan-Ukraine | |
| Uruguay-Venezuela | |

Table 9: Predictions from the SEM Models with errors clustered by dyads.

| Impact of | Min → Max | C.I. |
|---|---|---|
| IIT on Flexibility | -.1 | [-.14, -.06] |
| IIT on Tariff Flexibility | -.4 | [-.84, -.04] |
| Depth on Flexibility | .20 | [.19, .21] |
| Depth on Tariff Flexibility | 1.8 | [1.77, 1.83] |
| Flexibility on Depth | 4.7 | [4.66, 4.74] |
| Tariff Flexibility on Depth | 5.6 | [4.98, 6.22] |
| Scope on Depth (Flexibility) | 2.9 | [1.8, 4] |
| Scope on Depth (Tariff Flexibility) | 8.1 | [5, 11.2] |

Table 10: Predictions from the SEM Models with errors clustered by dyads.

| Impact of | Min → Max | C.I. |
|---|---|---|
| Depth on Flexibility | .2 | [.19, .21] |
| Depth on Tariff Flexibility | 2 | [1.98, 2.02] |
| FDI on Depth (Flexibility) | 2 | [1.48, 2.52] |
| FDI on Depth (Tariff Flexibility) | 4.3 | [3.3, 5.3] |
| Flexibility on Depth | 5.2 | [3.2, 7.2] |
| Tariff Flexibility on Depth | .7 | [.65, .75] |
| Scope on Depth (Flexibility) | 2.9 | [2.1, 3.7] |
| Scope on Depth (Tariff Flexibility) | 3.4 | [2.1, 4.7] |

Table 11: SEM Models with errors clustered by dyads and matching (Flexibility and IIT)

| VARIABLES | (1) Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Flexibility | | 0.18** | 5.02*** |
| | | (0.08) | (1.26) |
| PreviousFlexibility | -0.06*** | | |
| | (0.01) | | |
| FlexibilityDiffusion | 0.90*** | | |
| | (0.04) | | |
| Scope | -0.10*** | | 3.51*** |
| | (0.02) | | (0.62) |
| PreviousScope | | -0.05*** | |
| | | (0.02) | |
| ScopeDiffusion | | 1.01*** | |
| | | (0.04) | |
| Depth | 0.01*** | 0.01* | |
| | (0.00) | (0.00) | |
| PreviousDepth | | | 0.61*** |
| | | | (0.04) |
| DepthDiffusion | | | 0.54*** |
| | | | (0.10) |
| IIT | -0.09*** | -0.02 | 0.82 |
| | (0.03) | (0.06) | (0.99) |
| GDP | 0.01** | -0.00 | 0.11 |
| | (0.00) | (0.01) | (0.07) |
| GDPpc | -0.00 | -0.00* | 0.15*** |
| | (0.00) | (0.00) | (0.05) |
| GDPGrowth | 0.00 | -0.00** | 0.05** |
| | (0.00) | (0.00) | (0.02) |
| Trade | -0.00 | 0.00 | 0.10*** |
| | (0.00) | (0.00) | (0.03) |
| Distance | -0.00 | 0.01 | 0.61*** |
| | (0.00) | (0.01) | (0.09) |
| WTO | -0.00 | 0.05*** | 0.07 |
| | (0.01) | (0.01) | (0.12) |
| Regime | 0.00 | -0.03** | 0.20 |
| | (0.01) | (0.01) | (0.21) |
| Democratization | 0.00 | 0.01 | -0.10 |
| | (0.01) | (0.02) | (0.23) |
| VetoPlayers | 0.06*** | 0.11*** | -0.24 |
| | (0.02) | (0.03) | (0.44) |
| No. Members | 0.00*** | -0.00*** | -0.03*** |
| | (0.00) | (0.00) | (0.00) |
| Constant | 0.08** | -0.14** | -8.41*** |
| | (0.04) | (0.06) | (0.96) |
| Observations | 1,781 | 1,781 | 1,781 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: SEM Models with errors clustered by dyads and matching (Tariff Flexibility and IIT)

| VARIABLES | (1) Tariff Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Tariff Flexibility | | -0.02 | 1.54*** |
| | | (0.03) | (0.38) |
| PreviousTariffFlex | -0.07*** | | |
| | (0.02) | | |
| TariffFlexDiffusion | 0.51*** | | |
| | (0.08) | | |
| Scope | -0.32 | | 7.91*** |
| | (0.42) | | (1.70) |
| PreviousScope | | -0.03* | |
| | | (0.02) | |
| ScopeDiffusion | | 0.58*** | |
| | | (0.06) | |
| Depth | 0.08*** | 0.01** | |
| | (0.02) | (0.01) | |
| PreviousDepth | | | 0.41*** |
| | | | (0.05) |
| DepthDiffusion | | | 0.33*** |
| | | | (0.10) |
| IIT | -0.59* | -0.11 | 2.04* |
| | (0.32) | (0.08) | (1.22) |
| GDP | 0.20*** | -0.03*** | 0.08 |
| | (0.04) | (0.01) | (0.15) |
| GDPpc | -0.03** | 0.00 | 0.12** |
| | (0.01) | (0.00) | (0.06) |
| GDPGrowth | -0.01 | 0.00 | 0.03 |
| | (0.01) | (0.00) | (0.02) |
| Trade | 0.02* | 0.00 | 0.08 |
| | (0.01) | (0.00) | (0.05) |
| Distance | -0.07* | 0.03*** | 0.54*** |
| | (0.04) | (0.01) | (0.15) |
| WTO | -0.03 | 0.06*** | -0.30 |
| | (0.06) | (0.02) | (0.21) |
| Regime | 0.11 | 0.02 | -0.54 |
| | (0.10) | (0.02) | (0.34) |
| Democratization | 0.19** | -0.03 | 0.38 |
| | (0.09) | (0.02) | (0.32) |
| VetoPlayers | -0.25 | 0.24*** | -1.34 |
| | (0.24) | (0.05) | (0.86) |
| No. Members | 0.03*** | -0.00** | -0.05*** |
| | (0.00) | (0.00) | (0.02) |
| Constant | 0.69* | 0.60*** | 8.35*** |
| | (0.39) | (0.09) | (1.10) |
| Observations | 962 | 962 | 962 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: SEM Models with errors clustered by dyads and matching (Flexibility and FDI)

| VARIABLES | (1) Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Flexibility | | 0.15** | 5.81*** |
| | | (0.06) | (1.20) |
| PreviousFlexibility | -0.05*** | | |
| | (0.01) | | |
| FlexibilityDiffusion | 0.91*** | | |
| | (0.05) | | |
| Scope | -0.12*** | | 3.54*** |
| | (0.02) | | (0.54) |
| PreviousScope | | -0.04*** | |
| | | (0.01) | |
| ScopeDiffusion | | 1.07*** | |
| | | (0.03) | |
| Depth | 0.01*** | 0.00 | |
| | (0.00) | (0.00) | |
| PreviousDepth | | | 0.55*** |
| | | | (0.03) |
| DepthDiffusion | | | 0.53*** |
| | | | (0.10) |
| FDI | -0.02** | -0.04* | 1.16*** |
| | (0.01) | (0.02) | (0.37) |
| GDP | 0.00 | -0.00 | 0.13** |
| | (0.00) | (0.00) | (0.05) |
| GDPpc | -0.00 | -0.00** | 0.13*** |
| | (0.00) | (0.00) | (0.05) |
| GDPGrowth | -0.00 | -0.00** | 0.02** |
| | (0.00) | (0.00) | (0.01) |
| Trade | 0.00 | 0.00 | 0.06*** |
| | (0.00) | (0.00) | (0.02) |
| Distance | -0.00 | 0.00 | 0.55*** |
| | (0.00) | (0.00) | (0.06) |
| WTO | -0.01*** | 0.03*** | 0.07 |
| | (0.00) | (0.00) | (0.07) |
| Regime | 0.00 | -0.01 | 0.22 |
| | (0.00) | (0.01) | (0.15) |
| Democratization | 0.00 | 0.00 | -0.25* |
| | (0.00) | (0.01) | (0.14) |
| VetoPlayers | 0.02** | 0.06*** | 0.17 |
| | (0.01) | (0.02) | (0.28) |
| No. Members | 0.00*** | -0.00*** | -0.03*** |
| | (0.00) | (0.00) | (0.00) |
| Constant | 0.07* | -0.12*** | -8.08*** |
| | (0.04) | (0.05) | (0.75) |
| Observations | 7,248 | 7,248 | 7,248 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 14: SEM Models with errors clustered by dyads and matching (Tariff Flexibility and FDI)

| VARIABLES | (1) Tariff Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Tariff Flexibility | | -0.04* | 1.78*** |
| | | (0.02) | (0.29) |
| PreviousTariffFlex | -0.07*** | | |
| | (0.01) | | |
| TariffFlexDiffusion | 0.56*** | | |
| | (0.05) | | |
| Scope | -1.22*** | | 5.12*** |
| | (0.11) | | (0.75) |
| PreviousScope | | -0.02 | |
| | | (0.01) | |
| ScopeDiffusion | | 0.93*** | |
| | | (0.05) | |
| Depth | 0.09*** | 0.01 | |
| | (0.01) | (0.00) | |
| PreviousDepth | | | 0.43*** |
| | | | (0.03) |
| DepthDiffusion | | | 0.42*** |
| | | | (0.10) |
| FDI | -0.02 | -0.05*** | 1.91** |
| | (0.19) | (0.02) | (0.84) |
| GDP | 0.05** | -0.01*** | 0.13* |
| | (0.02) | (0.00) | (0.07) |
| GDPpc | -0.01 | -0.00 | 0.10** |
| | (0.01) | (0.00) | (0.05) |
| GDPGrowth | -0.01** | -0.00 | 0.03** |
| | (0.00) | (0.00) | (0.01) |
| Trade | -0.01** | 0.00 | 0.10*** |
| | (0.01) | (0.00) | (0.03) |
| Distance | -0.04 | 0.01 | 0.51*** |
| | (0.02) | (0.01) | (0.09) |
| WTO | -0.01 | 0.04*** | -0.15 |
| | (0.03) | (0.01) | (0.11) |
| Regime | 0.08 | -0.01 | -0.19 |
| | (0.06) | (0.02) | (0.24) |
| Democratization | 0.09* | 0.01 | -0.13 |
| | (0.05) | (0.02) | (0.20) |
| VetoPlayers | -0.17 | 0.14*** | 0.30 |
| | (0.12) | (0.03) | (0.47) |
| No. Members | 0.02*** | 0.00 | -0.06*** |
| | (0.00) | (0.00) | (0.01) |
| Constant | 1.09*** | 0.03 | -7.81*** |
| | (0.20) | (0.07) | (0.85) |
| Observations | 3,446 | 3,446 | 3,446 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: SEM Models with errors clustered by dyads, IIT instrumented (Flexibility).

| VARIABLES | (1) Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Flexibility | | 0.20** | 6.93*** |
| | | (0.08) | (1.41) |
| PreviousFlexibility | -0.04*** | | |
| | (0.01) | | |
| FlexibilityDiffusion | 0.88*** | | |
| | (0.05) | | |
| Scope | -0.08*** | | 4.28*** |
| | (0.02) | | (0.77) |
| PreviousScope | | -0.03* | |
| | | (0.02) | |
| ScopeDiffusion | | 1.05*** | |
| | | (0.04) | |
| Depth | 0.00*** | 0.00 | |
| | (0.00) | (0.00) | |
| PreviousDepth | | | 0.59*** |
| | | | (0.04) |
| DepthDiffusion | | | 0.46*** |
| | | | (0.11) |
| $I\hat{I}T$ | -0.13** | 0.03 | 7.73*** |
| | (0.06) | (0.12) | (2.66) |
| GDP | 0.01 | -0.01 | -0.07 |
| | (0.00) | (0.01) | (0.10) |
| GDPpc | -0.00** | -0.01** | 0.12** |
| | (0.00) | (0.00) | (0.05) |
| GDPGrowth | 0.00 | -0.00* | 0.05** |
| | (0.00) | (0.00) | (0.02) |
| Trade | -0.00 | 0.00** | 0.12*** |
| | (0.00) | (0.00) | (0.04) |
| Distance | -0.01** | 0.01 | 0.86*** |
| | (0.00) | (0.01) | (0.13) |
| WTO | -0.01* | 0.06*** | 0.04 |
| | (0.01) | (0.01) | (0.17) |
| Regime | -0.01 | -0.03** | 0.29 |
| | (0.01) | (0.02) | (0.26) |
| Democratization | 0.01 | 0.04** | -0.33 |
| | (0.01) | (0.02) | (0.27) |
| VetoPlayers | 0.04* | 0.11*** | 0.35 |
| | (0.02) | (0.03) | (0.60) |
| No. Members | 0.00*** | -0.00*** | -0.04*** |
| | (0.00) | (0.00) | (0.01) |
| Resid | -0.04 | 0.04 | 0.91 |
| | (0.03) | (0.06) | (1.13) |
| Constant | 0.15*** | -0.22*** | -11.19*** |
| | (0.04) | (0.08) | (1.20) |
| Observations | 1,266 | 1,266 | 1,266 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16: SEM Models with errors clustered by dyads, IIT instrumented (Tariff Flexibility).

| VARIABLES | (1) Tariff Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Tariff Flexibility | | -0.04 | 1.52*** |
| | | (0.03) | (0.33) |
| PreviousTariffFlex | -0.08*** | | |
| | (0.02) | | |
| TariffFlexDiffusion | 0.56*** | | |
| | (0.09) | | |
| Scope | -1.40** | | 10.60*** |
| | (0.60) | | (2.03) |
| PreviousScope | | -0.02 | |
| | | (0.02) | |
| ScopeDiffusion | | 0.55*** | |
| | | (0.07) | |
| Depth | 0.11*** | 0.02*** | |
| | (0.03) | (0.01) | |
| PreviousDepth | | | 0.35*** |
| | | | (0.06) |
| DepthDiffusion | | | 0.21** |
| | | | (0.10) |
| $I\hat{I}T$ | -0.78 | -0.06 | 5.50** |
| | (0.75) | (0.14) | (2.71) |
| GDP | 0.16*** | -0.02** | -0.07 |
| | (0.04) | (0.01) | (0.16) |
| GDPpc | -0.02** | -0.00 | 0.09 |
| | (0.01) | (0.00) | (0.06) |
| GDPGrowth | -0.02** | 0.00 | 0.05 |
| | (0.01) | (0.00) | (0.03) |
| Trade | 0.02 | 0.01** | 0.07 |
| | (0.01) | (0.00) | (0.06) |
| Distance | -0.06 | 0.03** | 0.63*** |
| | (0.05) | (0.01) | (0.20) |
| WTO | 0.10 | 0.08*** | -0.72** |
| | (0.09) | (0.02) | (0.31) |
| Regime | -0.01 | 0.01 | -0.36 |
| | (0.11) | (0.02) | (0.39) |
| Democratization | 0.15 | -0.04* | 0.46 |
| | (0.10) | (0.02) | (0.34) |
| VetoPlayers | 0.05 | 0.22*** | -1.31 |
| | (0.26) | (0.05) | (1.01) |
| No. Members | 0.02*** | -0.00 | -0.05*** |
| | (0.00) | (0.00) | (0.02) |
| Resid | -0.44 | -0.09 | 1.84 |
| | (0.32) | (0.07) | (1.19) |
| Constant | 0.98** | 0.03 | -10.33*** |
| | (0.49) | (0.11) | (1.27) |
| Observations | 743 | 743 | 743 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 17: SEM Models with errors clustered by dyads, FDI instrumented (Flexibility).

| VARIABLES | (1) Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Flexibility | | 0.23*** | 6.79*** |
| | | (0.07) | (1.37) |
| PreviousFlexibility | -0.05*** | | |
| | (0.01) | | |
| FlexibilityDiffusion | 0.85*** | | |
| | (0.05) | | |
| Scope | -0.12*** | | 3.49*** |
| | (0.02) | | (0.56) |
| PreviousScope | | -0.04*** | |
| | | (0.01) | |
| ScopeDiffusion | | 1.13*** | |
| | | (0.03) | |
| Depth | 0.01*** | 0.00 | |
| | (0.00) | (0.00) | |
| PreviousDepth | | | 0.59*** |
| | | | (0.03) |
| DepthDiffusion | | | 0.54*** |
| | | | (0.10) |
| $F\hat{D}I$ | -2.58*** | 0.29 | 0.77*** |
| | (0.52) | (10.52) | (0.21) |
| GDP | 0.00 | -0.00 | 0.13** |
| | (0.00) | (0.00) | (0.05) |
| GDPpc | -0.00 | -0.01*** | 0.10** |
| | (0.00) | (0.00) | (0.04) |
| GDPGrowth | -0.00 | -0.00** | 0.03*** |
| | (0.00) | (0.00) | (0.01) |
| Trade | -0.00 | 0.00* | 0.06*** |
| | (0.00) | (0.00) | (0.02) |
| Distance | 0.00 | 0.00 | 0.52*** |
| | (0.00) | (0.00) | (0.05) |
| WTO | -0.01*** | 0.03*** | 0.15** |
| | (0.00) | (0.01) | (0.07) |
| Regime | 0.00 | -0.01 | 0.15 |
| | (0.01) | (0.01) | (0.15) |
| Democratization | 0.00 | -0.01 | -0.20 |
| | (0.01) | (0.01) | (0.14) |
| VetoPlayers | 0.03*** | 0.08*** | 0.13 |
| | (0.01) | (0.02) | (0.28) |
| No. Members | 0.00*** | -0.00*** | -0.03*** |
| | (0.00) | (0.00) | (0.00) |
| Resid | -0.19 | 0.22 | -0.31 |
| | (0.18) | (0.19) | (1.24) |
| Constant | 0.09** | -0.18*** | -8.56*** |
| | (0.04) | (0.05) | (0.83) |
| Observations | 7,346 | 7,346 | 7,346 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 18: SEM Models with errors clustered by dyads, FDI instrumented (Tariff Flexibility).

| VARIABLES | (1) Tariff Flexibility | (2) Scope | (3) Depth |
|---|---|---|---|
| Tariff Flexibility | | -0.03 | 2.15*** |
| | | (0.02) | (0.30) |
| PreviousTariffFlex | -0.08*** | | |
| | (0.01) | | |
| TariffFlexDiffusion | 0.52*** | | |
| | (0.05) | | |
| Scope | -0.96*** | | 4.70*** |
| | (0.10) | | (0.70) |
| PreviousScope | | -0.01 | |
| | | (0.01) | |
| ScopeDiffusion | | 0.99*** | |
| | | (0.05) | |
| Depth | 0.08*** | 0.00 | |
| | (0.01) | (0.01) | |
| PreviousDepth | | | 0.45*** |
| | | | (0.04) |
| DepthDiffusion | | | 0.40*** |
| | | | (0.10) |
| $F\hat{D}I$ | -0.80*** | 0.87 | 0.26*** |
| | (0.28) | (0.88) | (0.04) |
| GDP | 0.06*** | -0.01*** | 0.10 |
| | (0.02) | (0.01) | (0.07) |
| GDPpc | -0.00 | -0.00* | 0.05 |
| | (0.01) | (0.00) | (0.05) |
| GDPGrowth | -0.01*** | -0.00 | 0.05*** |
| | (0.00) | (0.00) | (0.01) |
| Trade | -0.01 | 0.00** | 0.08*** |
| | (0.01) | (0.00) | (0.03) |
| Distance | -0.02 | 0.01** | 0.45*** |
| | (0.02) | (0.01) | (0.09) |
| WTO | -0.03 | 0.04*** | -0.09 |
| | (0.03) | (0.01) | (0.11) |
| Regime | 0.10 | -0.01 | -0.35 |
| | (0.06) | (0.02) | (0.25) |
| Democratization | 0.02 | -0.01 | 0.11 |
| | (0.05) | (0.02) | (0.21) |
| VetoPlayers | -0.17 | 0.15*** | 0.24 |
| | (0.12) | (0.03) | (0.47) |
| No. Members | 0.01*** | -0.00 | -0.06*** |
| | (0.00) | (0.00) | (0.01) |
| Resid | 0.57 | -0.58 | -0.72 |
| | (0.39) | (0.75) | (0.68) |
| Constant | 1.06*** | -0.02 | -8.32*** |
| | (0.18) | (0.08) | (0.88) |
| Observations | 3,514 | 3,514 | 3,514 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1