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Do Trade Agreements Stimulate International Trade Differently? Evidence from 296 Trade Agreements

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Abstract

In a seminal paper, Rose (2004) found that the assumed positive impact of the WTO on international trade was questionable. This finding has been scrutinized and modified in subsequent research, using different datasets, econometric methods and separating the WTO from other forms of trade agreements. A key characteristic of this literature is the rather simplistic way in which trade agreements are treated whereby all trade agreements are lumped together. Trade agreements come, however, in many different forms and shapes. This paper addresses these differences in trade agreements. Using a unique database of 296 trade agreements, we distinguish 17 trade-related policy domains, 9 indicators of institutional quality and indicate whether the agreements contain legally enforceable commitments. This extensive and novel taxonomy of trade agreements enables us to allow for the possible heterogeneity of the impact of trade agreements on international trade. Using a gravity model, we find that trade agreement heterogeneity indeed matters for international trade, both positively and negatively.

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1. Introduction

Trade agreements (TAs) are becoming an increasingly popular policy instrument to regulate international economic integration. The rules of the World Trade Organization (WTO) allow these trade agreements despite the fact that they can interfere with the most favoured nation principle. The reason is that these agreements are viewed as a step in the right (free trade) direction. The proliferation of TAs has sparked substantial theoretical and empirical interest into the effects of these agreements (see, amongst others, Krugman 1993; Bhagwati and Panagariya, 1996; Baldwin, 1997; Krishna, 1998; Baier and Bergstrand, 2004, 2007, 2009; Egger and Larch, 2008). Although the WTO allows for the existence of TAs, the effects are not always thought to be positive. One reason is that a TA might be a substitute for full implementation of WTO rules. Another reason is that a TA can result in trade diversion rather than trade creation. Ever since the seminal contribution of Rose (2004), in which his findings questioned the assumed positive effects of the WTO on international trade, studying the effects of TAs on international trade have been high on the research agenda.

In subsequent research, and by using different datasets, different econometric techniques, and dealing with the 'zero' trade flows problem, the findings of Rose (2004) have been revised, and the consensus seems that the WTO effect on international trade is positive as is assumed *a priori* (Felbermayr and Kohler, 2006; Subramanian and Wei, 2007; Tomz, Goldstein and Rivers, 2007; Liu, 2009; Chang and Lee, 2011; Herz and Wagner, 2011). However, a key characteristic in this literature is the fact that TAs, including the WTO, are treated rather simplistically as a binary dummy variable. This approach in essence captures whether a TA exist but not the details of an agreement.

The contents and scope of TAs differ widely. By implementing various coding strategies, a number of scholars have started opening the black box of TAs. These studies account for heterogeneity in the design of particular TAs, such as provisions on dispute settlement, investment, services or trade remedies (Lesher and Miroudot, 2006; Houde, Kolse-Patil and Miroudot, 2007; Fink and Molinuevo, 2008; Dür, et al., 2012; Kucik, 2012; Mansfield and Milner, 2012). Other examples investigate the use of TAs with respect to international cooperation (Estevadeordal and Suominen, 2008) or regional integration (Horn, Mavroidis and Sapir, 2010; Hicks and Kim, 2012; Haftel, 2013). The findings from this literature reveal that explicitly acknowledging the design of trade agreements is warranted and describing participation in a TA by rudimentary binary variable seems no longer sufficient.

So far the empirical trade literature, does, however, fail to address the heterogeneous design of trade agreements. The use of a binary variable that only accounts for the presence of an agreement between pairs of countries has the virtue of simplicity but ignores heterogeneity in terms of institutional design and legal enforceability. The purpose of this paper is to deal with this heterogeneity explicitly and to link these differences to their potentially different impact on international trade. Our paper makes three contributions. First, it develops a database that contains 296 trade agreements.[2] Building on the methodological approach followed by Horn et al. (2010) and WTO (2011a), the dataset provides a comprehensive coverage of 296 trade agreements for the period 1948-2011, and is far more comprehensive than that of Horn et al. (2010). It accounts for 17 trade-related policy domains and includes 9 indicators of institutional quality. In addition, it shows the extent to which undertakings can be considered to be legally enforceable commitments in a court of international law. Second, we provide some initial stylized facts to explain the heterogeneity. Finally and crucially, we address the question whether TAs stimulate international trade, and if TA heterogeneity is important for international trade. We find that the latter is indeed the case.

The setup of the paper is as follows. In section 2 we describe the database on TA heterogeneity in some detail, and illustrate the extent to which major trade-related policy domains are covered and legally enforceable. Most importantly for our purpose is that we observe heterogeneity in the design and enforceability of TAs. In section 3 we develop several indices to measure TA heterogeneity and we look into some correlates of trade agreements. The extent to which the composition of trade agreements actually affects international trade is dealt with in section 4. By estimating a gravity model, we show that more comprehensive trade agreements are better for trade. Noticeably, however, we find that not all provisions contained in TAs are beneficial for trade. Provisions that are in line with WTO regulations are shown to be trade promoting, while measures that go beyond the WTO's current mandate may actually *decrease* trade. In section 5 we look into the impact of our TAs on international trade by explicitly taking the issue of zero trade flows into account. Section 6 concludes.

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[2] The data are publicly available at http://tristankohl.org.

2. The database on trade agreements

Horn et al. (2010) provide a systematic study of 17 TAs involving the EC, and 14 involving the US. The authors take stock of the various policy domains that are covered by the undertakings laid out in these agreements. In doing this, attention is paid to (1) the legal enforceability of the provisions and (2) the extent to which the undertakings are included in the WTO's mandate.

For each provision identified by Horn et al. (2010), they did not only account for a provision being covered by a TA, but also for its legal enforceability. This is because a policy domain could be covered, but the undertaking may be too imprecisely formulated to give rise to a legal obligation that would be enforceable in the event of a dispute settlement proceeding. Provisions are considered to be legally enforceable only if the undertaking "specified at least some obligation that is clearly define, and that is likely to effectively bind the Parties" (Horn et al., 2010: 1572). It may also be the case that undertakings are not legally enforceable because they are explicitly excluded from the TA's dispute settlement procedures.[3]

Provisions that confirm countries' existing multilateral obligations and that may also deepen such commitments are categorized as "WTO$^+$" provisions. Examples of WTO$^+$ provisions are measures on anti-dumping, restrictions on state aid and the liberalization of trade in services. In contrast, "WTO^X" provisions involve policy domains that are not covered by the WTO's current mandate and may compromise the WTO's ability to expand into these legal territories with binding, non-discriminatory policy. Examples range from anti-terrorism to environmental and labour market regulations.

Horn et al. (2010) find that both the EC and US are strongly committed to legally enforceable WTO$^+$ undertakings, although the EC emphasises obligations on state trading enterprises (STEs) more than the US. In turn, the US focuses on trade-related investment measures (TRIMs), technical barriers to trade (TBT) and trade in services (GATS). WTO^X provisions feature more prominently in the EC's agreements, but often lack enforceability. However, both trade powers also have

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[3] In a related paper, Baccini. Dür, Elsig and Milewicz (2011) cover 591 agreements between 1945-2009. This number is larger than in the GPTAD dataset that we use. The advantage of our dataset, despite a smaller number of agreements, is that the data entries are comparable and consistent between observations. Although the coding procedure in Baccini et al. (2011) is not described in detail, making explicit comparison with Horn et al. (2010) difficult. One of the differences between their paper and ours is that we explicitly identify whether provisions are legally enforceable and that we extract indicators of institutional quality from the agreements. Moreover, our dataset is publicly available.

credible WTO[X] commitments. The World Trade Report (WTO 2011a) extends Horn et al. (2010)'s coverage to 96 TAs and shows that traditional WTO[+] provisions on tariff liberalisation are abundant and legally enforceable. This also applies to the newer WTO[+] policy domains such as intellectual property rights and investment and WTO[X] domains on competition policy and capital mobility.

We include almost all agreements that have been enforced to date. It builds on Horn et al. (2010) and WTO (2011a) by examining the coverage and legal enforceability of 13 WTO[+] and 4 WTO[X] policy domains and introduces 9 indicators of institutional quality (IQ). Note that the present study is the first to date that indicates the coverage and legal enforceability of such a vast number of TAs. Earlier studies by Horn et al. (2010) and WTO (2011b) rely on restricted samples of 31 and 96 TAs, respectively. We relegate our coding procedure to Appendix A, including a comparison of our coding procedure to that of Horn et al. 2010. Both datasets result in similar qualitative conclusions.

The results are presented in Table 1. Almost all TAs in the sample contain provisions on import restrictions, with an equally high rate of legal enforceability. The same applies to other fundamental WTO[+] domains such as anti-dumping and countervailing measures, customs administration and export restrictions.

Other WTO[+] policy domains are present in approximately 60 per cent of the sample but vary in their enforceability. On the one hand, provisions with a high rate of enforceability cover the domains of agriculture, intellectual property rights (IPR), sanitary and phytosanitary (SPS) measures, state aid, state trading enterprises (STEs) and technical barriers to trade (TBT). On the other hand, almost half of the provisions on investment, public procurement and services are not enforceable.

Turning to WTO[X] policy domains, provisions on capital mobility and competition laws are present in roughly 70 percept of the TAs. However, environmental issues are present in less than a third of the sample and labour policies in just one out of six agreements. Despite their differences in coverage, these provisions enjoy a high rate of legal enforceability. The coding suggests that although the fundamental WTO[+] policy domains are well represented and enforceable in most TAs, there is still considerable room for more binding measures on newer WTO[+] and WTO[X] topics.

With respect to the institutional provisions reflecting the TAs' institutional quality (IQ), approximately 90 per cent of the cases provide information on the objectives of the TA and the agreed upon institutional framework. Consultation, dispute settlement and evolutionary mechanisms

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Table 1: Descriptive statistics of coverage and enforceability

Type	Provision	(1) Number covered	(2) Number enforceable	(3) Sample covered (%)	(4) Sample enforceable (%)	(5) (2)/(1) (%)
WTO[+]	Agriculture	189	188	64	64	99
	AD & CVM	220	217	74	73	99
	Customs	216	214	73	72	99
	Export Restrictions	256	256	86	86	100
	Import Restrictions	292	292	99	99	100
	IPR	191	180	65	61	94
	Investment	162	85	55	29	52
	Public Procurement	172	103	58	35	60
	SPS	182	163	61	55	90
	Services	168	86	57	29	51
	State Aid	190	187	64	63	98
	STE	162	149	55	50	92
	TBT	187	138	63	47	74
WTO[X]	Capital Mobility	212	212	72	72	100
	Competition	209	181	71	61	87
	Environment	89	66	30	22	74
	Labour	48	43	16	15	90
IQ	Consultations	238	238	80	80	100
	Definitions	152	152	51	51	100
	Dispute Settlement	242	242	82	82	100
	Duration &	218	218	74	74	100
	Evolutionary Clause	235	235	79	79	100
	Institutional	273	273	92	92	100
	Objectives	267	267	90	90	100
	Plan & Schedule	128	128	43	43	100
	Transparency	162	162	55	55	100

are in place in 80 per cent of the agreements. Three out of four TAs provide details about their duration and termination procedures. Surprisingly, only half of the agreements provide mechanisms to promote transparency, define the terminology used in the agreement, or detail the plan and schedule that have to be applied when implementing the agreed upon liberalisation.

This section provided a taxonomy of different provisions–WTO[+], WTO[X] and IQ–found in 296 trade agreements. In doing so, the descriptive statistics of the dataset confirm that TAs are heterogeneous by design.

3. An index of trade agreement heterogeneity

Instead of using a simple binary dummy variable that indicates whether a TA is present, in this section we develop various indices to measure trade agreement heterogeneity. We will also relate these indices to various indicators like income, developmental status and location. As described in section 2, there are three basic types of regulation–WTO^+, WTO^X and IQ. We first consider each of these types separately.

For WTO^+ provisions, agreement A's total number of WTO^+ provisions is divided by the maximum number of provisions that can be covered. The maximum number is 13. Hence, the index for WTO^+ coverage is:

$$IWTO_A^{+,z} = \sum WTO_A^{+,z}/13 \tag{1}$$

where superscript z $(z=C,E)$ is C for provisions that are covered by agreement A regardless of their legal enforceability, and E for only those provisions that are legally enforceable. $IWTO^+$ ranges from 0 (incomprehensive; no coverage of WTO^+ provisions) to 1 (comprehensive; full coverage of WTO^+ provisions).

The index for WTO^X coverage is based on a maximum of 4 provisions and is:

$$IWTO_A^{X,z} = \sum WTO_A^{X,z}/4 \tag{2}$$

with $IWTO^X$ ranging between 0 (no coverage of WTO^X provisions) to 1 (full coverage of WTO^X provisions).

Finally, the index that reflects an agreement's institutional quality is:

$$IIQ_A = \sum IQ_A /9 \tag{3}$$

where IIQ is between 0 (low IQ) and 1 (high IQ).

An advantage of keeping the indices separate is that it allows us to consider whether extensive coverage of one type of policy is motivated by the same characteristics as another. The results presented below show that this is not the case.

The individual provisions in equations 1-3 are unweighted. We do not have a theoretical basis to justify the relative importance of one provision over another. For WTO^+ provisions, for example, it is unknown whether measures on anti-dumping matter more to policy makers than trade in services. Investigating whether policy makers attach different values to provisions is beyond the scope of this study.

Next, the three indices can easily be combined to construct an overall measure of TA heterogeneity, TAI:

$$TAI_A^z = \frac{1}{3}\left(WTO_A^{+,z} + WTO_A^{X,z} + IIQ_A\right) \tag{4}$$

Note that the separate indices of WTO^+, WTO^X and IQ provisions are unweighted, again because we do not have a theoretical motivation. We assume that all three components are equally important to a TA's comprehensiveness.[4]

Tables 2 and 3 provide descriptive statistics of the variables discussed so far. The first five variables all reflect the total number of provisions covered, superscript C, or legally enforceable, superscript E, per type of regulation. The other variables are (components of) the overall TAI. As explained above, the number of covered WTO^+ and WTO^X provisions drops when their legal enforceability is taken into account. This is accompanied by a small drop in variation. Pairwise correlation in Table 3 shows that the difference between enforceability versus provisions in general is important, but also that correlation between provisions has to be dealt with in the estimates. We return to this issue in the next section.

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[4] In the empirical application we also include the components of TAI_A^z separately.

Table 2: Descriptive statistics of TAIs

Variable	N	Mean	S.D.	Min.	Max.
WTO$^{+, C}$	296	8.740	3.388	0	13
WTO$^{+, E}$	296	7.628	3.053	0	13
WTO$^{X, C}$	296	1.885	1.150	0	4
WTO$^{X, E}$	296	1.696	1.043	0	4
IQ	296	6.470	1.737	1	9
IWTO$^{+, C}$	296	0.672	0.261	0	1
IWTO$^{+, E}$	296	0.587	0.235	0	1
IWTO$^{X, C}$	296	0.471	0.287	0	1
IWTO$^{X, E}$	296	0.424	0.261	0	1
IIQ	296	0.719	0.193	0.111	1
I^{C}	296	0.621	0.199	0.063	1
I^{E}	296	0.577	0.182	0.063	0.974

Table 3: Pairwise correlations of TAIs

	IWTO$^{+, C}$	IWTO$^{+, E}$	IWTO$^{X, C}$	IWTO$^{X, E}$	IIQ	I^{C}	I^{E}
IWTO$^{+, C}$	1.0000						
IWTO$^{+, E}$	0.9305	1.0000					
IWTO$^{X, C}$	0.5639	0.5778	1.0000				
IWTO$^{X, E}$	0.5331	0.5768	0.9123	1.0000			
IIQ	0.4270	0.4454	0.3632	0.2645	1.0000		
I^{C}	0.8471	0.8295	0.8461	0.7585	0.6853	1.0000	
I^{E}	0.8059	0.8632	0.8127	0.8192	0.6715	0.9614	1.0000

We have established that TA are heterogeneous. What determines these differences? Can we relate, for example, legally enforceable provisions to certain groups of countries, or are they related to WTO membership? We now turn to some analyses of the heterogeneity of our index, TAI_A^z.

The comprehensiveness of TAI_A^z, and its components can be expected to differ between groups of countries. Developed countries, for example, have well defined legal institutions that make the enforceability of provisions easier to control than in countries where legal institutions are less well developed. Based on the World Bank (2011b) income and development classification we distinguish between various groups of countries. Income categories are high income (HI), upper middle income (UMI), lower middle income (LMI) and lower income (LI). Similarly, countries are identified as developed, developing, or least developed countries (LDCs).

The data in Table 4 show that TAs related to low(er middle) income categories (i.e. the mode income level for one of these categories equals 1) regulate significantly fewer WTO$^+$ issues compared to their wealthier counterparts. However, these differences do not pertain to WTO^X or IQ provisions. The index reflects that wealthier countries have more extensive trade agreements.

An alternative specification is by using countries' development status: developed, developing, or least developed country (LDC). Agreements among developed countries or developed and developing countries are more extensive than those of developing and/or least developed countries. These differences relate to WTO$^+$ and WTO^X provisions, but are not visible with respect to IQ.

The prevalence of TAs between countries can also be related to cultural or geographical 'closeness'. Using the World Bank's (2011b) regional classification system we can distinguish seven groups of geographical related countries, which are East Asia and Pacific (EAP), Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), Middle East and North Africa (MENA), North America (NAM), South Asia (SA) and Sub-Saharan Africa (SSA). Interregional agreements are signed between countries from different regions and (intra)regional agreements involve signatories from one and the same region. Data on common borders and languages are from CEPII (2008).

According to the data in Table 4, interregional agreements are more extensive with respect to WTO$^+$, WTO^X and IQ measures. These differences do not hold with respect to WTO^X provisions after accounting for their legal enforceability. The index, however, does not indicate significant differences.

The differences are more pronounced when the presence of common borders is taken into account. When most participants in an agreement share a common border (i.e. the mode equals 1), they are found to have less extensive WTO$^+$, WTO^X and IQ provisions compared to the situation when the majority of participants are not contiguous. Similarly, agreements in which the majority of participants have a language in common (i.e. the mode equals 1) tend to be less extensive with respect to WTO$^+$ and WTO^X provisions compared to agreements in which the majority of participants do not share a common language.

The number of participants might affect coverage. The lower the number of participants the easier it is to reach an agreement. We distinguish between bilateral and plurilateral agreements. Examples of plurilateral agreements are ASEAN, CAFTA-DR-US and MERCOSUR. Examples of bilateral agreements include Armenia-Moldova, EC-South Korea and MERCOSUR-SACU.

The descriptive statistics in Table 4 indicate that bilateral agreements provide less coverage of WTO$^+$ domains, even when correcting for their legal enforceability. There are no apparent differences with respect to WTO^X or IQ provisions. Overall, the index suggests that plurilateral agreements are slightly more extensive than those that are bilateral.

Data on countries' WTO membership status, whether TAs have been notified to the WTO and if so, under which provision it has been enforced were obtained from WTO (2011b). Three groups of TAs are identified. The first group only contains non-members, the second group involves at least one WTO participant and one non-member, and the third group consists of WTO members only. From Table 4 it follows that the second (mixed) and third (members only) groups include more WTO$^+$, WTO^X and IQ provisions than agreements without any WTO participants. There are no clear differences when accounting for WTO^X provision' enforceability; however, the overall indices indicate that the extensiveness of TAs increases with the number participants in the WTO.

The number of enforceable WTO$^+$ and WTO^X provisions contained in TAs that have been notified to the WTO Secretariat is actually lower compared to the TAs that have not been notified. However, the differences are small and do not apply to IQ provisions. TAs that have been notified to the WTO and enforced under the Enabling Clause (Goods only) contain fewer WTO$^+$ and WTO^X provisions than those that have been enforced under the GATT and GATS (Goods and Services). Although TAs enforced under the GATT contain on average more provisions than those launched under the Enabling Clause, the differences are not significant. There are no differences when accounting for the enforceability of WTO^X provisions or with regard to IQ provisions.

To conclude, the group comparisons from this section suggest that the extensiveness of TAs–in terms of WTO$^+$ provisions, WTO^X provisions and the index of regulation–is positively associated with (1) the mode income category of the participants/their mode development status, (2) their lack of geographic focus, (3) the number of participants, and (4) the participants' affiliation with the WTO. The results also suggest that TAs display a higher degree of institutional quality with (1) a larger geographic focus and (2) a larger number of WTO members.[5]

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[5] Appendix B provides some tentative regression analyses, following Baier and Bergstrand (2004), into the determinants of trade agreements that by and large confirm the conclusions in the main text.

Table 4: Comparisons of group means

Variable	(1) I^C	(2) I^E	(3) WTO[+, C]	(4) WTO[+, E]	(5) WTO[X, C]	(6) WTO[X, E]	(7) IQ	(8) N
Income Category								
(a) HI	0.66±0.02	0.72±0.02	10.19±0.23	8.96±0.22	2.44±0.11	2.18±0.10	6.78±0.15	99
(b) HI & UMI	0.66±0.02	0.72±0.02	10.59±0.29	9.24±0.33	2.22±0.12	1.90±0.12	7.24±0.19	51
(c) HI & LMI	0.60±0.04	0.65±0.04	8.88±0.70	7.64±0.57	2.08±0.22	1.88±0.19	6.68±0.43	25
(d) HI & LI	0.64±0.06	0.65±0.07	8.67±0.88	8.33±0.67	1.67±0.33	1.67±0.33	7.67±0.67	3
(e) UMI	0.52±0.03	0.57±0.03	9.29±0.66	7.71±0.59	1.33±0.20	1.29±0.20	5.83±0.36	24
(f) UMI & LMI	0.49±0.02	0.52±0.02	7.52±0.48	6.58±0.42	1.29±0.15	1.17±0.13	5.96±0.25	48
(g) UMI & LI	0.41a,b±0.06	0.41a,b±0.06	4.50a-e±1.85	4.25a,b,d±1.65	1.25±0.48	1.25±0.48	5.25±0.25	4
(h) LMI	0.37a-d±0.03	0.39a-d±0.02	3.67a-e±0.35	3.20a-e±0.30	0.93a±0.23	0.87a±0.22	5.80±0.48	23
(i) LMI & LI	0.40a,b±0.03	0.41a,b±0.03	5.00a,b,e±0.65	4.35a,b,d±0.56	1.09±0.19	1.09±0.19	5.26±0.38	15
(j) LI	0.54±0.13	0.56±0.13	4.50a-e±1.71	4.50a,b,d±1.71	2.00±0.71	1.75±0.75	7.50±0.96	4
Development Status								
(a) Developed	0.67±0.02	0.71±0.02	10.26±0.30	9.21±0.27	2.23±0.14	2.09±0.13	6.93±0.18	57
(b) Developing	0.50a±0.02	0.53a±0.02	7.64a±0.38	6.67a±0.33	1.43a±0.10	1.32a±0.09	5.87±0.20	84
(c) Developed & Developing	0.64b±0.01	0.69b±0.02	9.77±0.25	8.49±0.23	2.30b±0.10	2.02±0.08	6.78±0.14	122
(d) Developing & LDC	0.39a,c±0.03	0.42a,c±0.03	4.71a-c±0.58	3.88a-c±0.49	0.96a,c±0.19	0.79a,c±0.18	5.96±0.40	24
(e) All	0.42a,c±0.09	0.47a,c±0.09	6.11a,c±1.47	4.89a,c±1.27	0.89a,c±0.48	0.67a,c±0.47	6.33±0.80	9
Regional Focus								
(a) Intraregional	0.55±0.01	0.59±0.01	8.27±0.25	7.25±0.22	1.75±0.08	1.67±0.07	6.15±0.12	198
(b) Interregional	0.62a±0.02	0.69a±0.02	9.69a±0.30	8.39a±0.29	2.15a±0.13	1.74a±0.11	7.12a±0.16	98
Border								
(a) Uncommon	0.59±0.01	0.64±0.01	9.05±0.21	7.88±0.19	1.98±0.07	1.77±0.07	6.58±0.10	248
(b) Common	0.49a±0.03	0.52a±0.03	7.15a±0.54	6.31a±0.46	1.38a±0.16	1.29a±0.15	5.90a±0.30	48
Language								
(a) Uncommon	0.61±0.01	0.65±0.01	9.18±0.22	8.03±0.19	2.11±0.07	1.91±0.06	6.50±0.11	232
(b) Common	0.47a±0.02	0.51a±0.03	7.16a±0.41	6.17a±0.4	1.08a±0.14	0.94a±0.13	6.34±0.26	64
Type								
(a) Bilateral	0.50±0.04	0.53±0.04	6.39±0.60	5.79±0.59	1.50±0.23	1.39±0.22	6.45±0.31	38
(b) Plurilateral	0.59a±0.01	0.63a±0.01	9.09a±0.2	7.90a±0.18	1.94a±0.07	1.74a±0.06	6.47±0.11	258

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Members in WTO								
(a) None	0.43±0.02	0.44±0.02	4.89±0.43	4.47±0.41	1.50±0.14	1.50±0.14	5.08±0.23	36
(b) Mix	0.55a±0.02	0.58a±0.02	8.48a±0.36	7.25a±0.31	1.70±0.11	1.61±0.11	6.10a±0.18	105
(c) All	0.63a,b±0.01	0.69a,b±0.01	9.81a,b±0.21	8.62a,b±0.2	2.10a±0.1 0	1.80±0.08	7.04a,b±0.12	135
Notified to WTO								
(a) No	0.61±0.02	0.65±0.02	9.76±0.29	8.43±0.26	1.94±0.09	1.88±0.09	6.29±0.18	103
(b) Yes	0.56±0.01	0.61a±0.02	8.2a±0.25	7.2a±0.23	1.85±0.09	1.60a±0.08	6.56±0.12	193
WTO Provision								
(a) Enabling	0.4±0.03	0.43±0.03	4.50±0.58	3.92±0.49	0.88±0.22	0.71±0.19	6.46±0.35	24
(b) Enabling & GATS	0.46±0.11	0.49±0.09	7.33±1.33	6.33±2.03	0.67±0.33	0.67±0.33	6.67±0.88	3
(c) GATT	0.53±0.02	0.58±0.02	7.84±0.39	6.49±0.31	1.86±0.12	1.67±0.11	5.97±0.17	86
(d) GATT & GATS	0.65a±0.02	0.7a±0.02	9.73a±0.28	8.99a±0.28	2.19b±0.15	1.81±0.13	7.24±0.17	80

Notes: Group means ± standard errors of the mean. The mean marked a/b/c/d/e is significantly different from the mean in the row marked a/b/c/d/e. Group means were compared using ANOVA, t and Tukey HSD tests. Statistical output is available upon request.

4. Do trade agreements promote international trade?

The workhorse model to assess the impact of TAs on trade is the gravity model (Rose, 2004; see for surveys Van Bergeijk and Brakman, 2010; Head and Mayer, 2013). The standard applications of the gravity model do thus far not explicitly deal with the heterogeneity of TA's, and, at best, only account for TAs with a binary dummy variable that equals 1 when a country-pair has a TA and 0 otherwise. Given the heterogeneity between TAs, a differentiation between TAs that have stronger or weaker trade promoting provisions seems warranted. Weaker TAs are expected to promote international trade less than stronger TAs. Our index allows us to differentiate between various TAs. The application is relatively straightforward and we replace the standard dummy by our index. The benchmark gravity specification is:

$$
\ln(M_{ijt}) = \alpha + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(Distance_{ij})
$$
$$
+ \beta_4 TA_{ijt} + \gamma_i F_i + \delta_j F_j + \zeta_t F_t + \varepsilon_{ijt} \qquad (5)
$$

where M is real bilateral imports by importer i from exporter j in year t, GDP is real GDP and $Distance$ is bilateral distance. TA is a binary dummy variable that is 1 if the dyad has a TA and 0 otherwise. F_i and F_j are country dummies to account for multilateral resistance terms (see Anderson and Van Wincoop, 2003; Feenstra, 2004), while F_t represents year fixed effects to control for unobserved time-varying phenomena.

The panel dataset covers 181 countries and contains observations for the period 1948 to 2007. The panel is arranged by country-pair and year, regardless of missing or zero values. Each country-pair is represented twice, once as ij and once as ji because bilateral imports are used as the dependent variable. Bilateral trade data (imports c.i.f. and exports f.o.b. in US$ millions) are from IMF (1995, 2008). The dependent variable of choice is bilateral imports. In case of missing values, the country's trade partner's bilateral exports are used as a proxy of that country's bilateral imports. Following Liu (2009), a 10 per cent c.i.f. rate is assumed when exports are used to replace missing imports. Baldwin and Taglioni (2006) argue that deflating trade data with a common price index may bias the regression estimates, but that time fixed effects may sufficiently address this issue. Since time fixed effects are included in the regression estimates, there is no problem with deflating trade by the US Consumer Price Index (All Consumer Goods, 1983-4 = 100) obtained from BLS (2008).

Data on GDP (in 1990 international dollars) are from Maddison (2007). Additional data are from World Bank (2011c) using the GDP in 2000 international dollars series, which was reconverted to

be consistent with Maddison's data. Data on population were also obtained from Maddison (2007). Population data for 1948-49 are from World Bank (1951). Several variables are from CEPII (2008): simple geodesic distance (in kilometres), country size (in square kilometres), whether countries share a common major/official language, a border, the number of countries in the dyad that are islands or landlocked, whether the countries in the dyad used to be one country, and details on their colonial history.

Details on the sources of the TA variable are provided in Appendix A. Data on countries' WTO participation status are from Tomz et al. (2007). A number of updates were necessary, mostly for a number of countries that became formal WTO members in the period 2000-2007. Updates were obtained from the WTO website.

The Generalized System of Preferences (GSP) that was initiated in 1969 allows developed nations to unilaterally grant preferential market access to exporters from developing countries. Our binary variable that accounts for the presence of GSP between a country-pair is based on UNCTAD (1974-5, 1979, 1981, 1985, 2005, 2006, 2008). The published preferences are assumed to have remained valid during years for which data could not be obtained. Thus, data for 1973 also apply to preceding years, 1974 also applies to 1975-6, 1977 also applies to 1978, 1979 also applies to 1980-3, 1984 also applies to 1985-94, 2004 also applies to 1995-2003 and 2005 also applies to 2006. 1995 is considered a "break" year in the long gap between data for 1984 and 2004 because GSP schemes are likely to have been altered during the Uruguay Round. Additional information about the dataset is provided in Appendix C.

The first step is to obtain a benchmark estimate of the gravity equation, where *TA* is a binary dummy variable. The heterogeneity of TAs is ignored when estimating regionalism's effect on cross-border trade flows. OLS estimates of equation 7 are presented in Table 4, column 1. Second, column 2 shows the results when TAI replaces the TA dummy, for all provisions covered and column 3 for provisions that are legally enforceable. The third step is to split the TAI into its three components: WTO^+ index, WTO^X index and the IQ index. Column 4 shows results for provisions that are covered, while column 5 considers only the provisions that are legally enforceable.

Columns 6-8 deal with possible correlations between the components of TAI. The WTO^+, WTO^X and IQ indicators are based on a total of 26 individual provisions. Although these provisions are sufficiently distinct to distinguish separate domains of trade policy, some of them could be correlated and thereby bias the parameter estimates obtained in columns 1-5. For example,

restrictions on imports, restrictions on exports and rules on intellectual property rights are all WTO$^+$ policy domains. The principle component technique enables us to extract uncorrelated factors from the underlying provisions. These factors are used as regressors in columns 6-8. Information on the construction of these factors is provided in Appendix D.

The basic model in Table 5, column 1, yields the usual results. Income and distance have the expected signs. Trade increases with incomes and decreases over greater distances between trade partners. Column 1 shows that groups of countries with a TA see trade increase with $e^{0.595} - 1 \approx$ 80 per cent compared to those without a TA. This is a fairly standard result in the gravity equation literature (see, e.g., Van Bergeijk and Brakman, 2010).

More comprehensive trade agreements stimulate international trade. Accounting for the TAs' comprehensiveness in terms of provisions covered, column 2, suggest a positive relation between the comprehensiveness of an agreement and its effect on international trade. This is reinforced after correcting for the provisions' legal enforceability in column 3.

Heterogeneity matters. A breakdown of the overall TAI into the components, WTO$^+$, WTO^X and IQ provisions separately, column 4, shows that WTO$^+$ and IQ provisions are trade promoting, but that WTO^X provisions are not. This result is confirmed after correcting for legal enforceability in column 5. Clearly, not all types of provisions contained in TAs are trade promoting by definition. This is further evidence that the standard "all or nothing" approach in the literature is misleading. For example, the results suggest that TAs with mostly WTO^X provisions will not have as positive an outcome on trade as TAs with predominantly WTO$^+$ provisions.

Reformulating the WTO$^+$, WTO^X and IQ provisions into factors using the principal component analysis shows that not all (types of) provisions have trade-promoting effects, see columns 6-8. The reason is that some of the provisions are aimed at, for example, capital mobility and investment and facilitate (trade substituting) FDI instead of trade.

Table 5: Basic gravity equation estimates

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln GDP								
- importer	0.791***	0.791***	0.791***	0.785***	0.786***	0.787***	0.786***	0.780***
	(0.008)	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)	(0.009)	(0.009)
- exporter	0.936***	0.936***	0.935***	0.932***	0.933***	0.934***	0.932***	0.927***
	(0.009)	-0.009	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
ln	-1.163***	-1.194***	-1.196***	-1.161***	-1.164***	-1.187***	-1.216***	-1.224***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
TA	0.595***							
	(0.014)							
I^C		0.674***						
		(0.021)						
I^E			0.692***					
			(0.023)					
$IWTO^{+, C}$				0.493***				
				(0.076)				
$IWTO^{X, C}$				-1.434***				
				(0.051)				
$IWTO^{+, E}$					0.433***			
					(0.093)			
$IWTO^{X, E}$					-1.526***			
					(0.062)			
IIQ				1.364***	1.389***			
				(0.053)	(0.050)			
Factor 1						-0.214***	-0.415***	-0.187***
						(0.015)	(0.021)	(0.022)
Factor 2						-0.140***	-0.087***	0.115***
						(0.011)	(0.013)	(0.019)
Factor 3						-0.134***	-0.271***	-0.282***
						(0.015)	(0.016)	(0.016)
Factor 4						-0.021	-0.048**	0.036*
						(0.017)	(0.016)	(0.016)
Factor 5						0.317***	0.275***	-0.164***
						-0.018	(0.017)	(0.017)
Factor 6						0.059***	0.410***	-0.360***
						(0.016)	(0.016)	(0.019)
Factor 7						0.313***	-0.036*	0.297***
						-0.013	(0.016)	(0.017)
Factor 8								0.501***
								(0.017)
Factor 9								-0.024
								(0.016)
Constant	-3.877***	-3.627***	-3.599***	-3.760***	-3.770***	-3.588***	-3.321***	-3.095***
	(0.246)	(0.247)	(0.247)	(0.247)	(0.247)	(0.246)	(0.246)	(0.246)
R^2	0.636	0.635	0.635	0.636	0.637	0.636	0.636	0.636
N	442,141	442,141	442,141	442,141	442,141	442,141	442,141	442,141

Notes: Dependent variable: ln(imports). Model estimated with OLS, country and time fixed effects (coefficients omitted to save space). Robust standard errors (clustered by dyad) are in parentheses. Coefficients marked ***/**/* are statistically significant at the 1/5/10 per cent level.

As a robustness check, we also estimate:

$$\ln(M_{ijt}) = \alpha + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(Distance_{ij})$$
$$+ \beta_4 TA_{ijt} + \theta X_{ijt} + \gamma_i F_i + \delta_j F_j + \zeta_t F_t + \varepsilon_{ijt} \tag{6}$$

where *X* is a vector of control variables that account for population, land domain, common language, colonial history and WTO and Generalized System of Preferences (GSP) participation. Regression estimates are presented in Table 6.

The signs of income and distance are as expected and the coefficients are comparable to those in Table 5. The model fit only slightly increases from 0.636 to 0.652, indicating that most of the variation is explained by the determinants included in the basic model. As expected, the presence of a common border, a common language, a shared colonial heritage or shared history as a former nation and participation in the WTO and/or GSP schemes are positively associated with countries' level of trade. Trade is negatively related to the extent to which countries are landlocked and the size of trading partners' population. The variables of interest on regionalism are robust to the addition of control variables, i.e., the parameter estimates have the same signs and are of comparable sizes in both Table 5 and 6.[6]

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[6] In Table 4 we showed whether and how the TA indices are correlated with indicators such as the income level and developmental status. As a check to our main results, we also re-estimated (5) and (6) for different subgroups of countries based on these indicators. In a qualitative sense the results as to the impact of TAs on trade are not affected by these additional estimations.

Table 6: Extended gravity equation estimates

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln GDP								
- importer	0.799***	0.797***	0.797***	0.795***	0.796***	0.795***	0.794***	0.789***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
- exporter	1.054***	1.052***	1.052***	1.050***	1.052***	1.051***	1.050***	1.046***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
ln Distance	-1.045***	-1.065***	-1.066***	-1.042***	-1.045***	-1.067***	-1.084***	-1.088***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
ln Population								
- importer	-0.378***	-0.339***	-0.340***	-0.386***	-0.392***	-0.419***	-0.455***	-0.449***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)	(0.016)	(0.016)
- exporter	-0.563***	-0.524***	-0.525***	-0.570***	-0.576***	-0.603***	-0.639***	-0.633***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)	(0.016)	(0.016)	(0.016)
ln Land area								
- importer	0.495***	0.474***	0.475***	0.503***	0.505***	0.531***	0.559***	0.560***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)	(0.015)	(0.015)
- exporter	0.538***	0.517***	0.517***	0.547***	0.548***	0.574***	0.601***	0.603***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)	(0.014)
Number landlocked								
- one	-2.250***	-2.112***	-2.112***	-2.320***	-2.340***	-2.469***	-2.617***	-2.627***
	(0.088)	(0.089)	(0.089)	(0.089)	(0.089)	(0.090)	(0.090)	(0.090)
- both	-4.216***	-3.947***	-3.951***	-4.344***	-4.380***	-4.661***	-4.957***	-4.970***
	(0.177)	(0.179)	(0.179)	(0.180)	(0.180)	(0.181)	(0.181)	(0.181)
Number of islands								
- one	0.332***	0.392***	0.395***	0.319***	0.314***	0.323***	0.348***	0.345***
	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)
- both	0.996***	1.120***	1.127***	0.946***	0.937***	0.940***	0.999***	0.981***
	(0.091)	(0.091)	(0.091)	(0.091)	(0.091)	(0.091)	(0.091)	(0.091)
Common land	0.219***	0.233***	0.232***	0.237***	0.234***	0.258***	0.257***	0.270***
	(0.020)	(0.021)	(0.021)	(0.020)	(0.020)	(0.021)	(0.021)	(0.021)
Common language	0.370***	0.399***	0.399***	0.377***	0.379***	0.378***	0.394***	0.390***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)
Ever colony	1.228***	1.213***	1.214***	1.218***	1.215***	1.205***	1.189***	1.191***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Common colonizer	0.549***	0.540***	0.541***	0.531***	0.534***	0.537***	0.538***	0.533***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Currently colonized	-1.506***	-1.477***	-1.486***	-1.437***	-1.421***	-1.574***	-1.543***	-1.455***
	(0.312)	(0.318)	(0.317)	(0.316)	(0.318)	(0.311)	(0.316)	(0.322)
Common country	0.812***	0.830***	0.833***	0.778***	0.762***	0.771***	0.775***	0.770***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)	(0.031)	(0.030)
WTO members								
- one	0.008	0.025	0.026	-0.004	-0.005	0.007	0.016	0.009
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
- both	0.273***	0.295***	0.296***	0.259***	0.257***	0.279***	0.289***	0.282***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
GSP	0.312***	0.318***	0.320***	0.289***	0.283***	0.259***	0.236***	0.224***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TA	0.587***							
	(0.014)							
I^C		0.726***						
		(0.021)						
I^E			0.766***					
			(0.023)					
$IWTO^{+, C}$				0.458***				
				(0.075)				
$IWTO^{X, C}$				-1.058***				
				(0.050)				
$IWTO^{+, E}$					0.526***			
					(0.09)			
$IWTO^{X, E}$					-1.154***			
					(0.06)			
IIQ				1.116***	1.080***			
				(0.052)	(0.049)			
Factor 1						-0.176***	-0.421***	-0.241***
						(0.015)	(0.020)	(0.022)
Factor 2						-0.094***	-0.011	0.081***
						(0.011)	(0.013)	(0.019)
Factor 3						-0.096***	-0.223***	-0.221***
						(0.015)	(0.015)	(0.015)
Factor 4						-0.026	0.013	0.089***
						(0.017)	(0.015)	(0.015)
Factor 5						0.308***	0.175***	-0.068***
						(0.018)	(0.016)	(0.017)
Factor 6						0.055***	0.377***	-0.279***
						(0.016)	(0.016)	(0.018)
Factor 7						0.254***	-0.034*	0.182***
						(0.013)	(0.017)	(0.017)
Factor 8								0.438***
								(0.016)
Factor 9								-0.022
								(0.017)
Constant	-18.909***	-18.419***	-18.435***	-19.028***	-19.036***	-19.389***	-19.778***	-19.730***
	(0.277)	(0.278)	(0.278)	(0.279)	(0.280)	(0.282)	(0.281)	(0.282)
R^2	0.652	0.652	0.652	0.653	0.653	0.652	0.652	0.652
N	436,775	436,775	436,775	436,775	436,775	436,775	436,775	436,775

Notes: Dependent variable: ln(imports). Model estimated with OLS, country and time fixed effects (coefficients omitted to save space). Robust standard errors (clustered by dyad) are in parentheses. Coefficients marked ***/**/* are statistically significant at the 1/5/10 per cent level.

As in Table 5, the provisions represented by the three groups of factors do not always have the same effect on trade. Table 7 presents an overview of the findings, which are obtained from combining the signs of the parameter estimates in columns 6-8 in Table 6 with the provisions underlying the factors, which are shown in Appendix D.

The signs are constructed as follows. Take, for example, the WTO^X provision labelled "Environment''. As shown in the appendix, it belongs to factor 7 in group 1. The parameter estimate in Table 6, column 6, shows that factor 7 is positively and significantly related to trade. "Environment'', being a provision that is positively related to trade by means of factor 7 in group 1, is therefore assigned a "+'' in Table 7 under "Group 1''.

However, "Environment'' does not explain much of any factor's variation in group 2. Its effect on trade therefore remains undetermined, which is represented by ".''. Then again, "Environment'' explains much of the variation in factor 5 in group 3. The gravity equation estimates in Table 6, column 8, indicate that factor 5 is negatively and significantly related to trade. The provision is consequently assigned a "-'' in Table 7 under "Group 3''.[7]

Overall, the findings suggest that explicitly taking TA heterogeneity into account matters. Provisions affect trade in different ways, and WTO^+ and IQ provisions are found to be trade promoting, in contrast to WTO^X provisions. Explicitly introducing TA heterogeneity is important.

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[7] We also included all 26 provisions separately; these results are available upon request.

Table 7: WTO$^+$, WTO^X and IQ provisions' effect on trade

Type	Provision	Group 1	Group 2	Group 3	Individual
WTO$^+$	Agriculture	.	.	.	-
	AD & CVM	.	.	.	-
	Customs Administration	.	.	+	.
	Export Restrictions	.	.	+	.
	Import Restrictions	.	.	+	-
	IPR	-	.	.	.
	Investment	-	.	+	-
	Public Procurement	.	.	.	-
	SPS	-	-	-	-
	Services	-	.	+	.
	State Aid	.	-	-	-
	STE	-	-	-	-
	TBT	-	-	-	-
WTO^X	Capital Mobility	-	.	-	.
	Competition	-	.	-	.
	Environment	+	.	-	-
	Labour	-	.	-	-
IQ	Consultations	.	+	+	-
	Definitions	.	+	+	-
	Dispute Settlement	+	.	.	-
	Duration & Termination	+	+	+	-
	Evolutionary Clause	.	+	+	.
	Institutional Framework	+	.	.	-
	Objectives	+	+	+	-
	Plan & Schedule	+	.	.	-
	Transparency	+	+	+	-

Notes: A statistically positive (negative) effect at the 95 per cent level (based on estimates in Table 10) is indicated by a + (-). Insignificant effects are marked ".". Statistical output for individual estimates is not reported, but available upon request.

5. Zero trade flows

For our sample a large part of bilateral of trade flows equals zero. A proper handling of these zero observations is warranted. Also OLS estimates of the log-linearized model may be both biased and inefficient in the presence of heteroskedasticity. All sorts of solutions have been proposed in the literature. Simply adding a positive constant to all flows has been a solution, which is very ad hoc. Helpman et al. (2008) propose a theoretical model rationalizing the zero trade. To implement their estimator, one needs to find an appropriate exclusion restriction for identification of the second stage equation, which can be difficult. An alternative is using a zero-inflated approach (alternative names are "with zeroes," "zero altered," and "hurdle" models). In a survey of the methods that have been proposed in the literature, Head and Mayer (2013) test the performance of six candidates to deal with the problem of zero trade flows. They conclude that the Poisson ML approach is an adequate way to handle the problem of zero flows. We use this method, and the results are presented in Table 8.

We repeat the procedure of section 4, and from column 1 to column 5 deal with different levels of TA heterogeneity. In the previous section we find that WTO^+ and IQ provisions promote trade in contrast to WTO^X provisions.[8] The same holds in this case, where we explicitly deal with zero trade flows. Our conclusion seems robust to the presence of zero trade flows.

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[8] As a further step into the effects of WTO^X we also estimated the Poisson zero inflated model. The second stage results, describing the intensive margin of trade, show qualitatively the same outcome as presented in Table 8, where WTO^X does not promote trade. The first stage, describing the extensive margin or the probability of finding zero trade, shows, that WTO^X significantly, but adversely, affects the existence of trade.

Table 8: Basic gravity equation estimates with zeros

Variable	(1)	(2)	(3)	(4)	(5)
ln GDP					
- importer	0.914***	0.948***	0.947***	0.939***	0.938***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
- exporter	0.948***	0.982***	0.981***	0.974***	0.972***
	(0.024)	(0.025)	(0.025)	(0.024)	(0.025)
ln Distance	-0.675***	-0.674***	-0.673***	-0.671***	-0.671***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
TA	0.430***				
	(0.027)				
I^C		0.539***			
		(0.031)			
I^E			0.575***		
			(0.034)		
$IWTO^{+,C}$				0.403**	
				(0.140)	
$IWTO^{X,C}$				-0.169	
				(0.121)	
$IWTO^{+,E}$					0.308
					(0.198)
$IWTO^{X,E}$					-0.110
					(0.138)
IIQ				0.305*	0.343**
				(0.144)	(0.133)
Constant	-10.329***	-11.293***	-11.251***	-11.072***	-11.038***
	(0.666)	(0.693)	(0.693)	(0.676)	(0.688)
Pseudo-R^2	0.875	0.875	0.875	0.875	0.875
N	803,675	803,675	803,675	803,675	803,675
Wald Chi^2	408,788.855	405591.133	405128.204	408204.653	408410.155
Log-pseudolikelihood	$-5.090e^7$	$-5.081e^7$	$-5.082e^7$	$-5.075e^7$	$-5.076e^7$

Notes: Dependent variable: imports. Model estimated with Poisson maximum likelihood estimation. Country and time fixed effects are included (coefficients omitted to save space). Robust standard errors (clustered by dyad) are in parentheses. Coefficients marked ***/**/* are statistically significant at the 1/5/10 per cent level. Note that we have 442,141 positive observations and 803,675-442,141=361,534 zero observations.

6. Conclusions

The seminal article of Rose (2004) revived interest in the effects of trade agreements on international trade. A key characteristic of this literature is the overly simplistic way in which trade agreements are treated: as a binary dummy variable. However, trade agreements come in many different forms and shapes. This paper addresses this heterogeneity in trade agreements. Using a database of 296 agreements we distinguish 13 policy domains that are within the present scope of the WTO's mandate (i.e. WTO$^+$ provisions) and 4 policy domains that are not (i.e. WTO^X provisions). An additional 9 indicators of the agreements' institutional quality (IQ) were also obtained. Furthermore, the possibility that these undertakings may or may not be legally enforceable is accounted for. The degree to which governments negotiate comprehensive trade agreements is positively related to their level of economic development. Moreover, the number of WTO members in a TA and its comprehensiveness are positively associated. This is because many provisions contained in trade agreements generally build on existing WTO policies. The evidence suggests that WTO members use TAs not to undermine or circumvent the WTO, but rather to build on the trade-promoting, non-discriminatory policies embedded in the multilateral system–even when not all TA participants are WTO members.

Our extensive taxonomy of trade agreements enables us to shed some light on whether trade agreement heterogeneity affects international trade differently. Using a gravity model, we find that trade agreement heterogeneity indeed matters in order to grasp the impact of TAs on international trade. The "all provisions are equal'' approach in the literature is therefore only of limited use. Distinguishing between various types of provisions confirms that they have different effects on international trade. Standard trade provisions that are part of the WTO's mandate (WTO$^+$ policies) and those that enhance an agreements' institutional quality are found to be trade promoting, whereas more modern provisions that are beyond the scope of the WTO have the opposite effect. This conclusion is not altered if we explicitly deal with the presence of zero trade flows. The overall conclusion is thus that trade agreement heterogeneity matters for international trade.

References

Anderson, J.E. and E. Van Wincoop, 2003. "Gravity with gravitas: A solution to the border puzzle." *American Economic Review* 93, 170-192.

Baccini, L., Dür, A., Elsig, M. and K. Milewicz, 2011. "The design of preferential trade agreements: A new dataset in the making." WTO Staff Working Paper ERSD-2011-10.

Baier, S.L. and J.H. Bergstrand, 2004. "Economic determinants of free trade agreements." *Journal of International Economics* 61, 29-63.

Baier, S.L. and J.H. Bergstrand, 2007. "Do free trade agreements actually increase members' international trade?" *Journal of International Economics* 71, 72-95.

Baier, S.L., Dwyer, G.P. and R. Tamura, 2006. "How important are capital and total factor productivity for economic growth?" *Economic Inquiry* 44, 23-49.

Baldwin, R.E., 1997. "The causes of regionalism." *The World Economy* 20, 865-888.

Baldwin, R.E., and D. Taglioni, 2006. "Gravity for dummies and dummies for gravity equations." NBER Working Paper No. 12516. NBER: Cambridge, MA.

Bergstrand, J.H. and P. Egger, 2012. "What determines BITs?" *Journal of International Economics* (forthcoming)

Bhagwati, J. and A. Panagariya, 1996. "The theory of preferential trade agreements: Historical evolution and current trends". *American Economic Review* 86, 82-87.

Blonigen, B.A., 1997. "Firm-specific assets and the link between exchange rates and foreign direct investment," *American Economic Review* 87: 447-465.

BLS, 2008. *Consumer price index*. http://www.bls.gov/cpi, retrieved 8 November 2008.

CEPII, 2008. "Geodesic distances". http://www.cepii.fr/anglaisgraph/bdd/distances.htm, retrieved 8 November 2008.

Chang, P. and M. Lee, 2011. "The WTO trade effect." *Journal of International Economics* 85, 53-71.

CIA, 2011. "The CIA world factbook." https://www.cia.gov/library/publications/the-world-factbook, retrieved January 2, 2012.

Dür, A., Baccini, L., Elsig, M. and K. Milewicz, 2012. "The design of international trade agreements: Introducing a new database." Unpublished manuscript.

Eaton, J., and S. Kortum, 2001. "Trade in capital goods." *European Economic Review* 45, 1195-1235.

Egger, P. and M. Larch, 2008. "Interdependent preferential trade agreement memberships: An empirical analysis." *Journal of International Economics* 76, 384-399.

Estevadeordal, A. and K. Suominen, 2008. "Sequencing regional trade integration and cooperation agreements." *The World Economy* 31, 112-140.

Felbermayr, G. and W. Kohler, 2006. Exploring the intensive and extensive margins of world trade. *Review of World Economics* 142, 642-674.

Fink, C. and M. Molinuevo, 2008. "East Asian preferential trade agreements in services: Liberalization content and WTO rules." *World Trade Review* 7, 641-673.

Haftel, Y.Z., 2013. "Commerce and institutions: Trade, scope, and the design of regional economic organizations." *The Review of International Organizations* 8, 1-26.

Head, K. and T. Mayer, 2013. "Gravity equations: Workhorse, toolkit, and cookbook." in G. Gopinath, E. Helpman and K. Rogoff (eds), *Handbook of International Economics,* Vol. 4, forthcoming.

Helpman, E., Melitz, M. and Y. Rubenstein, 2008. "Estimating trade flows: Trading partners and trading volumes." *Quarterly Journal of Economics* 123, 441-487.

Herz, B. and M. Wagner, 2011. "The 'real' effect of GATT/WTO – a generalised approach." *The World Economy* 34, 1014-1041.

Hicks, R. and S.Y. Kim, 2012. "Reciprocal trade agreements in Asia: Credible commitments to trade liberalization or paper tigers?" *Journal of East Asian Studies* 12:1-29.

Horn, H., Mavroidis, P.C. and A. Sapir, 2010. "Beyond the WTO? An anatomy of EU and US preferential trade agreements." *The World Economy* 33, 1565-1588.

Houde, M., Kolse-Patil, A. and S. Miroudot, 2007. "The interaction between investment and services chapters in selected regional trade agreements". OECD Trade Policy Paper 55, Paris: OECD.

IMF, 1995. *Direction of Trade Statistics Historical Database (1948-1980) CD-ROM*. Washington, DC: IMF.

IMF, 2008. *Direction of Trade Statistics*. Washington, DC: IMF.

Kohl. T., 2012. *Trade agreements galore: Who, what, when, where, why, how and how much?* Groningen: University of Groningen.

Krishna, P., 1998. "Regionalism and multilateralism: A political economy approach." *Quarterly Journal of Economics* 113, 227-250.

Krugman, P., 1993. "Regionalism versus multilateralism: Analytic notes." in J. De Melo and A. Panagariya (eds), *New dimensions in regional integration*. Cambridge: Cambridge University Press.

Kucik, J., 2012. "The domestic politics of institutional design: Producer preferences over trade agreement rules." *Economics and Politics* 24, 95-118.

Lesher, M. and S. Miroudot, 2006. "Analysis of the economic impact of investment provisions in regional trade agreements." OECD Trade Policy Paper 36, Paris: OECD.

Liu, X., 2009. "GATT/WTO promotes trade strongly: Sample selection and model specification." *Review of International Economics* 17, 428-446.

Maddison, A., 2007. "Historical Statistics of the World Economy: 1-2006 AD." http://www.ggdc.net/maddison, retrieved November 8, 2008.

Mansfield, E.D. and H.V. Milner, 2012. *Votes, vetoes, and the political economy of international trade agreements.* Princeton, NJ: Princeton University Press.

McGill, 2009. "PTA database." http://ptas.mcgill.ca, retrieved October 3, 2009.

Rose, A., 2004. "Do we really know that the WTO increases trade?" *American Economic Review* 94, 98-114.

Santos-Silva, J. and S. Tenreyro, 2006. "The Log of Gravity." *The Review of Economics and Statistics* 88: 641-658.

Subramanian, A. and S. Wei, 2007. "The WTO promotes trade, strongly but unevenly." *Journal of International Economics* 72, 151-175.

Tomz, M., Goldstein, J. and D. Rivers, 2007. "Do we really know that the WTO increases trade? Comment." *American Economic Review* 97, 2005-2018.

Tuck, 2009. "Trade Agreements Database." http://dartmouth.edu/tradeb, retrieved October 3, 2009.

UNCTAD, 1974, 1975, 1979, 1981, 1985. *Operation and effects of the Generalized System of Preferences*. Geneva: UNCTAD.

UNCTAD, 2005, 2006, 2008, 2011. *Generalized System of Preferences: List of beneficiaries*. Geneva: UNCTAD.

UNCTAD, 2011. "Merchandise trade matrix, exports in thousands of dollars, annual, 1995-2010." http://unctadstat.unctad.org, retrieved January 2, 2012.

Van Bergeijk, P.A.G. and S. Brakman (eds). 2010. *The gravity model in international trade: Advances and applications.* Cambridge: Cambridge University Press.

Wooldridge, J. 2002. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

World Bank, 1951. *Demographic yearbook 1949-1950*. World Bank: Washington, DC.

World Bank, 2011a. "Global Preferential Trade Agreements Database." http://wits.worldbank.org/gptad, retrieved December 18, 2011.

World Bank, 2011b. "Classification of economies by income and region." http://data.worldbank.org/about/country-classifications/country-and-lending-groups, retrieved December 18, 2011.

World Bank, 2011c. "Development indicators." http://data.worldbank.org/indicator, retrieved December 18, 2011.

WorldTradeLaw.net, 2009. "FTA Database." http://www.worldtradelaw.net/fta/ftadatabase/ftas.asp, retrieved October 2, 3009.

WTO, 2011a. *The WTO and preferential trade agreements: From co-existence to coherence.* Geneva: WTO.

WTO, 2011b. "Regional Trade Agreements Information System." http://rtais.wto.org, retrieved December 18, 2011.

Appendix A   Coding Procedure of Trade Agreements

The dataset in this study draws on the Global Preferential Trade Agreements Database (GPTAD), which was developed by the World Bank and the Tuck Centre for International Business (World Bank 2011a). GPTAD is an extensive database that contains the legal texts of virtually all trade agreements that have been enforced in the post-war period. Its unique feature is that it makes the agreements text searchable for a large number of keywords. Table A1 lists the 344 TAs that are or have been enforced in the period 1948-2011. 296 of these agreements have been classified by GPTAD and are therefore included in this study.

Contrary to Horn et al. (2010) and following WTO (2011a), agreements with non-WTO members are included. This is useful to investigate possible differences or similarities between the nature and number of provisions contained in (non) WTO members' trade policy commitments. Moreover, the sample is not restricted to only those agreements that have been notified to the WTO. The reason for this is because notification is neither a legal prerequisite for governments to be able to enforce a TA, nor some form of WTO endorsement that it is a "real" TA. Of the 296 TAs in the sample, 193 have been notified to the WTO. Finally, agreements are included even if they have already expired. This is because these agreements also contain information about the domains for which their governments (at some point in time) enforced the specific trade policies that are of interest in this study.

GPTAD classifies the provisions of every agreement according to WTO criteria, which allows the user to compare provisions across agreements. So, a researcher interested in measures on anti-dumping and countervailing measures may search the database with these keywords. All agreements containing provisions on this topic will then be listed, along with the relevant chapters, titles and/or articles for each agreement.

As discussed in WTO (2011a), the number of policy domains depends on the identification strategy. Horn et al. (2010), for instance, use chapter and article headings of the agreements in their sample to reach a total of 52 policy domains.   An alternative would be to compile a detailed list of each and every single policy domain that could conceptually be included in a TA. Although this approach has the merit of exhaustiveness and precision, which is arguably a preferred route when analysing a limited set of agreements, it introduces even more complexity when the objective of a study such as this one is to identify the key domains of importance for a substantial number of TAs.

What are the provisions identified in the present study? First, GPTAD features 13 WTO$^+$ policy domains. These provisions, all of which are part of the WTO's current mandate, are listed in Table A2, along with a brief intuition of how it relates to trade. In addition, it describes the purpose of an additional four WTO^X policy domains that extend beyond the scope of the WTO. Finally, details on nine relevant indicators of the agreement's institutional quality (IQ) are also included.

Having identified the provisions that can be extracted from GPTAD, every TA can now be coded. GPTAD is used to assign a binary variable to each policy domain that is covered by the TA under investigation. Policy domains for which the agreement contains a provision are coded 1 and 0 otherwise. In order for a provision to be considered "covered" (C) and scored 1, all that is needed is for the provision to reflect agreement by both parties to somehow cooperate with a view of trade liberalisation. The issue of legal enforceability is not relevant at this stage. Hence, a provision calling for an exchange of Parties' information on their environmental policies would score a 1, but so would provisions that give rise to obligations to protect natural resources. The odd provisions that only state that Parties reserve the right to protect their natural resources are scored 0 because such measures are essentially protectionist and do not require any form of cooperation.

Table A1: Trade agreements by year of enforcement

Year	Trade agreement
<1950	Belgium-Netherlands-Luxembourg Customs Union (Benelux) (1957)*, Southern African Customs Union (SACU).
1958	European Community (EC).
1960	European Free Trade Association (EFTA).
1961	Central American Economic Integration Agreement (CAEIA) (1966)*
1966	Central American Common Market (CACM) (1970)*
1968	Association of Southeast Asian Nations (ASEAN) Free Trade Agreement (AFTA).
1971	EC-Malta (2004), EC-Overseas Countries and Territories (EC-OCT).
1973	Caribbean Community (CARICOM), Costa Rica-Panama, EC-Cyprus (2004), EC-Egypt, EC-Iceland, EC-Norway, EC-Switzerland-Liechtenstein, Honduras-Panama.
1976	Asia Pacific Trade Agreement (APTA), Australia-Papua New Guinea (PATCRA), EC-Algeria.
1977	EC-Syria.
1981	Gulf Cooperation Council (GCC), India-Maldives, Latin American Integration Association (LAIA), South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA/PACER).
1982	Australia-New Zealand (ANZCERTA), Organization of Eastern Caribbean States (OECS)*.
1984	China-India.
1985	Economic Community of Central African States (ECCAS), Economic Cooperation Organization (ECO), Israel-US.
1988	Andean Community (Cartanega).
1989	Arab Maghreb Union (AMU), Canada-US Free Trade Agreement (CUSFTA) (1994)*.
1990	Central American Common Market (CACM) (revival)
1991	EC-Andorra, India-Nepal, Laos-Thailand, Mercado Comun del Sur (MERCOSUR).
1992	Armenia-Russia, Belarus-Ukraine, Czech Republic-Slovak Republic (2004), EC-Czech Republic (2004), EC-Hungary (2004), EC-Poland (2004), EC-Slovak Republic (2004), EFTA-Czech Republic (2004), EFTA-Slovak Republic (2004), EFTA-Turkey, Faroe Islands-Norway, Kyrgyz Republic-Russia.
1993	Armenia-Moldova, Bolivia-Chile, CARICOM-Venezuela, Chile-Venezuela, EC-Bulgaria (2007), EC-Romania (2007), Economic Community of West African States (ECOWAS), EFTA-Bulgaria (2007), EFTA-Hungary (2004), EFTA-Israel, EFTA-Poland (2004), EFTA-Romania (2007), Russia-Ukraine.
1994	Armenia-Kyrgyz Republic, Armenia-Ukraine, Baltic Free Trade Area (BAFTA) (2004)*, Bolivia-Mexico*, Central European Free Trade Agreement (CEFTA), Common Market for Eastern and Southern Africa (COMESA), Commonwealth of Independent States (CIS), Costa Rica-Mexico, European Economic Area (EEA), Faroe Islands-Switzerland, Georgia-Russia, Kazakhstan-Ukraine, Melanesian Spearhead Group (MSG), Moldova-Romania (2007), North American Free Trade Agreement (NAFTA), Turkmenistan-Ukraine, Ukraine-Uzbekistan, West African Economic and Monetary Union (WAEMU).
1995	Armenia-Cyprus (2004)*, Armenia-Georgia, Armenia-Iran, Armenia-Turkmenistan, Association of Caribbean States (ACS)*, Azerbaijan-Ukraine, CARICOM-Colombia, Colombia-Mexico-Venezuela*, EC-Estonia (2004), EC-Latvia (2004), EC-Lithuania (2004), EFTA-Slovenia (2004), Estonia-Ukraine (2004), Georgia-Ukraine, Kazakhstan-Kyrgyz Republic, Kyrgyz Republic-Moldova, Kyrgyz Republic-Ukraine, South Asian Preferential Trade Agreement (SAPTA) (2006).
1996	Azerbaijan-Georgia, Canada-Chile, Canada-Israel, Croatia-Macedonia, Czech Republic-Estonia (2004), Czech Republic-Israel (2004), Czech Republic-Latvia (2004), Czech Republic-Lithuania (2004), EC-Turkey, EFTA-Estonia (2004), EFTA-Latvia (2004), EFTA-Lithuania (2004), Estonia-Slovak Republic (2004), Estonia-Slovenia (2004), Georgia-Turkmenistan, Israel-Turkey, Kyrgyz Republic-Uzbekistan, Latvia-Slovak Republic (2004), Latvia-Slovenia (2004), Lithuania-Poland (2004), Lithuania-Slovak Republic (2004), Lithuania-Slovenia (2004), Macedonia-Slovenia (2004).
1997	Armenia-Canada*, Croatia-Slovenia (2004), Czech Republic-Turkey (2004), EC-Faroe Islands, EC-PLO, EC-Russia*, EC-Slovenia (2004), Estonia-Faroe Islands (2004), Estonia-Turkey (2004), Eurasian Economic Community (EAEC), Georgia-Kazakhstan, Hungary-Israel (2004), Hungary-Turkey (2004), Israel-Poland (2004), Israel-Slovak Republic (2004), Lithuania-Turkey (2004), MERCOSUR-Bolivia, Mexico-Nicaragua, Romania-Turkey (2007), Slovak Republic-Turkey (2004).
1999	Armenia-Kazakhstan, Bulgaria-Macedonia (2007), Chile-Costa Rica, Chile-El Salvador, Chile-Guatemala*, Chile-Honduras*, EFTA-Morocco, EFTA-PLO, Macedonia-Turkey, Poland-Turkey (2004).
2001	Albania-Macedonia, Bosnia & Herzegovina-Macedonia, Bosnia & Herzegovina-Macedonia, Bosnia & Herzegovina-Slovenia (2004), Bulgaria-Estonia (2004), Bulgaria-Israel, Bulgaria-Lithuania (2004), Canada-Costa Rica, Central America-Mexico, EC-Macedonia, EFTA-Macedonia, EFTA-Mexico, Israel-Romania (2007), Macedonia-Ukraine, Mexico-Northern Triangle, Northern Triangle*, Tajikistan-Ukraine, Vietnam-US.
2002	Albania-Bosnia & Herzegovina*, Albania-Bulgaria (2007), Albania-Croatia, Armenia-Estonia (2004)*, Bosnia & Herzegovina-Romania (2007), Bosnia & Herzegovina-Serbia & Montenegro*, Bosnia & Herzegovina-Turkey, Bulgaria-Latvia (2004), CARICOM-Dominican Republic, Croatia-Turkey, EC-Croatia, EC-Jordan, EC-San Marino, EFTA-Croatia, EFTA-Jordan, El Salvador-Panama, Guatemala-Panama*, Japan-Singapore, Pakistan-Sri Lanka.
2003	Afghanistan-India, Albania-Moldova, Albania-Romania (2007), Albania-Serbia & Montenegro*, ASEAN-China, Australia-Singapore, Bosnia & Herzegovina-Bulgaria (2007), Bosnia & Herzegovina-Moldova, Bulgaria-Moldova (2007)*, Bulgaria-Serbia & Montenegro (2007)*, CEFTA-Croatia (2007)*, Chile-South Korea, Chile-US, China-Hong Kong, China-Macao, Croatia-Lithuania (2004), Croatia-Moldova, Croatia-Serbia & Montenegro, Dominican Republic-Panama, EC-Chile, EC-Lebanon, EFTA-Singapore, Mexico-Uruguay*, Moldova-Serbia & Montenegro, Moldova-Ukraine, Pacific Island Countries Trade Agreement (PICTA), Romania-Serbia & Montenegro (2007), Singapore-US.

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2004	Australia-Thailand, Australia-US, Bosnia & Herzegovina-Croatia, CARICOM-Costa Rica, Common Economic Zone (CEZ), EC-Fiji-Papua New Guinea*, EC-Serbia & Montenegro*, EFTA-Chile, Japan-Mexico, Jordan-Singapore, Macedonia-Moldova, Macedonia-Romania (2007), Morocco-Turkey, Morocco-US, Panama-Taiwan, Syria-Turkey, Tunisia-Turkey.
2005	Bahrain-US, Bhutan-India, CARICOM-Cuba, Chile-China, EFTA-Tunisia, Egypt-Turkey, Faroe Islands-Iceland, India-Singapore, Japan-Malaysia, MERCOSUR-Colombia-Ecuador*, MERCOSUR-Peru*, MERCOSUR-SACU*, PLO-Turkey, New Zealand-Thailand, Singapore-South Korea.
2006	ASEAN-South Korea, Bangladesh-India, Central America-Dominican Republic-US, Chile-India, Chile-Peru, EC-Albania, EFTA-South Korea, Guatemala-Taiwan*, MERCOSUR-Mexico*, Panama-Singapore, South Asian Free Trade Agreement (SAFTA)*, Trans-Pacific Strategic Economic Partnership (TPSEP).
2007	Chile-Japan, China-Pakistan, EFTA-Egypt, EFTA-Lebanon, Japan-Thailand, Mauritius-Pakistan.
2008	Albania-Turkey, ASEAN-Japan, Brunei-Japan, Chile-Panama, China-New Zealand, EC-Bosnia & Herzegovina, EC-CARIFORUM States EPA, EC-Montenegro, EFTA-SACU, El Salvador-Honduras-Taiwan, Georgia-Turkey, Indonesia-Japan, Japan-Philippines, Malaysia-Pakistan, Nicaragua-Taiwan*.
2009	Australia-Chile, Canada-Peru, Chile-Colombia, China-Singapore, EC-Cameroon, EC-Côte d'Ivoire, EFTA-Canada, Japan-Switzerland, Japan-Vietnam, MERCOSUR-India, Oman-US, Peru-Singapore, Peru-US.
2010	ASEAN-Australia-New Zealand, ASEAN-India, EFTA-Albania*, EFTA-Serbia*, India-South Korea, Montenegro-Turkey*, Peru-China, Serbia-Turkey*.
2011	Canada-Colombia, Chile-Turkey*, EC-South Korea*, EFTA-Colombia, EFTA-Peru*, Hong Kong-New Zealand*, India-Japan, India-Malaysia*, Jordan-Turkey*, Peru-South Korea*.

Notes: TAs marked * were not indexed due to missing information in the GPTAD. Years of expiration or transition to another TA are in parentheses. Source: McGill (2009), Tuck (2009), WorldTradeLaw.net (2009), World Bank (2011a) and WTO (2011b).

Table A2: Description of provisions by type

Type	Provisions	Description
WTO[+]	Agriculture	Agreement to liberalize trade in agricultural commodities by reducing/abolishing barriers to trade such as tariffs, quotas and subsidies. Agreement to harmonize agricultural policies may also be included. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the GATT 1994/WTO Agriculture Agreement.
WTO[+]	Anti-Dumping & Countervailing Measures (AD & CVM)	Agreement with rules on anti-dumping and countervailing measures that specify the conditions under which parties may deviate from their liberalization commitments to offset injury caused by dumping. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the GATT 1994/WTO Agreement on Subsidies and Countervailing Measures (SCM Agreement).
WTO[+]	Customs Administration	Agreement to reduce administrative barriers to trade by simplifying customs administration with respect to issues such as import licensing requirements, valuation and nomenclature. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the GATT 1994/WTO Agreement on Import Licensing Procedures.
WTO[+]	Export Restrictions	Agreement to liberalize duties, charges and/or quantitative restrictions on exported goods. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the GATT 1994.
WTO[+]	Import Restrictions	Agreement to liberalize duties, charges and/or quantitative restrictions on imported goods. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the GATT 1994.
WTO[+]	Intellectual Property Rights (IPR)	Agreement on the protection of intellectual property rights (copyrights, patents, trademarks, etc.) in foreign markets. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement).
WTO[+]	Investment	Agreement to prohibit discriminatory trade-related investment practices such as local content requirements, trade balancing requirements and foreign exchange restrictions. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the WTO Agreement on Trade-Related Investment Measures (TRIMS).
WTO[+]	Public Procurement	Agreement to grant access to foreign parties and further liberalize the market for public procurement. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the WTO Agreement on Government Procurement (GPA).
WTO[+]	Sanitary & Phytosanitary Measures (SPS)	Agreement to simplify and/or harmonize import requirements with respect to food safety and animal and plant health. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the WTO Sanitary and Phytosanitary (SPS) Agreement.
WTO[+]	Services	Agreement to liberalize trade in services. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the General Agreement on Trade in Services (GATS).
WTO[+]	State Aid	Agreement to restrict any form of aid that could give rise to unfair competitive advantages. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the GATT 1994/WTO Agreement on Subsidies and Countervailing Measures (SCM Agreement).
WTO[+]	State Trading Enterprises (STE)	Agreements to ensure market access and non-discriminatory behaviour by governmental enterprises. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the GATT 1994.
WTO[+]	Technical Barriers to Trade (TBT)	Agreements to reduce barriers to trade by simplifying and harmonizing standards and technical barriers such as testing and certification procedures. Undertakings may be in line with, deepen and/or broaden the scope of provisions specified in the WTO Agreement on TBT.

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WTO[X]	Capital Mobility	Agreement to improve capital mobility by relaxing restrictions on foreign capital and facilitating cross-border financial transfers.
WTO[X]	Competitiion	Agreements on competition policy to restrict or prohibit monopolies' activities to promote undistorted competition.
WTO[X]	Environment	Agreement to uphold environmental laws, provided that they are not used as disguised barriers to trade. Commitments to enforce environmental laws so as not to attract (foreign) business activity that would exploit environmental resources
WTO[X]	Labour	Agreement to uphold labour laws so as not to attract (foreign) business activity that would exploit employees and/or to facilitate labour mobility.
IQ	Consultations	Signatories wishing to address issues arising from the implementation of the EIA, or their broader economic partnership in general, may engage in a diplomatic dialogue known as consultations "with a view to finding a mutually satisfactory solution". When specified, consultation procedures provide details on when and where consultations are to be held, which parties (e.g. non-governmental organizations, external advisors, etc.) may be allowed to attend, and the issues that may be addressed. In most cases, signatories must first attempt to solve disputes according to consultation procedures before having access to the EIA's dispute settlement mechanism.
IQ	Definition	By providing definitions of key concepts, signatories increase the clarity, scope and certainty of their commitments.
IQ	Dispute Settlement	By agreeing on dispute settlement procedures, signatories reduce ambiguity and create a judicially binding mechanism that ensures the implementation of the EIA.
IQ	Duration & Termination	Signatories reduce ambiguity about their commitments by specifying the duration of the EIA and the means by which it can be terminated.
IQ	Evolutionary Clause	Signatories commit themselves to a built-in periodic review mechanism that facilitates amendments and improvements to the original EIA.
IQ	Institutional Framework	The signatories provide details on the institutional framework that will be used to oversee the implementation of the EIA.
IQ	Objectives	The signatories enhance the clarity and context of their commitments by specifying the objectives they envision by signing the EIA.
IQ	Plan & Schedule	The signatories commit themselves to a specific timetable by detailing the schedule according to which the EIA is to be implemented.
IQ	Transparency	The signatories commit themselves to creating greater institutional transparency, e.g. by agreeing on how and when information on economic policy will be shared.

Source: World Bank (2011a).

A provision that is also deemed to be legally enforceable scores 1 for "enforceability" (E). The criteria build on those laid down in Horn et al. (2010). These provisions typically use the word "shall". For example: "Parties shall grant service providers treatment no less favourable than that accorded to their own." Timing is also important. A provision calling for gradual liberalisation of government procurement policies, without indicating the date by which the liberalisation must be complete, scores 0. This is because it is unclear when the Party must be able to meet that particular requirement. Provisions stating that Parties "shall negotiate", "shall consider" or "shall cooperate" are also difficult to be enforced. Negotiations may still fail and not abolish trade barriers. It also seems very unlikely that it would be able to prove that Parties have not given due consideration to a matter or that they have not cooperated.[9] For clarity and ease of replication, several excerpts from actual trade agreements are provided below. Table A3 shows examples of WTO^+ provisions and WTO^X provisions and classifies them as being either enforceable or non-enforceable, based on the criteria discussed above.

It is useful to reflect on some of the comments on Horn et al. (2010)'s notion of legal enforceability discussed in WTO (2011a: 129-130). Firstly, the question whether an undertaking is sufficiently formulated to give rise to an obligation is a matter of treaty interpretation. For example, dispute settlement rulings of the WTO Appellate Body have shown that obligations may arise from statements using the word "should" instead of "shall". Secondly, provisions that are excluded from the agreements' dispute settlement system may still be subject to dispute settlement flowing from commitments that the Parties may have elsewhere. This argument applies not only to WTO^+ provisions related to other commitments at the WTO, but also to WTO^X commitments arising from, for example, international treaties on labour standards and environmental protection. Thirdly, the legal enforceability of a provision that allows the use of countermeasures to enforce rights or obligations may be limited by commitments stemming from other agreements. Finally, provisions not subject to dispute settlement may still be enforceable through political and diplomatic channels, but the reverse could also hold: it may not at all times be possible to enforce provisions which are subject to dispute settlement, due to political, non-legal and/or resource considerations. Indeed, it is important to acknowledge that there are limitations to the extent to which the legal enforceability of an undertaking can be determined with absolute certainty. However, it is still useful to differentiate, in one way or another, between those undertakings that instil in the reader some sense of concrete and imminent policy liberalisation and those that merely reflect a loosely defined agreement to explore possible avenues of future cooperation.

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[9] All IQ provisions are considered fully legally enforceable because they provide the underlying organisational mechanism that are needed to implement the agreed upon commitments, including consultations and dispute settlement.

Type	Provision	Covered and…	Example(s)
WTO[+]	AD & CVM	not enforceable	(...) The provisions of this Article shall not be subject to the dispute settlement provisions of this Agreement.
		enforceable	Each Party retains its rights and obligations under Article VI of GATT 1994 and the WTO Agreement, and their successors, with regard to the application of antidumping and countervailing duties.
WTO[+]	Customs Administration	not enforceable	The Member States recognise that the objectives of this Agreement may be promoted by harmonisation of customs policies and procedures in particular cases. Accordingly the Member States shall consult at the written request of either to determine any harmonisation which may be appropriate.
		enforceable	The Parties shall apply the provisions of Article VII of GATT 1994 and the WTO Agreement on the Implementation of Article VII of GATT 1994 for the purposes of determining the customs value of goods traded between the Parties.
WTO[+]	IPR	not enforceable	Each Party, recognizing the importance of protecting intellectual property in further improving the business environment in the Party, shall: (a) endeavor to improve its intellectual property protection system; (b) comply with the obligations set out in the international agreements relating to intellectual property to which it is a party; (c) endeavour to become a party to international agreements relating to intellectual property to which it is not a party; (d) endeavour to ensure transparent and streamlined administrative procedures concerning intellectual property; (e) endeavor to ensure adequate and effective enforcement of intellectual property rights; and (f) endeavor to further promote public awareness of protection of intellectual property.
		enforceable	The Parties agree that the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights shall govern and apply to all intellectual property issues arising from this Agreement. // Each Party affirms its rights and obligations with respect to each other Party under the TRIPS Agreement. Each Party shall accord to the nationals of each other Party treatment no less favourable than it accords to its own nationals with regard to the protection1 of intellectual property, subject to the exceptions provided in the TRIPS Agreement and in those multilateral agreements concluded under the auspices of WIPO. // The Parties shall grant and ensure adequate and effective protection of intellectual property rights on a non-discriminatory basis, including effective measures for enforcing such rights against infringement, and particularly against counterfeiting and piracy.
WTO[+]	Investment	not enforceable	To promote investments, the Parties agree to enter into negotiations in order to progressively liberalise the investment regime. // To promote investments and to create a liberal, facilitative, transparent and competitive investment regime, the Parties agree to enter into negotiations in order to progressively liberalise their investment regimes, strengthen cooperation in investment, facilitate investment and improve transparency of investment rules and regulations, and provide for the protection of investments. // If a Party grants to a non-Party, after the entry into force of this Agreement, a more favourable investment framework than under this Agreement, it shall afford adequate opportunity to the other Parties to seek to obtain, including through possible negotiations, comparable conditions, on a mutually beneficial basis.
		enforceable	The Sides will not: - impose local taxes or charges, directly or indirectly on goods, covered by the present agreement, of another Side, at the rate that exceeds the level of relevant taxes or charges imposed on analogous goods of the local production or those produced in third countries; - introduce special restrictions or demands towards export and import of goods, covered by the present agreement, that in similar cases are not used towards analogous goods of the local production or those produced in third countries;- use different rules towards warehousing, unloading, storage, shipment of goods, originated from another country to the agreement, as well as towards repayments and remittances, with the exception of rules that in similar cases are used towards domestic goods or those originated from third countries.

WTO[+]	Public Procurement	not enforceable	The Parties will progressively develop their respective rules, conditions and practices on public procurement and shall grant suppliers of the other Party access to contract award procedures on their respective public procurement markets not less favourable than that accorded to companies of any third country. // The Parties consider the liberalization of their respective public procurement markets as an objective of this Agreement. The Parties aim at opening up of the award of public contracts on the basis of non-discrimination and reciprocity. // The Parties shall, subject to their laws, regulations and policies, exchange information in respect of their government procurement policies and practices.
		enforceable	The Parties consider the opening up of the award of public contracts on the basis of non-discrimination and reciprocity, to be a desirable objective. 2. As of the entry into force of this Agreement, both Parties shall grant each otherÕs companies access to contract award procedures a treatment no less favourable than that accorded to companies of any other country.
WTO[+]	SPS	not enforceable	The Parties shall aim to reduce differences in standardisation and conformity assessment. To this end the Parties shall conclude where appropriate agreements on mutual recognition in the field of conformity assessment.
		enforceable	Each party affirms its rights and obligations with respect to each other Party under the SPS Agreement. // Each Party undertakes not to adopt or maintain any prohibition or quantitative restriction on the importation of any goods of the other Parties or on the exportation of any goods destined for the territory of the other Parties, except in accordance with its WTO rights and obligations or other provisions in this Agreement. // The Parties reaffirm the rights and obligations relating to SPS measures under the SPS Agreement among those Parties that are parties to the said Agreement. // The Parties shall apply their regulations in sanitary and phytosanitary matters in a non-discriminatory fashion and shall not introduce any measures that have the effect of unduly obstructing trade.
WTO[+]	Services	not enforceable	The Parties agree to enter into negotiations to progressively liberalise trade in services with substantial sectorial coverage. // Each Party shall provide free transit over the territory of its country for goods originated within the customs territory of the other Party or having originated in third countries and destined for the customs territory of the other Party or any third country, and shall supply the exporters, importers, and shipping companies involved in such transit operations with all the available resources and services required for the execution of these transit operations on terms (including financial) that are not worse than the terms for providing the same resources and services to exporters, importers, and national shipping companies of any other third country. Contracting Parties shall conclude a special agreement on transit.
		enforceable	Each Party shall accord services and service suppliers of any other Party treatment no less favourable than that provided by those of the Party. // There shall be free movement of services.
WTO[+]	State Aid	not enforceable	The Parties shall review the issue of disciplines on subsidies related to trade in services in the light of any disciplines agreed under Article XV of GATS with a view to their incorporation into this Agreement.
		enforceable	Each Party agrees to eliminate and not reintroduce all forms of export subsidies for agricultural goods destined for the other Parties. // The following are incompatible with the proper functioning of this Agreement in so far as it affects trade between the Contracting Parties: any state aid which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods. // Contracting Parties shall not use state aid in the form of subsidies to enterprises or in any other form if the result of such state aid would be the distortion of normal economic conditions in the territory of the other Contracting Party. // The Parties confirm their rights and obligations arising from the WTO Agreement on Subsidies and Countervailing Measures.

WTO[+]	STE	not enforceable	The Contracting Parties shall adjust progressively any state monopoly of a commercial character so as to ensure that no discrimination regarding the conditions under which goods are procured and marketed exists between nationals of the Contracting Parties.
		enforceable	The Parties shall adjust progressively any state monopoly of a commercial character so as to ensure that by the date of entry into force of this Agreement, no discrimination regarding the conditions under which goods are procured and marketed exists between nationals of the Parties. // Each Party shall ensure that any state monopoly supplier of a service in its Area does not, in the supply of the monopoly service in the relevant market, act in a manner inconsistent with the PartyÕs commitments under this Chapter. // The States Parties to this Agreement shall ensure that any state monopoly of a commercial character be adjusted, subject to the provisions laid down in Protocol D, so that no discrimination regarding the conditions under which goods are procured and marketed will exist between nationals of Party 1 and of Party 2.
WTO[+]	TBT	not enforceable	The parties agree to strengthen their co-operation in measures including technical barriers to trade/non-tariff measures. // The Member States shall:(a) examine the scope for taking action to harmonise requirements relating to such matters as standards, technical specifications and testing procedures, domestic labelling and restrictive trade practices; and (b) where appropriate, encourage government bodies and other organisations and institutions to work towards the harmonisation of such requirements.
		enforceable	Member States shall eliminate other non-tariff barriers on a gradual basis within a period of five years after the enjoyment of concessions applicable to those products. // Each Party undertakes not to adopt or maintain any prohibition or quantitative restriction on the importation of any goods of the other Parties or on the exportation of any goods destined for the territory of the other Parties, except in accordance with its WTO rights and obligations or other provisions in this Agreement. // The Parties reaffirm the rights and obligations relating to standards, technical regulations and conformity assessment procedures under the TBT Agreement among those Parties that are parties to the said Agreement. // The rights and obligations of the Parties, relating to technical barriers to trade (technical regulations, standards and conformity assessment procedures) and the respective measures, shall be governed by the WTO Agreement on Technical Barriers to Trade.
WTO[X]	Capital Mobility	not enforceable	Not available.
		enforceable	Each Party shall permit all transfers relating to a covered investment to be made freely and without delay into and out of its territory. Such transfers include: (a) contributions to capital; (b) profits, dividends, interest, capital gains, royalty payments,management fees, and technical assistance and other fees; (c) proceeds from the sale of all or any part of the covered investment or from the partial or complete liquidation of the covered investment; (d) payments made under a contract entered into by the investor, or the covered investment, including payments made pursuant to a loan agreement; (e) payments made pursuant to paragraphs 1 and 2 of Article 10.6 and Article 10.11; and (f) payments arising under Section B. 2. Each Party shall permit returns in kind relating to a covered investment to be made as authorised or specified in a written agreement between the Party and a covered investment or an investor of the other Party. 3. Each Party shall permit transfers relating to a covered investment to be made in a freely usable currency at the market rate of exchange prevailing on the date of transfer.

(continued from previous page)

WTO[X]	Competition	not enforceable	The Commission shall adopt, at the General Secretariat's proposal, the rules which are needed to guard against or correct practices which may distort competition within the Subregion, such as dumping, improper price manipulations, manoeuvres made to upset the normal supply of raw materials and others with a like effect. In this respect, the Commission shall consider the problems that could derive from the imposition of levies and other restrictions on exports.
		enforceable	Where a Party's monopoly supplier competes, either directly or through an affiliated company, in the supply of a service outside the scope of its monopoly rights and which is subject to that Party's specific commitments, the Party shall ensure that such a supplier does not abuse its monopoly position to act in its territory in a manner inconsistent with such commitments.
WTO[X]	Environment	not enforceable	Member Countries shall undertake joint policies that enable a better use of their renewable and non-renewable natural resources and the preservation and improvement of the environment.
		enforceable	A Party shall not fail to effectively enforce its environmental laws, through a sustained or recurring course of action or inaction, in a manner affecting trade between the Parties, after the date of entry into force of this Agreement. // Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between the Parties where the same conditions prevail, or a disguised restriction on international trade, nothing in this Chapter shall be construed to prevent the adoption or enforcement by a Party of measures: (a) necessary to protect public morals; (b) necessary to protect human, animal or plant life or health. // Each Party recognizes that it is inappropriate to encourage investments by investors of the other Party by relaxing its environmental measures. To this effect each Party should not waive or otherwise derogate from such environmental measures as an encouragement for establishment, acquisition or expansion of investments in its Area.
WTO[X]	Labour	not enforceable	Cooperation between the Parties will complement the cooperation set out in other Chapters of this Agreement. Areas of cooperation may include but should not be limited to: science, agriculture including the wine industry, food production and processing, mining, energy, environment, small and medium enterprises, tourism, education, labour, human capital development and cultural collaboration. Cooperation on labour and employment matters of mutual interest and benefit will be based on the concept of decent work.
		enforceable	Neither Party shall require labour market testing, labour certification tests or other procedures of similar effect as a condition for temporary entry in respect of natural persons on whom the benefits of this Chapter are conferred. // Each Party shall grant entry and temporary stay to nationals of the other Party in accordance with this Chapter including the provisions of Annex 13.

Source: Excerpts from various TAs obtained from World Bank (2011a).

Figure A1 compares our strategy to that of Horn et al. (2010). Note, that our coverage is much larger, but comparing the two datasets for the subsample of agreements that are part of both studies, Horn et al. (2010) and ours, shows similarities and differences in the approach; the coding strategies can be compared. Figure A1 shows the 13 (4) WTO$^+$ (WTO^X) policy domains and 9 IQ indicators on the top. 14 of the European Community (EC)'s 14 TAs and 11 agreements involving the United States are on the left. The information of rows marked "GPTAD'' is derived from World Bank (2011a) and those marked "HMS'' refer to data in Horn et al. (2010). Individual cells are marked to indicate whether a provision listed in the column is covered by the agreement listed in the row. Undertakings that are (not) legally enforceable are indicated by a black (grey) cell, while the absence of an agreement is indicated by a blank cell. Missing information is represented by a dotted cell. For example, legally enforceable provisions on import restrictions are represented in all 25 TAs, regardless of the source used. Both sources also show that provisions on AD & CVM are not legally enforceable in the EC-CARIFORUM trade agreement. HMS cells on IQ are marked as being missing because these measures were beyond the scope of that study.

Are the coding strategies compatible? By and large, the answer is affirmative, although there are some minor differences. Some differences are likely to be due to input errors. For instance, Horn et al. (2010) indicate that services are legally enforceable in the US-Israel agreement, but the treaty literally states that these "the principles [on trade in services] (…) shall not be legally binding". On the other hand, the commitments in the EC-Mexico agreement on AD & CVM and customs administration are elaborate and do not lack or rule out their legal enforceability.

Another difference involves provisions on investment and the WTO Agreement on Trade-Related Investment Measures. Horn et al. (2010) include "TRIMS" as a WTO$^+$ provision and "Investment" as a WTO^X policy domain, but do not provide further information to sufficiently differentiate between these two concepts. Signatories of the TRIMS Agreement are committed to a basic, non-discriminatory system of cross-border investment.

However, the investment measures contained in the TAs investigated in this study usually start with the same principles, but do not necessarily refer to the TRIMS Agreement. So, although there may be a line between "TRIMS'' as a WTO$^+$ policy domain and the broader WTO^X "Investment" provisions, it is arguably an ambiguous one. Since scoring agreements twice for the same type of provision is redundant, we include all TRIMS/investment-related provisions as one WTO$^+$ policy domain called "Investment". Comparing this data with Horn et al. (2010)'s differentiated "TRIMS/Investment" data shows that both methodologies are very similar.

Despite this small number of differences, the overall impression is that the methodologies are compatible. The column totals indicate that both methodologies provide a very similar number of agreements containing a specific provision, regardless of its legal enforceability. Both strategies find for both the EC and US a strong support for WTO$^+$ and WTO^X policies in their trade agreements. The EC tends to include more "legally inflated" (i.e. legally unenforceable) undertakings than the US, which focuses on a more limited range of legally enforceable commitments.

Figure A1: Benchmarks of EC and US agreements

The figure presents a benchmarking grid of EC and US agreements across three categories of provisions — WTO+ (Agriculture, AD & CVM, Customs Administration, Export Restrictions, Import Restrictions, IPR, Investment, Public Procurement, SPS, Services, State Aid, STE, TBT), WTOX (Capital Mobility, Competition, Environment, Labour), and IQ (Consultations, Definitions, Dispute Settlement, Duration & Termination, Evolutionary Clause, Institutional Framework, Objectives, Plan & Schedule, Transparency) — with the Totals summarized below.

Agreement	Source	WTO+ Coverage	WTO+ Enforceable	WTOX Coverage	WTOX Enforceable	Total Coverage	Total Enforceable	Total IQ
EC-Albania	GPTAD	10	9	3	2	13	11	3
	HMS	11	10	3	2	14	12	-
EC-CARIFORUM	GPTAD	13	11	4	4	17	15	9
	HMS	13	12	4	4	17	16	-
EC-Chile	GPTAD	13	10	4	1	17	11	9
	HMS	13	11	3	1	16	12	-
EC-Croatia	GPTAD	11	9	2	2	13	11	6
	HMS	12	10	3	2	15	12	-
EC-Egypt	GPTAD	9	6	2	1	11	7	6
	HMS	11	8	3	2	14	10	-
EC-Israel	GPTAD	13	10	4	3	17	13	7
	HMS	11	8	3	2	14	10	-
EC-Jordan	GPTAD	13	9	4	3	17	12	8
	HMS	12	9	3	2	15	11	-
EC-Macedonia	GPTAD	13	11	4	3	17	14	9
	HMS	12	10	3	2	15	12	-
EC-Mexico	GPTAD	11	9	1	1	12	10	8
	HMS	12	8	3	2	15	10	-
EC-Morocco	GPTAD	11	7	4	3	15	10	9
	HMS	10	7	3	2	13	9	-
EC-South Africa	GPTAD	12	9	3	2	15	11	9
	HMS	10	7	3	2	13	9	-
EC-Tunisia	GPTAD	10	7	4	3	14	10	6
	HMS	10	7	3	2	13	9	-
EC-Turkey	GPTAD	10	9	1	1	11	10	7
	HMS	10	9	1	1	11	10	-
EEA	GPTAD	12	12	4	4	16	16	5
	HMS	13	13	4	4	17	17	-
NAFTA	GPTAD	13	13	4	3	17	16	9
	HMS	13	13	4	3	17	16	-
US-Australia	GPTAD	13	12	4	3	17	15	8
	HMS	13	12	4	3	17	15	-
US-Bahrain	GPTAD	11	10	3	3	14	13	6
	HMS	11	10	3	3	14	13	-
US-CAFTA-DR	GPTAD	12	11	3	3	15	14	8
	HMS	12	11	3	3	15	14	-
US-Chile	GPTAD	13	12	4	3	17	15	9
	HMS	13	12	4	3	17	15	-
US-Israel	GPTAD	10	8	1	1	11	9	4
	HMS	8	8	0	0	8	8	-
US-Jordan	GPTAD	6	5	2	2	8	7	7
	HMS	6	5	2	2	8	7	-
US-Morocco	GPTAD	13	11	3	3	16	14	8
	HMS	13	11	3	3	16	14	-
US-Oman	GPTAD	12	11	3	3	15	14	7
	HMS	12	11	3	3	15	14	-
US-Peru	GPTAD	13	12	4	3	17	15	7
	HMS	13	12	4	3	17	15	-
US-Singapore	GPTAD	11	10	4	3	15	13	9
	HMS	11	10	4	3	15	13	-

Total Coverage / Total Enforceable (by provision)

	Source	Agriculture	AD & CVM	Customs Administration	Export Restrictions	Import Restrictions	IPR	Investment	Public Procurement	SPS	Services	State Aid	STE	TBT	Capital Mobility	Competition	Environment	Labour	Consultations	Definitions	Dispute Settlement	Duration & Termination	Evolutionary Clause	Institutional Framework	Objectives	Plan & Schedule	Transparency
Total Coverage	GPTAD	25	23	25	22	25	24	20	25	16	20	22	18	23	22	18	21	18	23	19	23	15	18	25	22	18	20
	HMS	25	23	24	22	25	25	21	25	17	14	22	19	23	22	19	23	12	-	-	-	-	-	-	-	-	-
Total Enforceable	GPTAD	25	22	25	22	25	23	15	17	3	16	21	16	13	22	12	12	17	23	19	23	15	18	25	22	18	20
	HMS	25	21	23	22	25	24	17	17	5	14	21	17	13	22	13	12	12	-	-	-	-	-	-	-	-	-

Notes: Undertakings that are (not) legally enforceable are indicated by black (grey) cells. Dotted cells indicate missing information and blank cells mean that there is no agreement. Sources: Authors' calculations, Horn et al. (2010) and World Bank (2011a).

Appendix B   Determinants of Ttrade Areement Heterogeneity

Using the TAIs and other variables of interest identified in section 3, the following equation is estimated,

$$TAI_A^z = \alpha + \beta_1 Income_A + \beta_2 WTO_A + \beta_3 Herfindahl_A + \beta_4 \ln(Distance)_A$$
$$+ \beta_5 \ln(Size)_A + \beta_6 \ln(Network)_A + \gamma_t F_t + \varepsilon_A$$

<div align="right">(B1)</div>

where α is a constant and *Income* is a dummy variable for the mode income category, according to the World Bank's income classification system (World Bank, 2011b) of the countries participating in *A* in the year of enforcement. These dummies represent (combinations of) high income (HI), upper middle income (UMI), lower middle income (LMI) and lower income (LI) countries.[10] *WTO* is a dummy variable that is 0 of none of the TA participants were WTO members in the year of enforcement, 1 if at least one but not all were WTO members and 2 if all participated in the multilateral trade system. *Distance* is the mean bilateral distance between all combinations of country-pair *ij* of *A*'s members, based on data from CEPII (2008). *Size* is the agreement's size, measured by the number of participants, all in the year of enforcement. *Network* is the mean number of additional agreements in which *A*'s members participated in the year of enforcement. F_t represents year dummies that account for unobserved time-variant phenomena and ε is the error term.

A measure of countries' export structures is included as a proxy for their interest in gaining foreign market access. Countries with a limited export package are expected to have a lower interest in negotiating full-fledged trade agreements compared to countries that have more balanced export structures. Total exports were disaggregated into the 10 top-level categories *c* following SITC Rev. 3, e.g., Food and live animals, beverages and tobacco, crude materials, mineral fuels, etc. Each category's share in the country's total exports is denoted as *M*. An annual Herfindahl index *AH* for country *j* and year *t* is calculated following

$$AH_{jt} = \sum_{c=1}^{10} M_{ct}^2$$

<div align="right">(B2)</div>

These indices could not be constructed for all years due to gaps in the data. The Herfindahl index used in the remainder of this paper therefore is the average of available indices for the period 1995-2010, so that $H_j = \overline{AH_{jt}}$. Export share data used in the construction of these Herfindahl indices were obtained from UNCTAD (2011). In equation B1, *Herfindahl* is a continuous variable ranging from 0 to 1 and is the mean Herfindahl index of the countries in *A* during the year of enforcement.[11]

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[10] Following Baier and Bergstrand (2004), capital per worker as a determinant of TA comprehensiveness is also explored. Results are not included due to a high correlation with income levels and a poorer model fit when substituting income for capital per worker. Data on capital per worker for the period 1960-2000 were obtained from Baier, Dwyer and Tamura (2006).

[11] Annual data were not used due to gaps in the time series.

Table B1: Descriptive statistics of determinants

Variable	N	Mean	S.D.	Min.	Max.
Income	296	3.685	2.793	1	10
- HI	99			0	1
- HI & UMI	51			0	1
- HI & LMI	25			0	1
- HI & LI	3			0	1
- UMI	24			0	1
- UMI & LMI	48			0	1
- UMI &LI	4			0	1
- LMI	23			0	1
- LMI & LI	15			0	1
- LI	4			0	1
WTO	296	2.402	0.697	1	3
- None in WTO	36			0	1
- Mixed	105			0	1
- All in WTO	155			0	1
Herfindahl	296	0.288	0.086	0.162	0.645
ln Distance	296	1.999	0.129	1.561	2.288
ln Size	296	1.242	0.771	0.693	3.738
ln Network	296	1.891	0.810	0	3.532

Table B1 provides descriptive statistics. Income is based on ten categories that represent the participating countries' mode level of income. The distribution of the WTO dummy indicates that half of the TAs in the sample has all their members participating in the WTO. A third of the agreements have some of their participants in the WTO and others not. Also notice that the variation is relatively small in the Herfindahl and distance measures, but large with respect to size and network.

Regression estimates of equation B1 are provided in Table B2. Columns 1 and 2 show the determinants of the overall TAI. The first column accounts for the coverage of the underlying provisions, while the second also correcting for their legal enforceability. The remaining columns display the determinants per type of policy. Columns 3 and 4 display the index with respect to WTO$^+$ provisions, while column 5 and 6 cover WTO^X provisions. Finally, column 7 shows the determinants of the index on institutional quality. Why do countries sign TAs? In particular, how can their commitment to comprehensive TAs be explained? With respect to income, the results suggest that TAs are less comprehensive when most of their participants involve lower-income countries. An interesting exception is the case of low-income countries that are involved with regional integration initiatives under the auspices of the African Union. This holds for WTO$^+$ and WTO^X provisions, but differences in institutional quality are not explained by income.

Note that the TAI increases with the number of TA participants that are also WTO members. In particular, this is true for WTO$^+$ and IQ provisions, but not for provisions that are beyond the WTO's mandate. In light of the debate on regionalism as a building or stumbling block to the multilateral trade system, the results indicate that countries use TAs to build on the trade-promoting, non-discriminatory policies that are embedded in the WTO–even if not all of them are WTO members. As expected, a more balanced export structure (reflected by low values

of the Herfindahl index) gives rise to more comprehensive agreements. This holds for WTO$^+$ and WTO^X provisions, but not for IQ. The opposite is true for geographic proximity: IQ increases with distance, but the number of WTO$^+$ and WTO^X provisions is not affected. Finally, the number of participants has a slightly negative effect on the number of WTO$^+$ and WTO^X provisions. In contrast, embeddedness in a network of trade agreements increases the number of WTO$^+$ and WTO^X provisions.

In sum, these findings suggest that WTO members use TAs to build on the trade-promoting, non-discriminatory policies already embedded in the multilateral system and in other trade agreements in which they participate.

Table B2: Determinants of TAIs

Variable	(1) I^C	(2) I^E	(3) $IWTO^{+,C}$	(4) $IWTO^{+,E}$	(5) $IWTO^{X,}$	(6) $IWTO^{X,E}$	(7) IIQ
Income (HI is baseline)							
- HI & UMI	0.006	-0.009	-0.008	-0.031	-0.024	-0.045	0.051
	(0.028)	(0.028)	(0.030)	(0.032)	(0.044)	(0.045)	(0.035)
- HI & LMI	-0.083*	-0.075	-0.129*	-0.153**	-0.082	-0.031	-0.04
	(0.042)	(0.040)	(0.050)	(0.046)	(0.066)	(0.062)	(0.054)
- HI & LI	-0.091	-0.024	-0.119	-0.065	-0.186*	-0.038	0.031
	(0.067)	(0.074)	(0.087)	(0.094)	(0.092)	(0.109)	(0.086)
- UMI	-0.135**	-0.135**	-0.094	-0.132*	-	-	-0.035
	(0.047)	(0.044)	(0.049)	(0.052)	(0.074)	(0.067)	(0.054)
- UMI & LMI	-	-	-	-	-	-	-0.061
	(0.035)	(0.033)	(0.038)	(0.039)	(0.058)	(0.054)	(0.040)
- UMI &LI	-0.158	-0.136	-0.24	-0.206	-0.165	-0.133	-0.068
	(0.082)	(0.079)	(0.138)	(0.137)	(0.144)	(0.137)	(0.077)
- LMI	-	-	-	-	-	-0.230**	-0.005
	(0.046)	(0.043)	(0.056)	(0.051)	(0.080)	(0.070)	(0.066)
- LMI & LI	-	-	-	-	-0.242**	-0.202**	-0.027
	(0.049)	(0.048)	(0.059)	(0.053)	(0.074)	(0.073)	(0.058)
-LI	0.011	0.029	-0.271	-0.177	0.202	0.164	0.1
	(0.145)	(0.144)	(0.161)	(0.160)	(0.200)	(0.197)	(0.113)
Countries in WTO (None is baseline)							
- Mixed	0.051	0.06	0.189***	0.151**	-0.102	-0.038	0.067
	(0.037)	(0.036)	(0.053)	(0.049)	(0.063)	(0.059)	(0.042)
- All	0.109**	0.103**	0.227***	0.191***	-0.051	-0.034	0.152***
	(0.037)	(0.035)	(0.051)	(0.047)	(0.062)	(0.059)	(0.041)
Herfindahl	-0.351**	-0.319*	-0.425**	-0.397**	-0.543**	-0.475*	-0.085
	(0.129)	(0.124)	(0.155)	(0.147)	(0.198)	(0.178)	(0.144)
ln Distance	0.041	0.043	-0.220*	-0.06	0.076	-0.077	0.266*
	(0.085)	(0.082)	(0.086)	(0.089)	(0.147)	(0.136)	(0.109)
ln Size	-0.022	-0.037*	-0.055*	-	-0.036	-0.066*	0.025
	(0.018)	(0.018)	(0.022)	(0.020)	(0.025)	(0.026)	(0.022)
ln Network	0.062**	0.054*	0.059*	0.048	0.121***	0.108***	0.005
	(0.022)	(0.021)	(0.027)	(0.027)	(0.033)	(0.032)	(0.026)
Constant	0.35	0.371	0.850**	0.574*	0.306	0.647	-0.106
	(0.231)	(0.227)	(0.258)	(0.275)	(0.362)	(0.331)	(0.276)
R^2	0.576	0.534	0.656	0.613	0.447	0.408	0.367
N	296	296	296	296	296	296	296

Notes: Indices marked [C] only account for the coverage of policy areas, not their enforceability. Enforceability is accounted for by indices marked [E]. HI is High Income, UMI is Upper Middle Income, LMI is Lower Middle Income and LI is Low Income. Coefficients of year fixed effects were omitted to save space. Estimates marked ***/**/* are significant at the 1/5/10 per cent level. Robust standard errors in parentheses.

Appendix C Dataset for Gravity Model

Table C1: Countries in dataset

Afghanistan, Albania, Algeria, American Samoa, Angola, Antigua & Barbuda, Argentina, Aruba, Australia, Austria, Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Botswana, Brazil, Brunei, Bulgaria, Burkina Faso, Burundi, Côte d'Ivoire, Cambodia, Cameroon, Canada, Cape Verde, Cayman Islands, Central African Republic, Chad, Chile, China, Colombia, Comoros, Costa Rica, Cuba, Cyprus, D.R. Congo, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Faeroe Islands, Falkland Islands, Fiji, Finland, France, French Polynesia, Gabon, Gambia, Germany, Ghana, Gibraltar, Greece, Greenland, Grenada, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kenya, Kiribati, Kuwait, Laos, Lebanon, Lesotho, Liberia, Libya, Luxembourg, Macao, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Mongolia, Montserrat, Morocco, Mozambique, Myanmar, Namibia, Nauru, Nepal, Netherlands, Netherlands Antilles, New Caledonia, New Zealand, Nicaragua, Niger, Nigeria, North Korea, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Congo, Romania, Rwanda, St. Helena, St. Kitts & Nevis, St. Lucia, St. Pierre-Miquelon, St. Vincent & Grenadines, Samoa, São Tomé & Príncipe, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Singapore, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, Sudan, Suriname, Swaziland, Sweden, Switzerland, Syria, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Tuvalu, Uganda, United Arab Emirates, United Kingdom, United States, Uruguay, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe.

Table C2: Descriptive statistics

Variable	N	Mean	S.D.	Min.	Max.
Imports	1,054,520	119.06	1,589.26	0.00	214,440.00
Both in WTO	1,954,800	0.33	0.47	0.00	1.00
One in WTO	1,954,800	0.43	0.50	0.00	1.00
GSP	1,954,800	0.12	0.32	0.00	1.00
EIA	1,954,800	0.04	0.19	0.00	1.00
ln GDP importer	1,494,000	9.52	2.19	3.53	16.04
ln GDP exporter	1,494,000	9.52	2.19	3.53	16.04
ln Population importer	1,483,380	1.66	1.89	-3.69	7.18
ln Population exporter	1,483,380	1.66	1.89	-3.69	7.18
ln Land area importer	1,911,600	10.99	3.04	1.95	16.12
ln Land area exporter	1,911,600	10.99	3.04	1.95	16.12
ln Distance	1,869,120	8.84	0.75	2.35	9.90
Number landlocked	1,869,120	0.29	0.50	0.00	2.00
Number of islands	1,869,120	0.68	0.67	0.00	2.00
Common land border	1,954,800	0.01	0.11	0.00	1.00
Common language	1,869,120	0.21	0.41	0.00	1.00
Ever colony	1,954,800	0.01	0.10	0.00	1.00
Common coloniser	1,954,800	0.14	0.34	0.00	1.00
Currently colonised	1,954,800	0.00	0.03	0.00	1.00
Common country	1,954,800	0.01	0.09	0.00	1.00

Appendix D   Factor Analysis

The first group of factors is calculated by performing factor analysis on all 26 provisions, without giving any consideration to their status as WTO^+, WTO^X or IQ provision.[12] This yields 7 factors, which are included as regressors in Tables 5 and 6, column 6.

The second group of factors was obtained from the 17 WTO^+ and WTO^X provisions on the one hand and the 9 IQ provisions on the other. This distinction is made because trade policies are specified in WTO^+ and WTO^X provisions, while the institutional context that specifies their enforcement is expressed by IQ. Again, a total of 7 factors is obtained and included in Tables 5 and 6, column 7.

The third group of factors is based on this paper's dominant logic of distinguishing between WTO^+, WTO^X and IQ provisions. Factor analysis is used to obtain factors from each type of provisions separately. This gives 4 factors for WTO^+ provisions, 2 factors for WTO^X provisions and 3 factors for IQ provisions. The factors are used as regressors and their parameter estimates are displayed in Table 5 and 6, column 8.

The contribution of each provision in explaining the total variance of a given factor is displayed in Table D1.

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[12] Note that only provisions that are legally enforceable were used.

Table D1: Overview of factors

Group	Type	Provision	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Group 1	WTO[+]	Agriculture	0.150	0.029	-0.007	-0.047	-0.014	-0.063	0.160	.	.
		AD & CVM	0.045	-0.083	0.130	-0.055	0.093	0.110	0.138	.	.
		Customs Administration	0.084	0.002	-0.061	0.080	-0.230	0.193	0.043	.	.
		Export Restrictions	0.167	-0.064	0.053	**0.219**	-0.170	-0.022	-0.290	.	.
		Import Restrictions	0.004	-0.062	0.046	**0.314**	0.155	0.075	-0.199	.	.
		IPR	**0.189**	0.062	0.047	-0.095	-0.065	0.012	-0.045	.	.
		Investment	0.003	**0.302**	-0.027	-0.056	0.098	0.002	-0.118	.	.
		Public Procurement	0.131	0.085	0.037	-0.074	-0.039	-0.049	-0.006	.	.
		SPS	0.036	-0.055	**0.376**	-0.024	-0.058	-0.015	-0.097	.	.
		Services	0.002	**0.298**	-0.024	-0.062	0.055	-0.006	-0.085	.	.
		State Aid	0.150	-0.032	-0.035	-0.004	0.076	-0.011	0.109	.	.
		STE	**0.197**	0.045	-0.117	-0.105	0.101	0.053	-0.029	.	.
		TBT	-0.055	0.017	**0.441**	-0.031	-0.120	0.008	-0.100	.	.
	WTO[X]	Capital Mobility	**0.185**	0.009	-0.118	0.115	-0.033	-0.109	-0.128	.	.
		Competition	**0.196**	-0.056	-0.050	0.000	-0.070	0.024	-0.070	.	.
		Environment	0.038	0.165	0.008	0.080	-0.086	-0.262	**0.207**	.	.
		Labour	0.088	**0.327**	-0.192	-0.142	0.001	-0.043	-0.039	.	.
	IQ	Consultations	-0.056	-0.054	-0.072	**0.564**	0.122	-0.110	0.085	.	.
		Definitions	-0.125	0.143	0.114	0.083	0.047	0.083	0.076	.	.
		Dispute Settlement	-0.006	0.017	-0.088	0.044	0.088	**0.514**	-0.187	.	.
		Duration & Termination	0.008	-0.008	-0.146	0.148	**0.510**	0.121	-0.157	.	.
		Evolutionary Clause	-0.076	-0.082	0.288	0.049	0.159	-0.050	0.173	.	.
		Institutional Framework	-0.022	-0.050	0.049	-0.192	-0.082	**0.547**	**0.190**	.	.
		Objectives	-0.030	0.104	0.014	-0.040	**0.434**	-0.160	0.094	.	.
		Plan & Schedule	-0.011	-0.074	-0.090	0.101	-0.011	0.030	**0.545**	.	.
		Transparency	-0.080	0.039	0.186	**0.283**	-0.178	-0.039	**0.163**	.	.

(continued on next page)

Group	Type	Provision	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Group 2	WTO[+]	Agriculture	0.201	0.036	-0.061	-0.028	.	.	.	.	.
		AD & CVM	0.153	-0.068	0.147	-0.124	.	.	.	.	.
		Customs Administration	-0.073	0.094	-0.144	**0.476**	.	.	.	.	.
		Export Restrictions	-0.055	-0.078	0.057	**0.506**	.	.	.	.	.
		Import Restrictions	-0.151	-0.053	0.200	**0.472**	.	.	.	.	.
		IPR	0.202	0.054	0.054	-0.081	.	.	.	.	.
		Investment	-0.054	**0.318**	0.096	-0.003	.	.	.	.	.
		Public Procurement	0.162	0.080	0.036	-0.123	.	.	.	.	.
		SPS	0.034	-0.071	**0.450**	-0.053	.	.	.	.	.
		Services	-0.035	**0.321**	0.075	-0.051	.	.	.	.	.
		State Aid	**0.225**	-0.039	-0.043	-0.065	.	.	.	.	.
		STE	**0.246**	0.004	-0.082	-0.119	.	.	.	.	.
		TBT	-0.114	0.04	**0.542**	0.028	.	.	.	.	.
	WTO[X]	Capital Mobility	0.115	-0.013	-0.197	0.201	.	.	.	.	.
		Competition	0.159	-0.090	-0.082	0.112	.	.	.	.	.
		Environment	0.055	0.231	-0.104	0.028	.	.	.	.	.
		Labour	0.053	**0.331**	-0.166	-0.060	.	.	.	.	.
	IQ	Consultations	.	.	.	.	**0.465**	0.039	-0.185	.	.
		Definitions	.	.	.	.	**0.321**	-0.014	0.092	.	.
		Dispute Settlement	.	.	.	.	-0.024	-0.093	**0.544**	.	.
		Duration & Termination	.	.	.	.	-0.113	**0.382**	0.163	.	.
		Evolutionary Clause	.	.	.	.	0.014	**0.452**	0.001	.	.
		Institutional Framework	.	.	.	.	-0.148	-0.002	**0.648**	.	.
		Objectives	.	.	.	.	0.036	**0.516**	-0.135	.	.
		Plan & Schedule	.	.	.	.	0.227	0.200	-0.012	.	.
		Transparency	.	.	.	.	**0.463**	-0.043	-0.046	.	.

Group	Type	Provision	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Group 3	WTO[+]	Agriculture	0.230	-0.009	-0.076	0.034	.	.	.	.	.
		AD & CVM	0.132	-0.153	0.176	-0.018	.	.	.	.	.
		Customs Administration	0.015	0.169	-0.298	**0.482**	.	.	.	.	.
		Export Restrictions	-0.004	-0.077	0.018	**0.466**	.	.	.	.	.
		Import Restrictions	-0.166	-0.101	0.170	**0.601**	.	.	.	.	.
		IPR	0.246	0.077	0.012	-0.075	.	.	.	.	.
		Investment	-0.016	**0.481**	0.010	-0.020	.	.	.	.	.
		Public Procurement	0.217	0.131	-0.042	-0.127	.	.	.	.	.
		SPS	0.019	-0.060	**0.480**	-0.074	.	.	.	.	.
		Services	0.005	**0.495**	-0.019	-0.073	.	.	.	.	.
		State Aid	**0.258**	-0.076	-0.077	-0.010	.	.	.	.	.
		STE	**0.298**	0.015	-0.138	-0.109	.	.	.	.	.
		TBT	-0.150	0.068	**0.590**	0.026	.	.	.	.	.
	WTO[X]	Capital Mobility	.	.	.	.	0.084	**0.578**	.	.	.
		Competition	.	.	.	.	-0.130	**0.635**	.	.	.
		Environment	.	.	.	.	**0.580**	0.036	.	.	.
		Labour	.	.	.	.	**0.621**	-0.094	.	.	.
	IQ	Consultations	.	.	.	.	.	.	**0.465**	0.039	-0.185
		Definitions	.	.	.	.	.	.	**0.321**	-0.014	0.092
		Dispute Settlement	.	.	.	.	.	.	-0.024	-0.093	**0.544**
		Duration & Termination	.	.	.	.	.	.	-0.113	**0.382**	0.163
		Evolutionary Clause	.	.	.	.	.	.	0.014	**0.452**	0.001
		Institutional Framework	.	.	.	.	.	.	-0.148	-0.002	**0.648**
		Objectives	.	.	.	.	.	.	0.036	**0.516**	-0.135
		Plan & Schedule	.	.	.	.	.	.	0.227	0.200	-0.012
		Transparency	.	.	.	.	.	.	**0.463**	-0.043	-0.046

Notes: Factors according to principle components analysis. The first group of factors does not differentiate between WTO[+], WTO[X] or IQ provisions. The second group of factors is based on either a combination of WTO[+] and WTO[X] provisions or IQ provisions. The third group of factors is exclusively based on either WTO[+], WTO[X] or IQ provisions. The provisions that are major contributors to specific factors are in bold.