Ratification of Multilateral Environmental Agreements: Civil Society Access to International Institutions

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Abstract

The stage in which countries formally decide on whether to participate in (i.e., ratify) international agreements is crucial to global governance efforts. The reason is that, by and large, international agreements with greater participation are more likely to contribute to effective problem solving. We study the role procedural design characteristics of agreements play in such decisions. Specifically, we examine whether treaties' provisions allowing non-state actors to participate in treaty making, which is widely regarded as an important procedural aspect of governance, increases the likelihood of ratification. Our empirical testing relies on a new time-series-cross-sectional dataset that includes information on the ratification behavior of 154 countries with respect to 178 multilateral environmental agreements in 1950–2011. We find that treaty provisions allowing for greater non-state actor access to the meetings of the parties indeed increase the likelihood of treaty ratification. The result is robust to controlling for the effects of various other treaty design characteristics and country characteristics on ratification behavior. The main policy implication is that, despite occasional debate over drawbacks of involvement of non-state actors, the latter tends to support global environmental governance efforts and should be further enhanced.

Keywords: multilateral environmental agreements, treaty design characteristics, civil society, Conference of the Parties (CoPs), ratification

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Introduction

States establish international institutions and form legal arrangements in order to solve collective action problems and to advance their mutual interests (Keohane, 1984). However, while there exists an enormous proliferation of legally binding agreements, i.e., treaties, conventions, and protocols, it appears that there also exists a long lag in securing widespread ratification of these agreements because states lack sufficient incentives for accepting them (Barrett 1994). We contribute to the international institutions literature by examining whether treaty design features matter for states' cooperative behavior in the form of treaty ratification[1] (Spilker and Koubi 2016; Bernauer et al 2013a; von Stein 2008).

While not every international agreement requires ratification, the large majority of agreements comprising the basis of international institutions, and thus advancing the legalization process in world politics, do (Goldstein et al 2000). For instance, the US Congress's decision not to ratify the Kyoto Protocol on Climate Change Mitigation, which the United States signed in 1998, highlights the importance of the ratification phase. However, there are many other cases where national legislatures refused to ratify international bargaining outcomes that their governments negotiated and signed. For example, the United States did not ratify the UN Convention on the Law of the Sea, the Convention on Biological Diversity, or the Anti-Counterfeiting Trade Agreement. Similarly, Russia did not ratify the Rome Statute of the International Criminal Court and the Energy Charter Treaty. Moreover, a cursory look at major

[1] Typically, governments sign an agreement at the end of its negotiation phase when the participating governments have agreed on the adoption of a final text. For most agreements and countries, this government signature does not implicate consent that the country is bound by the agreement but it only creates the obligation to refrain from actions against the agreement's objective or purpose. A country's consent to be constrained by an agreement is usually expressed via the ratification of this treaty by the national parliament (Vienna Convention on the Law of Treaties (1969)).

international agreements in areas such as trade, finance, arms control, human rights, and the environment suggests that there is strong variation in ratification rates within and between international agreements. For example, with regard to the environment, while the Montreal Protocol on Substances that Deplete the Ozone Layer and the Kyoto Protocol have been ratified by 197 and 192 countries respectively, the London Convention on the Prevention of Marine Pollution and the Convention for the High Seas have only been ratified by 87 and 63 countries respectively. Consequently, both policy-makers and scholars have been interested in how international institutions could be set up that maximize both participation and problem solving effectiveness (e.g., Barrett 2005; Guzman 2005; Koremenos et al 2001; Abbott and Snidal 2000; Downs et al 1996).

Contributors to the "rational design" of international organizations literature (Koremenos 2005; Koremenos et al 2001; Rosendorff and Milner 2001; Mitchell and Keilbach 2001; Abbott and Snidal 2000; Mitchell 1994), recognizing the existence of a great variety of international institutions, argue that differences in the design of international institutions "are the result of rational, purposive interactions among states and other international actors to solve specific problems" (Koremenos et al 2001, 762). Thus, based on distributional and enforcement problems, uncertainty, and the number of states and other international actors involved, states negotiate over various aspects of treaty design because these choices are expected to affect the likelihood of ratification and, consequently problem solving effectiveness. Treaty design characteristics over which countries usually bargain include membership rules and obligations, flexibility, monitoring, enforcement and dispute resolution mechanisms, and financial provisions. The existing literature provides evidence that treaty characteristics are indeed significantly related to treaty ratification. For instance, Spilker and Koubi (2016) find that treaties including strong obligations and providing monitoring, enforcement, and dispute settlement mechanisms are seen as more demanding and are thus less likely to be ratified. They also find that treaties containing provisions for technical assistance either to all or to developing

countries only are more likely to be ratified. Similarly, treaties that include flexibility provisions and "escape clauses" are ratified by more countries (Koremenos 2001; Rosendorff and Milner 2001; von Stein 2008). Another debate in the institutional design literature pertains to whether a "depth versus participation" dilemma exists. That is, shallower international agreements may attract more countries and greater depth may be associated with less participation (Barrett 2005; Downs et al 1996). However, Bernauer et al (2013, 478) find only limited evidence for such a trade-off in global environmental cooperation and conclude "(…) policymakers do not necessarily need to water down global treaties in order to obtain more participation."

Our work contributes to this literature by developing a framework that captures and explains an additional treaty design trend and relates it to countries' ratification behavior. In particular, we posit that ratification with respect to multilateral environmental agreements (MEAs) is affected by procedural institutional characteristics of treaties. By "procedural institutional characteristics" we refer to the rules postulated in a treaty regarding the participation of 'non-governmental organizations'[2] alongside national governments in a treaty's meetings of the parties (i.e., Conference of the Parties (CoPs)[3]. We argue that, all else equal, treaty provisions allowing for transnational actors (TNAs) access to its CoPs increase the likelihood of its ratification. This seems to be plausible because TNAs could provide participating governments at these meetings with the knowledge and expertise needed for improving the quality of the particular agreement, could convince their respective domestic citizenry of the merits of the agreement, and could increase the agreement's perceived procedural legitimacy.

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[2] For the purpose of this paper, the term 'nongovernmental organizations' is used interchangeably with 'transnational actors' (TNAs), and includes nongovernmental organizations (NGOs), civil society organizations, social movements, philanthropic foundations, business associations, and multinational corporations (Tallberg et al 2013, 1).

[3] A Conference of the Parties (CoP) is the supreme decision-making body of an international agreement/treaty. It consists of representatives from state governments that have signed/ratified the particular treaty.

To test this claim, we use a new dataset that includes information on the ratification behavior of 154 countries as well as treaty characteristics of 178 MEAs from 1950 to 2011. We use an empirical design (treaty–country dyads over time) that allows us to analyze both treaty-related and country-related driving forces of international cooperation. The results support our argument that countries are more likely to ratify MEAs that grant TNA access to the meetings of their members.

The following section discusses the theoretical argument regarding the effect of TNA legal access to CoPs on the propensity of states to ratify MEAs. The subsequent section defines the variables and research design, and presents the results. The article concludes with a discussion of the main findings of our paper and venues for future research.

Theory and Hypothesis: TNAs in Global Governance

The increasing participation of TNAs in international affairs traditionally restricted to states has been accompanied by an increase in academic interest in the role of TNAs in global environmental politics (Betsill and Corell 2008). TNAs are now granted access to many of the major intergovernmental organizations (IOs) and increasingly participate in international treaty making and implementation processes, as observers and via inclusion in national delegations (Böhmelt et al 2014; Böhmelt 2013; Böhmelt and Betzold 2013; Bernauer and Betzold 2012; Tallberg and Jönsson 2010; Steffek and Nanz 2008; Willetts 2000; Raustiala 1997; Charnovitz 1997).

In comparison with policy areas such as human rights, finance, and security, international environmental politics has a long-standing tradition of openness to non-state actor participation (Green 2017; Tallberg et al 2014; Dingwerth and Pattberg 2009; Bäckstrand 2006). By granting non-state actors status as major groups or constituencies, international institutions such as the

UNEP and the UNFCCC have championed greater civil society access to the UN (Steffek 2010).

While states remain the primary actors in global environmental governance and are responsible for treaty ratification, still treaties' provisions allowing for TNA participation in CoPs could enhance the likelihood of their ratification. There exist several potential reasons for why treaty provisions that stipulate de facto participation of TNAs in a treaty's future meetings may positively affect states' propensity to ratify the particular treaty.

First, the extant literature posits that it is the expertise and provision of information by TNAs that make international institutions and national governments willing to grant TNAs access to their CoPs (Tallberg et al 2013; Betsill and Corell 2008; Lake and McCubbins 2006; Raustiala 1997). International environmental politics is one area in which knowledge is particularly uncertain, issues are complex, and the material interests of states are ambiguously affected (Sprinz and Vaahtoranta 1994). States and international institutions operating in such settings thus need the best available information in order to fully understand the particular environmental problem as well as the implications of various policy options to effectively and/or efficiently solve the problem at hand. TNAs dedicate a considerable amount of their resources and efforts to building up expertise in many of the scientific, economic, and social and technical disciplines relevant to sustainable development (Yamin 2001; see also Gough and Shackley 2001; Stroup and Murdie 2012). Participation of TNAs that specialize in gathering and analyzing data as well as offering policy expertise at a treaty's meetings can help states to maximize such policy information and research resulting in a 'better' treaty, which states are more likely to ratify (Tallberg et al 2013; see also Albin 1999; Raustiala 1997).

Second, in addition to providing information that can contribute to effective and efficient policy responses to particular environmental problems, when TNAs participate in a treaty's meetings they can observe the positions of all negotiating parties and become aware of the shape and location of the "win-set," i.e., the set of points acceptable to all parties (Putnam 1988). By

collecting and disseminating information regarding the structure of the international bargaining process, TNAs can help governments convince their domestic constituencies of the potential benefits of the respective agreement. As a result, TNAs by functioning as a "transmission belt" between the international institutions and domestic citizenry (Steffek and Nanz 2008, 3) can positively affect states' ratification behavior.

Finally, TNA participation in CoPs can enhance the legitimacy of the agreement by reducing the democratic deficit problem that emerges when shifting political decision-making processes from the national to the international level (Zürn 2000, 2014). It is not then surprising that global governance scholars and policy makers call for 'opening up the intergovernmental system to institutionalized balanced involvement of non-state actors' (Biermann and Gupta 2011: 1862). A statement by the UN Secretary-General Boutros Boutros-Ghali in 1994 on the role of TNAs is illustrative: "non-governmental organizations are a basic form of popular representation in the present day world. Their participation in international organizations is, in a way, a guarantee of the political legitimacy of those international organizations" (Yamin 2001, 155). Schouten and Glasbergen (2011), and Dellas (2011) show that TNAs' participation in the decision-making process of the Roundtable on Sustainable Palm Oil and the UN Commission on Sustainable Development respectively enhanced the legitimacy of those institutions.[4] According to this logic, granting TNAs access to a treaty's meetings of the parties enhances political responsiveness, transparency, accountability and, ultimately, legitimacy[5] in

[4] Recent experimental studies also show that individuals favor civil society involvement in global climate policy-making, and that individuals pay more attention to changes of the status quo of civil society participation than to static conditions. That is, popular legitimacy (i.e., public support) of global climate governance decreases when civil society is excluded and increases when civil society is added. This is found in both liberal democracies (Bernauer and Gampfer 2013) and non-democratic countries (Bernauer et al 2016).

[5] Several scholars are skeptical about the ability of TNAs to increase the democratic legitimacy of international institutions. This is mainly because TNAs are not accountable to voters, represent narrow and parochial interests, and their operational and decision-making procedures are often undemocratic and nontransparent (Bernauer and Betzold 2012; Mitchell 2011; Piewitt et al 2010; Steffek and Ferretti 2009; Kissling and Steffek 2008; Moravcsik 2004; Nanz and

the sense of domestic public support for the particular treaty, making it thus more likely that states will ratify it (Bernauer and Betzold 2012; Tallberg and Uhlin 2011).

In summary, the three arguments developed in this section point in the same direction: we should expect countries to be more likely to ratify MEAs that postulate provisions allowing for TNA participation in the meetings of the parties. While the three arguments outlined here are distinct to some degree, we do not regard them as separate causal mechanisms that require separate empirical testing and explicit comparison, but rather as a set of related theoretical reasons for expecting a positive effect of this particular treaty design characteristic on ratification. Consequently, the empirical analysis will focus on the overall effect of treaty provisions regarding TNA access to CoPs on countries' ratification behavior.

Data and Research Design

Dependent Variable and Methodology

We use a new panel dataset containing information on the ratification behavior of 154 countries toward 178 MEAs from 1950 to 2011.[6] We study treaties for which Mitchell (2014) provides signature dates—in some cases also termination dates—and information on countries' ratification and withdrawal activities. While the data on TNA access provisions were coded by the authors, data for other treaty design characteristics were obtained from Spilker and Koubi (2016) and updated by the authors.

Steffek 2004; Scholte 2004). Dellmuth and Tallberg (2015) and Agné et al (2015), however, report that citizen as well as stakeholder organization perceptions of IO legitimacy do not appear to be influenced by the representation of their interests in IOs.

[6] A plot with the distribution of the dependent variable over time is reported on the online appendix.

Starting in 1950, each MEA enters our dataset when it becomes open for ratification, and is then paired will all sovereign states[7] at this particular point in time.[8] Hence, our unit of analysis is the treaty-country-year: each observation contains information about a country and a treaty for a given year, including whether the country has ratified this treaty. The dependent variable, i.e., ratification, is coded in binary form. It takes the value zero (0) for each year in which a treaty is not ratified by a particular country or the country had done so but withdrew from this treaty. It is coded one (1) for the year in a treaty is ratified by the particular country; for the subsequent years, we assigned missing values to this treaty-country combination and only re-set ratification to zero if the country withdrew its ratification.[9]

We model a country's choice whether or not to ratify a treaty based on the approach proposed by Carter and Signorino (2010), which is similar to the binary-time-series-cross-sectional approach proposed by Beck et al (1998). To capture that a country's ratification behavior today depends strongly on its past ratification behavior, we include time as a covariate (its linear (t_1), squared (t_2), and cubed (t_3) terms). We also estimate our models using robust standard errors clustered by country to control for the fact that observations for the same country may be more similar than observations across different countries.[10]

Explanatory Variables

Our analysis focuses on explanatory variables measuring treaty provisions allowing for TNAs' access to its meetings, i.e., CoPs. We follow the coding procedures developed by Tallberg et

[7] We identify sovereign states using the Correlates of War data (2011).
[8] In some cases, it is not entirely clear whether certain treaties are only in principle or also de facto open to all countries globally. We show in the robustness section that our results hold for several subsamples of treaties that are considered to be global.
[9] Keeping an MEA-country observation in the data after ratification has occurred would indicate that the respective country ratifies the particular treaty in each subsequent year. This would bias our findings (McGrath 2015).
[10] The results remain unchanged if we cluster the standard errors by treaty or treaty-country dyad, or if we use a complementary log-log regression instead of the logit link function (see online appendix).

al (2014) to measure the extent to which a treaty grants TNAs access. To this end, we performed a content analysis of the legal text of each treaty with respect to the *range* of TNAs granted access as well as the *depth* and *permanence* of this access (see Table 1). These variables were independently coded by two coders, who, in the case of deviating coding decisions, determined the final value together with a third coder.[11] We also screened each treaty's amendment(s) for either a (new) provision of TNA access or change(s) of existing access provisions. In two cases, namely the Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries and the Convention for the Protection of the Mediterranean Sea against Pollution, the original treaty did not provide for TNA access. However, subsequent amendments to these two treaties introduce provisions allowing TNA access.

Insert Table 1 about here

Range refers to the breadth of TNAs allowed to participate at CoPs by the respective treaty; *Depth* captures the level of TNAs' involvement; and *Permanence* refers to the durableness of TNAs access. *Range*, *depth*, and *permanence* is each measured on an ordinal scale with five possible values. The two lowest values indicate that a treaty does not grant TNAs any access to meetings (*no TNA access*), or that TNAs are granted access but that the range, depth, or permanence of this access is not specified (*unspecified*). The maximum values indicate that the breath of TNAs granted access is not restricted but encompasses all interested TNAs (*range*), TNAs granted access are allowed to participate fully and autonomously, e.g. with a right to vote (*depth*), and TNA access is granted permanently (*permanence*).[12]

[11] Identical codes were assigned in 94% of the related coding decisions.

[12] Tallberg et al (2014) do not include the category "unspecified" and use five categories, that is, integer values from zero to 4. We collapsed their middle categories 2 and 3, namely 'Active and direct' and 'Active and indirect', and 'Formal' and 'Comprehensive' in the range and depth variables respectively reducing the scale to three categories given that TNA access is granted

We then aggregate the *range*, *depth*, and *permanence* variables in two ways: first, a dummy variable, *tna_access,* indicating whether a treaty grants any TNA access; it takes the value (1) if at least one of these variables is specified in the treaty, otherwise (0).[13] Second, an index of the overall strength of TNA access, *intensity*, calculated similarly to the TNA access index developed by Tallberg et al (2014):

$$intensity = (range + depth) * permanence.$$

Depth and range are additive because they are constitutive of access, in that they define what rights are granted to whom, while permanence functions as a weighting factor because it shape the regularity of the depth and range of TNA access (Tallberg et al (2014, 746). Hence, a more/less permanent definition of TNA access increases/decreases the sum of *depth* and *range* (using the numerical values reported in Table 1). Furthermore the five dimensions of the permanence variable, namely, "no TNA access", "unspecified", "ad hoc", "conditional", and "permanent" are assigned the following weights 0, 0.1, 0.5, 0.75, and 1 respectively (see Tallberg et al 2014, 746). While a score of the *intensity* index equal to zero indicates that a treaty does not grant TNAs any access to its meetings, values greater than zero indicate that

and that depth or range are specified. Merging these categories was both theoretically and empirically motivated. The descriptions of these categories are very similar and our initial attempts to implement this differentiation resulted in most of the recorded differences across coders.

[13] To illustrate, the Montreal Protocol (Art.11.5) grants TNAs access: "(…) Any body or agency, whether national or international, governmental or non-governmental, qualified in fields relating to the protection of the ozone layer which has informed the secretariat of its wish to be represented at a meeting of the Parties as an observer may be admitted unless at least one third of the Parties present object. (…)". In Contrast the Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific , does not grant any non-members access to its meetings of the parties: "Parties to the Protocols shall be invited to any such meeting [of the Parties] and to participate in a manner to be determined by the Parties to the Convention." (Art.7(2))

some or more intense access is granted.[14] Figure 1 visualize the distributions of these variables across treaties observed in 2011 and analyzed in model 1 (Table 2).[15]

Insert Figure 1 about here

We control for characteristics of treaties, countries, and the international system (see also Bernauer et al (2010, 2013a) and Spilker and Koubi (2016)). Starting with treaty design characteristics, we include several dummy variables[16]: *obligation* captures whether a treaty quantifies obligations for its members; monitoring and enforcement (*mon_and_enf),* and *dispute settlement* mechanism indicate whether the treaty contains provisions to monitor and enforce members' compliance and settle disputes among its member states respectively. We also include a variable capturing whether the treaty provides technological and/or financial assistance to all member countries or only to developing ones (*assistance_all, assistance_developing)*. On the one hand, we expect countries to refrain from ratifying treaties that specify obligations and/or contain monitoring and enforcement provision because these features increase states' treaty implementation and compliance costs. On the other hand, providing dispute settlement procedures or assistance should decrease such costs and, therefore, render countries' participation more likely (Bernauer et al 2013a; Spilker and Koubi 2016).

[14] Calculating the intensity variable in this way implies that treaties receive a positive intensity value if range, depth, or permanence is coded 'unspecified'. An alternative way of dealing with such unspecified values would be to assign missing values to the intensity variable if at least one of the variables range, depth, or permanence is coded 'unspecified'. We show in the appendix that the results of model 2 (Table 2) hardly differ depending on how the intensity-variable is coded.

[15] Descriptive statistics and information on missing values are reported on the online appendix.

[16] Spilker and Koubi (2016) report these variables from 1950 to 2000 and emphasize their time invariance. Thus, we carry the values observed in 2000 forward to all years from 2001 to 2011. We discuss in the robustness section that our results remain unchanged if we only study observations from 1950 to 2000.

Turning to country characteristics, we first use a country's openness to trade (*trade_openness*), which we measure via the logarithm of the sum of the absolute shares of imports and exports to GDP (the data come from Penn World Tables 9.0, (Feenstra et al 2015)). Based on trade theory we expect countries that trade a lot to be more reluctant to ratify multilateral environmental agreements because of fear of losing competitiveness (Bernauer et al 2010). Second, to capture a country's international political integration we use the number of its IGO memberships (*IGO-membership_count*) taken from the Correlates of War Project (Pevehouse et al 2004)[17]. We expect countries that are 'entangled' in a larger network of international organizations to be more likely to internalize this co-operative behavior and ratify MEAs with higher probability (Bernauer et al 2010). Third, we use the Polity2 variable from the POLITY IV data set to measure a country's political regime (*polity*). (Marshall and Jaggers 2002). Democracies are more likely to ratify MEAs relative to non-democratic regimes because a) great levels of civil liberties, e.g., freedom of speech, press and association, enable citizens to voice concerns over environmental problems more effectively; and b) democratic leaders depend on the median voter rather than a narrow political elite for their political survival and they thus are more likely to take into account their citizens' environmental concerns and provide more (environmental) public goods (Bernauer and Koubi 2009). Fourth, a country's wealth is measured by its logged GDP per capita, both linearly and squared, (*gdp pc* and *gdp_pc_squared*), addressing the environmental Kuznets' curve proposition, that income has an inverted U-shaped effect on the likelihood of ratifying MEAs (Dinda 2004). Fifth, a country's power is approximated by the log of its *GDP (*data come from Gleditsch (2002)). The effect of power is theoretically ambiguous since on the one hand powerful states might ratify

[17] For 1950–1965, IGO membership is only reported at five-year intervals. Since these consecutive observations are relatively similar, we assume a linear trend and interpolate values for the unobserved years in between observations as well as for the six years following the last observation (2006–2011).

an environmental treaty in order to show that they are good citizens and leaders in world environmental affairs; on the other hand, powerful states might choose not to ratify because they are likely to get away with such behavior at lower cost. Sixth, we employ three different measures to account for countries' frequently observed tendency to mirror their peers' political choices (e.g., Simmons et al 2008), i.e., the global and regional shares of countries as well as the share of countries from the same income group that have already ratified the treaty *(ratification_global, ratification_in_region, ratification_same_income_group).* Finally, we use a variable indicating whether approval by a national legislative body is required for treaty ratification by the country (*legislative_approval)*[18]. Such ratification hurdles are likely to reduce the probability of treaty ratification because a greater number of veto players i.e., required legislators, is more likely to lead to a policy stasis and consequently to ratification failure (Spilker and Koubi 2016).

Finally, we account for whether an agreement primarily deals with a global, e.g., climate change (*public_good_global*, coded as one) or a national environmental issue, e.g. domestic wildlife (*public_good_global*, coded as zero). Environmental issues that cannot be located at either the global or the national levels are coded as *public_good_mixed*. We expect countries to be more reluctant to ratify agreements dealing with global environmental issues due to free-rider problem (Barrett 2005). In addition, we include dummy variables controlling for specific issue areas treaties deal with, thus, capturing potential different ratification probabilities due to an issue's perceived importance and additional, unmeasured issue-specific treaty characteristics.[19]

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[18] This variable is taken from Spilker and Koubi (2016) who relied on Hathaway (2008). The latter describes countries as of 2007. We assume that these domestic rules are time invariant from 1950 to 2011. We address this assumption by re-estimating the main model after omitting countries that experience a regime change and therefore are more likely than other countries to have experienced constitutional changes (see the online appendix).

[19] We coded whether a treaty addresses the following subjects: energy, freshwater, habitat, nature, ocean, pollution, species, or weapons. This information was downloaded on December

Results

Overall, our main findings are that countries are more likely to ratify MEAs granting TNAs access to their meetings (compared to not granting access; see model 1 in Table 2) as well as MEAs granting more intense TNA access (model 2).

Insert Table 2 about here

Our interpretation of the regression results is supported by the simulation of differences in the ratification probabilities of hypothetical, overall average agreements differing only with respect to one input variable at a time, which is changed from a very small to a very large value (King et al 2000; see Figure 2).[20] These differences in ratification probabilities allow for a meaningful comparison of the effect of granting (more) TNA access with the effects of other input variables.

Insert Figure 2 about here

These comparisons reveal that granting TNAs any access compared to none increases the average expected probability of treaty ratification by about 0.03 (see panel a), and changing the intensity of TNA access from a very small, positive value to a very high value leads to an increase of about 0.02 (see panel b). These effects are about similar to the effects resulting from

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3 2015 from the IEA Database website (Agreements by Subject: http://iea.uoregon.edu/page.php?query=list_subject.php).

[20] We change dummy variables from zero to one and other variables from their 10th to their 90th percentile. Regarding the *intensity*-variable, we calculated percentiles based on positive values only. The remaining variables are held constant at their median, except for the time variables, which are set to 1960 and the public good variables, which are set to indicate that no public good is addressed. Confidence intervals summarize 20,000 simulations.

changing a country's number of IGO memberships from a small to a large value (about 0.04) and smaller than the two largest observed changes in the annual ratification probability induced by the variables measuring prior ratification among all countries as well as whether an agreement involves assistance for developing countries (average differences of 0.06 and 0.07). Although these differences in ratification probabilities appear small (e.g. 0.02 related to low vs. high *intensity*), they still represent significant real-life effects. While these numerically small effects relate to ratification behavior in one particular year, effects can be much bigger if such behavior is studied over several years. For instance, if an otherwise average treaty grants TNAs high-intensity compared to low-intensity access, the probabilities that it is ratified by an average country within five years differ by about 0.3.[21]

Furthermore, over time, we visualize average countries' probability to ratify treaties being average but the intensity of their granted TNA access (Figure 3).[22]

Insert Figure 3 about here

In this dynamic perspective, as in the static scenarios shown in Figure 2, the expected annual ratification probability is larger if treaty provisions allow for high-intensity TNA access (compared to treaties allowing for TNA access at a low intensity level).

The results clearly indicate that countries are more likely to ratify MEAs that allow for (more intense) TNA access to their meetings. Recall, that in the theory section we identify three distinct mechanisms, namely information provision, information transmission, and procedural

[21] Based on the expected probabilities plotted in Figure 3 for 1950–1954 (see also the online appendix).
[22] Low and high intensity is defined by the smallest positive and the largest observed intensity-value. The bands indicate 95-percent confidence intervals based on 20,000 simulated expected values.

legitimacy, which by pointing in the same direction lead us to expect that countries are more likely to ratify MEAs which contain provisions allowing for TNA access to their CoPs. Consequently, our empirical analysis focuses on testing this expectation rather than on rigorously testing the individual effect of these mechanisms on ratification, which could be examined in future research.

Having said that, our results appear to only support the information-provision and the information-transmission arguments since TNAs can fulfill both functions if they are granted access to a treaty's meetings (Table 2, columns 3-6).[23] Consequently, it is the access of a broad range of TNAs and the permanence of the access, not the depth of the TNA access that seems to be valuable to participating governments interested in accessing more (diverse) and better information as well as in passing information to a larger section of their national citizenry. Moreover, if governments were interested in increasing the procedural legitimacy of the treaty, then they should ratify with higher probability MEAs that granted TNAs deeper access. However, our results do not provide any evidence for a preference for deeper TNA access when controlling for *range* and *permanence*. Yet, the literature highlights that legitimacy concerns motivate states to involve civil society actors in their governmental delegations to CoPs (e.g., Böhmelt et al 2014; Böhmelt 2013; Bernauer and Betzold 2012). Consequently, the possibility exists that the inclusion of civil society actors in national delegations to CoP suffices to mitigate the 'democracy deficit' and enhance the legitimacy of global governance (e.g., Dryzek 2012; Biermann and Gupta 2011; Steffek and Ferretti 2009; Betsill and Corell 2008; Bernstein 2005).

[23] Given the high correlation between *depth*, *range*, and *permanence*, the regression estimates in models 4–6 should not be taken at face value without either controlling for the other two dimensions directly (model 3) or aggregating the information into one single measure (models 1 and 2).

If so, then, any further independent engagement of such actors at the CoPs is not needed. This is an issue that future research could explore.

Results for the control variables are mostly as expected. For example, democratic countries and countries with many IGO memberships tend to ratify more MEAs. In addition, while countries are reluctant to ratify MEAs that specify obligations that tend to increase countries' implementation and compliance costs, they are keen to ratify treaties that include design features that decrease these costs such as dispute settlement mechanisms and the provision of assistance to the treaty members. However, countries are more likely to ratify treaties that monitor and enforce members' compliance despite the increased membership costs they entail. While this finding runs against our expectation, it seems to be in line with the argument that international cooperation can be enhanced by the treaty's capacity to enforce its rules (Downs et al 1996; see also Bernauer et al 2013a).

Robustness Checks

Our main finding that countries are more likely to ratify MEAs granting TNAs (more intense) access is robust to several modifications of our modeling strategy.[24] First, we controlled for additional covariates, such as a dummy indicating whether a country participated in the treaty negotiations and a variable capturing a country's environmental quality measured by the country's per capita sulfur dioxide emissions. Second, we re-estimated the models using several theoretically defined subsets of our dataset. In particular we excluded countries from the analysis that experienced regime change and therefore might have altered their laws and examine observations only from 1950–2000. We report these two robustness tests because for several variables we assumed time invariance or carried the last observation forward. Most importantly, we strictly limited the sample of MEAs to the ones known with high certainty that

[24] See online appendix for results.

are open to all countries. Specifically we only examined twenty-two treaties Roberts et al (2004) identified as global and treaties that Spilker and Koubi (2016) report to allow all UN-member countries to join. Confirming our results based on these two subsamples is important because we constructed our main dataset by pairing all our treaties with all sovereign countries, therefore, potentially combining countries with treaties not allowing these countries to join, e.g. because of geographic or political membership restrictions. Finally, we estimated a survival model and clustered the standard errors not by country but by treaty-country or treaty.

Conclusion

The existing literature on ratification behavior of states vis-a-vis MEAs concentrates on the impact of political and economic globalization, networks, environmental vulnerability, political regimes, income levels, domestic environmental groups and treaty design characteristics (e.g., Spilker and Koubi 2016; Bernauer et al 2013a,b; Bernauer et al 2010; von Stein 2008; Roberts et al 2004). Although this literature offers important insights into the ratification dynamics underlying MEAs, there is certainly room for advancement (Wangler et al 2013).

In this paper, we examine whether countries are more likely to ratify treaties that contain provisions allowing TNAs to participate in their Conference of the Parties (CoPs) meetings relative to the ones without such provisions. Our empirical testing is based on a dataset that combines data on MEA ratifications with newly compiled information on treaty TNA access provisions for the time-period 1950-2011. We find that countries indeed ratify with higher probability MEAs that provide for greater TNA access, in terms of range, depth and permanence, at their meetings. With this research, we contribute to the international institutions literature the insight that TNA participation in international fora is associated with international cooperation.

Our results also support the general expectation that environmental treaties can be strategically designed to render international cooperation more likely. Broad TNA access to regular meetings appears to be a wise policy strategy to be applied during the negotiation of international treaties in order to increase the probability of subsequent formal international commitment to the treaty under negotiation. While the results presented in this paper are based on the analysis of global environmental governance efforts, yet we believe that the analysis of international cooperative behavior (as indicated by treaty ratifications) in other policy areas such as trade and human rights is likely to produce similar results.

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Table 1: *TNA access coding rules.*

***Range** of TNAs access:* type(s) of TNAs selected to have access to CoPs.	
No TNA access (0)	Treaty does not grant TNAs any access.
Unspecified (0.1)	Treaty grants TNAs access, but does not specify to which TNAs this applies.
Small (1)	The selection process is demanding (individual TNAs identified; very selective choice)
Medium (2)	The selection process is comprehensive (TNAs must conform to treaty goal or satisfy criteria such as „transparent financing", „democratic structure") or formal (all TNAs from member states/international TNAs/TNAs from a specific sector have access)
Full (3)	No selection (all interested TNAs/general public have access)
***Depth** of TNA access:* amount of rights connected with access.	
No TNA access (0)	Treaty does not grant TNAs any access.
Unspecified (0.1)	Treaty grants TNAs access, but does not specify the rights connected with access.
Observe (1)	Access is passive. TNAs are allowed as observers only, that is, without the right to speak.
Speak (2)	Access is active. TNAs are allowed to speak or issue written statements either at regular meetings or indirectly via special meetings or consultations.
Vote (3)	Access is full and autonomous. TNAs have, for example, the right to vote or to lodge legal complaints.
***Permanence** of TNA access:* extent to which institutional rules grant a permanent right for TNAs to be involved, or whether such privileges are ad hoc or by invitation	
No TNA access (0)	Treaty does not grant TNAs any access.
Unspecified (0.1)	Treaty grants TNAs access, but does not specify the permanence of this access.
Ad hoc (0.5)	Access is granted on an ad hoc basis or upon invitation (admission needs to be requested; TNA needs to be invited)
Conditional (0.75)	Access is permanent but with conditions. (For example, after an initial admission, no further invitation to a specific meeting is necessary or participation is generally granted but exclusion is possible upon request of the parties to the agreement.)
Permanent (1)	Access is granted permanently without conditions.

Note: The first column reports the value labels used in the analysis section together with numeric values which we use for calculating the index variable *intensity*.

Table 2: *Main results* (logit regression, robust standard errors clustered by country)

	(1)	(2)	(3)	(4)	(5)	(6)
tna_access	0.63* (0.05)					
intensity		0.35* (0.03)				
range No TNA access				0.74 (0.43)		
range Medium			0.88 (0.55)	1.37* (0.43)		
range Full			0.99 (0.56)	1.69* (0.54)		
depth No TNA access					−0.69 (0.43)	
depth Observe			−0.49 (0.48)		0.05 (0.43)	
depth Speak			−0.56 (0.49)		−0.30 (0.43)	
permanence No TNA access						0.26 (0.14)
permanence Adhoc			0.55* (0.23)			0.87* (0.17)
permanence Conditional			0.77* (0.25)			1.22* (0.15)
subject_energy	0.31* (0.08)	0.31* (0.08)	−3.48* (0.58)	0.31* (0.08)	0.30* (0.08)	0.30* (0.08)
subject_freshwater	−0.29* (0.13)	−0.31* (0.13)	−13.39* (0.20)	−0.29* (0.13)	−0.28* (0.13)	−0.30* (0.12)
subject_habitat	0.40* (0.07)	0.48* (0.07)	0.08 (0.13)	0.40* (0.08)	0.35* (0.08)	0.45* (0.08)
subject_nature	0.24* (0.06)	0.20* (0.06)	0.15 (0.13)	0.24* (0.06)	0.25* (0.06)	0.20* (0.06)
subject_ocean	−0.53* (0.06)	−0.57* (0.06)	−1.22* (0.14)	−0.54* (0.06)	−0.51* (0.06)	−0.57* (0.07)
subject_pollution	0.77* (0.07)	0.80* (0.07)	0.43* (0.17)	0.76* (0.07)	0.77* (0.07)	0.80* (0.07)
subject_species	0.16* (0.04)	0.14* (0.05)	0.20 (0.12)	0.15* (0.05)	0.15* (0.05)	0.14* (0.05)
subject_weapons	0.54* (0.12)	0.57* (0.12)		0.54* (0.12)	0.49* (0.12)	0.55* (0.12)
obligations	−0.11* (0.04)	−0.12* (0.04)	0.002 (0.13)	−0.12* (0.04)	−0.13* (0.04)	−0.15* (0.04)
mon_and_enf	0.08* (0.04)	0.11* (0.04)	0.12 (0.12)	0.08* (0.04)	0.10* (0.04)	0.13* (0.04)
dispute_settlement	0.22* (0.04)	0.20* (0.04)	0.42* (0.12)	0.21* (0.04)	0.21* (0.04)	0.18* (0.04)
assistance_all	0.45* (0.06)	0.47* (0.06)	0.38* (0.09)	0.47* (0.06)	0.47* (0.06)	0.48* (0.06)
assistance_developing	1.08* (0.07)	1.15* (0.07)	1.43* (0.12)	1.09* (0.07)	1.03* (0.07)	1.09* (0.07)
public_good_global	−0.52* (0.06)	−0.51* (0.06)	−0.27* (0.08)	−0.51* (0.06)	−0.55* (0.06)	−0.53* (0.06)
public_good_mixed	−0.74* (0.06)	−0.83* (0.07)	−0.40* (0.17)	−0.73* (0.06)	−0.69* (0.06)	−0.80* (0.07)
trade_openness	0.04 (0.06)	0.04 (0.06)	0.03 (0.06)	0.04 (0.06)	0.05 (0.06)	0.04 (0.06)
igo_membership_count	0.02* (0.004)	0.02* (0.004)	0.03* (0.004)	0.02* (0.004)	0.02* (0.004)	0.02* (0.004)
polity	0.03* (0.01)	0.03* (0.01)	0.03* (0.01)	0.03* (0.01)	0.03* (0.01)	0.03* (0.01)
gdppc	0.12* (0.04)	0.12* (0.04)	−0.05 (0.05)	0.12* (0.04)	0.13* (0.04)	0.12* (0.04)
gdppc_squared	−0.05* (0.02)	−0.05* (0.02)	−0.04 (0.03)	−0.05* (0.02)	−0.05* (0.02)	−0.05* (0.02)
gdp	0.04 (0.04)	0.04 (0.04)	0.01 (0.04)	0.04 (0.04)	0.04 (0.04)	0.04 (0.04)
legislative_approval	0.10 (0.11)	0.10 (0.11)	−0.08 (0.10)	0.10 (0.11)	0.10 (0.11)	0.10 (0.11)
ratification_global	0.04* (0.002)	0.04* (0.002)	0.04* (0.002)	0.04* (0.002)	0.04* (0.002)	0.04* (0.002)
ratification_in_region	0.02* (0.002)	0.02* (0.002)	0.01* (0.002)	0.02* (0.002)	0.02* (0.002)	0.02* (0.002)
t1	−0.24* (0.02)	−0.25* (0.02)	−0.15 (0.10)	−0.24* (0.02)	−0.24* (0.02)	−0.24* (0.02)
t2	0.01* (0.001)	0.01* (0.001)	0.004 (0.003)	0.01* (0.001)	0.01* (0.001)	0.01* (0.001)
t3	−0.0001* (0.0000)	−0.0001* (0.0000)	−0.0000* (0.0000)	−0.0001* (0.0000)	−0.0001* (0.0000)	−0.0001* (0.0000)
Constant	−3.09* (0.29)	−3.00* (0.28)	−4.32* (1.49)	−3.81* (0.56)	−2.38* (0.53)	−3.23* (0.33)
Treaties	178	178	42	178	178	178
Countries	154	154	154	154	154	154
Years	62	62	49	62	62	62
Observations	612,429	612,429	94,656	612,429	612,429	612,429
Log Likelihood	−24,805.99	−24,791.33	−7,166.33	−24,797.80	−24,792.52	−24,777.56

Note: *p<0.05

Model (3) excludes treaties not granting any TNA access.

Models (3) to (6) use 'Unspecified' as baseline category for range, depth, and permanence.

We did not observe treaties with a range coded as 'small', a depth coded as 'Vote', nor a permanence coded as 'permanent'.

Figure 1: *Dimensions of TNA access* MEAs observed in 2011

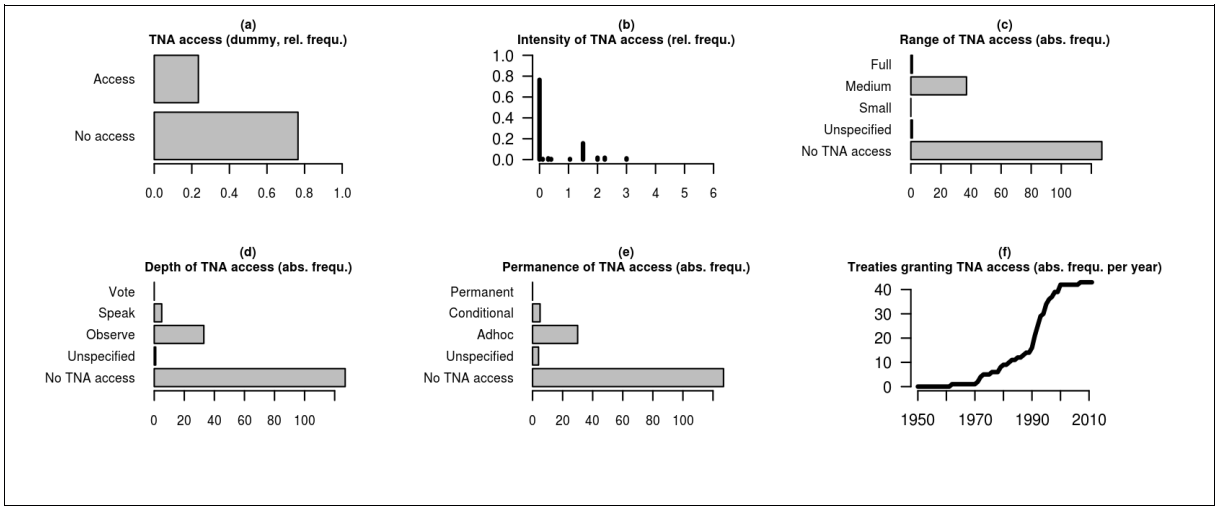
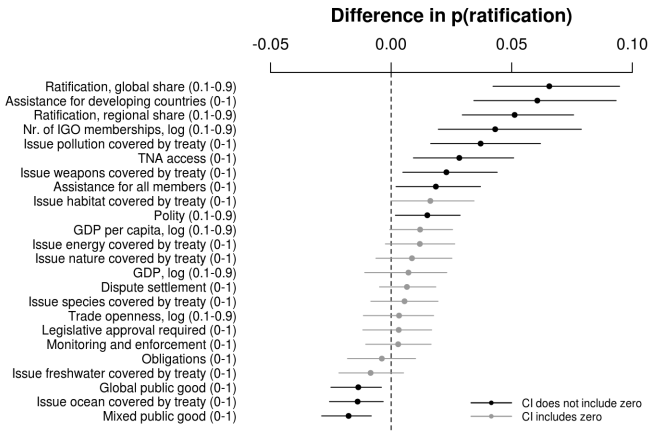


Figure 2: *Simulated differences in the probability of treaty ratification when input variables of model 1 (panel a) or model 2 (panel b) are, one by one, changed from a low to a high value.*

a)



b)

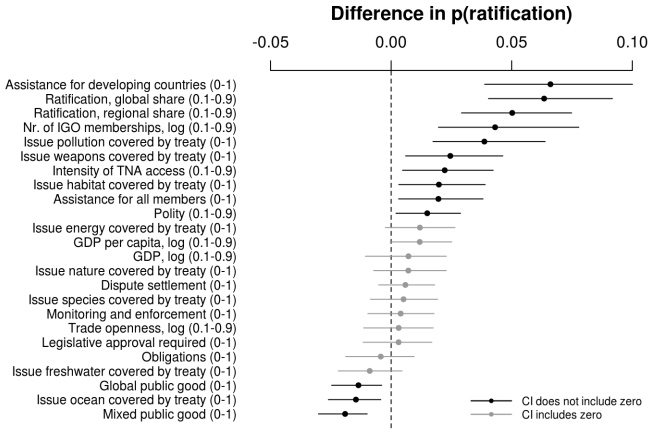


Figure 3: *Simulated probability of treaty ratification over time for treaties granting TNAs with high- or low-intensity access.*