

The Self-Selection of Democracies into Treaty Design: Insights from International Environmental Agreements

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Abstract

Generally, democratic regime type is positively associated with participating in international environmental agreements. In this context, this study focuses on the legal nature of an agreement, which is linked to audience costs primarily at the domestic level that occur in case of non-compliance and are felt especially by democracies. Eventually, more legalized (“hard-law”) treaties make compliance potentially more challenging and democratic leaders may anticipate the corresponding audience costs, which decreases the likelihood that democracies select themselves into such treaties. The empirical implication of our theory follows that environmental agreements with a larger share of democratic members are less likely to be characterized by hard law. This claim is tested using quantitative data on global environmental treaties. The results strongly support our argument, shed new light on the relationship between participation in international agreements and the form of government, and also have implications for the “words-deeds” debate in international environmental policy-making.

Keywords: Democracy; Design; International Environmental Agreements; Legalization; Quantitative Methods; Treaties

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1 Introduction

Many of the current environmental issues are of a transnational nature and cannot be addressed by states unilaterally or solely at the domestic level. Protection of the ozone layer, addressing transboundary air pollution, and fighting climate change are just a few of those environmental matters that require several nations' coordinated efforts at the international level. Arguably, the most prominent and perhaps even necessary instruments for such efforts are international agreements, i.e., formal treaties between two or more states for dealing with an environmental issue, which countries can commit to and participate in (e.g., Martin, 1993, 2000; Fearon, 1998; Leeds, 1999; Schneider and Urpelainen, 2013). These agreements might pool resources, coordinate state policies, and thus provide cooperative gains for their members, although they impose costs as well on, e.g., countries' sovereignty and decision-making power.

The existing work primarily focuses on three clusters that help explaining state participation in international (environmental) agreements:¹ (1) treaty design characteristics, (2) domestic influences, and (3) systemic factors (e.g., Abbott et al., 2000; Abbott and Snidal, 2000; Congleton, 1992; Frank, 1999; Fredriksson and Gaston, 2000; Neumayer, 2002*a,b*; Murdoch, Sandler and Vijverberg, 2003; Beron, Murdoch and Vijverberg, 2003; Roberts, Parks and Vásquez, 2004; Goodliffe and Hawkins, 2006; Fredriksson, Neumayer and Ujhelyi, 2007; von Stein, 2008; Bernauer et al., 2010; Perrin and Bernauer, 2010; Bernauer et al., 2013; Mansfield, Milner and Rosendorff, 2002; Mansfield and Pevehouse, 2006, 2008; Lantis, 2009; Lupu, 2014; Pollack, 2015; Shaffer and Pollack, 2010, 2011). The following article focuses primarily on a combination of the first and the second cluster. That is, previous work has repeatedly shown that democracies are more likely than other regime types to cooperate via and commit to international environmental treaties (e.g., Mansfield, Milner and Rosendorff, 2002; Neumayer, 2002*a*; Mansfield and Pevehouse, 2006, 2008; Bättig and Bernauer, 2009; Lantis, 2009; Bernauer et al., 2010; Bernauer, Böhmelt and Koubi, 2013; Spilker and Koubi, 2016). Theoretically, Mattes and Rodríguez (2014, p.528) summarize that “[d]emocracies’ superior track record [in international cooperation] is usually attributed to three institutional factors [...]: accountability of leaders, limited decision-making flexibility, and transparency.” Specifically, it is argued that democracies are more likely than non-democratic regimes to provide public goods for their constituency; and since environmental quality is just a specific kind of public good, democracies are then also more inclined to cooperate in international problem-solving efforts as this may signal the willingness to ensure that good’s provision (e.g., Congleton, 1992; Bättig and Bernauer, 2009; Bernauer et al., 2010). In addition, citizens can express their preferences better in democracies and they benefit from a higher “flow of information.” This should translate into more international cooperation over environmental problems as well, since citizens will demand this from their democratic governments (e.g., Congleton, 1992; Bättig and Bernauer, 2009; Bernauer et al.,

¹Note that “participation” refers to (1) states that were involved in drafting an agreement and then ratified it and (2) those countries that were not involved in negotiating a treaty, but joined it afterwards (nonetheless). Hence, it captures states’ continued involvement in an agreement and only ends when a country leaves a treaty. Empirically, participation in our case refers to the members of a global environmental treaty – those that have ratified it (signature alone is insufficient) – by the end of 2006 (see Bernauer et al., 2013).

2010). Bättig and Bernauer (2009, p.285) focus on climate change and consequently conclude that “both the demand for, and supply of, climate mitigation measures are likely to be stronger in democracies.” And Neumayer (2002*a*, p.139) stresses that “the spread of democracy around the world will lead to enhanced environmental commitment [i.e., treaty participation] worldwide.”

Clearly, however, not all democracies participate in any agreement under all circumstances. The following research takes this as a motivation as we address the question of how democratic members’ participation in international environmental treaties is related to “hard-law designs,” i.e., environmental agreement legalization that is characterized by obligation, precision, and delegation (e.g., Abbott et al., 2000; Abbott and Snidal, 2000; Shaffer and Pollack, 2010, 2011). We ultimately argue that environmental agreements formed among a larger share of democracies are less likely to be characterized by hard law than soft law, i.e., democracies are less likely to participate in more legalized (hard-law) treaties. The underlying theoretical argument for this empirical implication focuses on the likely costs stemming from agreement non-compliance that are imposed by international and, primarily, domestic audiences: democratic leaders may anticipate the costs of not complying with an environmental treaty. But audience costs, in particular domestic ones, are higher in democratic than non-democratic regimes, and it is anticipated that a hard-law design makes full treaty compliance more challenging due to more constraining obligations or less flexibility in decision-making. In combination, democracies will select themselves strategically into soft-law treaties, which allow maintaining flexibility and decision-making power, while the chances of treaty violation and, therefore, the risk of audience costs are lower.

The empirical analysis employs quantitative data by Bernauer et al. (2013) on global environmental agreements since 1950. Using a binary indicator for hard law as the dependent variable, we find that our core explanatory variable measuring the proportion of democracies participating in a treaty is negatively related to this item. Hence, democracies are less likely to select themselves into more legalized treaties. The confidence in this result is further supported as we control for several alternative determinants of design or legalization and democracies’ self-selection into an agreement (membership or participation), and by an extensive list of robustness checks that we discuss in the article’s appendix. Ultimately, this research makes three central contributions to the literature. First, we shed new light on the relationship between democracy and environmental treaty participation as well as design. This may also influence the literature on treaty ratification more generally and has crucial influences for policymakers and public institutions. Derived from this, secondly, our work potentially contributes to the literature on the effectiveness of environmental agreements. As Miles et al. (2001) show, there is a strong link between the design of an institution and its effectiveness. An implication of our work is that democracies tend to “soften-up” environmental agreements, which in turn may eventually lower an institution’s performance. Finally, we contribute to the debate on “screening” (i.e., the selection into an international agreement) and “constraining” (i.e., whether a treaty actually can change state behavior and enforce compliance even if a state’s (short-term) interest depart from

the agreement requirements) effects in international politics. In line with research on military alliances, we find that “states with the greatest likelihood of being constrained are more carefully screened” (Chiba, Johnson and Leeds, 2015, p.968). The conclusion further discusses how this is connected to the “words-deeds” debate in global environmental policy-making (e.g., Bättig and Bernauer, 2009).

2 States’ Participation in Environmental Treaties

A review of the literature highlights that states participate in international (environmental) agreements as long as the benefits stemming from accession outweigh the costs (Roberts, Parks and Vásquez, 2004; Bernauer et al., 2010; Wangler, Altamirano-Cabrera and Weikard, 2013; Kelley and Pevehouse, 2015; Pollack, 2015). Against this background, there are primarily three clusters of determinants that may influence countries’ evaluation of costs and benefits associated with an agreement and, hence, participating in international environmental treaties. First, international agreements vary considerably in their design (e.g., Abbott et al., 2000; Abbott and Snidal, 2000; Shaffer and Pollack, 2010, 2011). Institutions can be highly legalized if they are characterized by clear obligations (i.e., an institution’s rules can be enforced upon its members), are precise (i.e., rules are clearly and unambiguously defined), and delegate authority to a supranational body (i.e., a dispute-settlement third-party that has authority to implement, interpret, and apply rules). Following Abbott et al. (2000), hard law describes highly legalized treaties, while soft law does not have a strong degree of legalization. In general, states are more reluctant to participate in more legalized, i.e., hard-law agreements (e.g., Wagner, 2001; Bernauer et al., 2010, 2013; Spilker and Koubi, 2016), while there is also evidence that hard law is less likely to diffuse within the network of environmental treaties (e.g., Böhmelt and Spilker, 2016).

Second, there are domestic-level characteristics such as political regime type, institutional constraints, or countries’ economic conditions. As summarized above, it is argued that democracies are more likely than non-democratic regimes to participate in international environmental agreements (e.g., Neumayer, 2002*a,b*; Fredriksson and Gaston, 2000; von Stein, 2008; Bernauer et al., 2010; Elsig, Milewicz and Stürchler, 2011; Milewicz and Elsig, 2014; Carbonell and Allison, 2015). Other research looks at authoritarian states and finds that there is significant variation in the participation behavior among them (e.g., Leinaweaver, 2012; Mattes and Rodríguez, 2014). Further influences at the domestic level pertain to interest groups and veto players (e.g., Fredriksson and Gaston, 2000; Roberts, Parks and Vásquez, 2004; Bernhagen, 2008; Urpelainen, 2010; Bernauer, Böhmelt and Koubi, 2013; Hugh-Jones, Milewicz and Ward, 2016), electoral systems, election periods and constitutional institutions (e.g., Cazals and Sauquet, 2015; Kelley and Pevehouse, 2015; Kiesow Cortez and Gutmann, 2015), income levels (e.g., Bernauer et al., 2010; Haftel and Thompson, 2013), and military or economic power aspects (e.g., Elsig, Milewicz and Stürchler, 2011; Haftel and Thompson, 2013; Milewicz and Elsig, 2014).

Finally, there are systemic factors. For example, it is suggested that a state’s degree of cooperative be-

havior is influenced by other nations (e.g., Fredriksson and Gaston, 2000; Neumayer, 2002*a,b*; Roberts, Parks and Vásquez, 2004; Fredriksson, Neumayer and Ujhelyi, 2007; von Stein, 2008; Bernauer et al., 2010). This “international policy diffusion occurs when government policy decisions in a given country are systematically conditioned by prior policy choices made in other countries” (Simmons, Dobbin and Garrett, 2006, p.787). The contingent behavior of states also incorporates dependencies between states and third-party countries, i.e., “power politics” (e.g., Schneider and Urpelainen, 2013; Milewicz and Snidal, 2016), linkages based on states’ colonial past (e.g., Elsig, Milewicz and Stürchler, 2011; Milewicz and Elsig, 2014), or geographical distance and economic factors such as income size, joint trade agreements, and trade openness (e.g., Vogel, 2000; Neumayer, 2002*b*; Besedeš, Johnson and Tian, 2016). Similarly, economic globalization (see, e.g., Elsig, Milewicz and Stürchler, 2011; Milewicz and Elsig, 2014) or the involvement in international organizations are crucial factors (see, e.g., Bernauer et al., 2010; Spilker, 2013; Bernauer, Böhmelt and Koubi, 2013; Yamagata, Yang and Galaskiewicz, 2013; Böhmelt and Vollenweider, 2015; Böhmelt and Spilker, 2016).

In sum, the literature has produced strong theoretical arguments that help explaining why states participate in what kind of environmental agreements, and found robust empirical findings that support the claims. Most importantly for our work, there is nearly universal consensus in the literature that democratic forms of government are strongly linked to the participation in international environmental problem-solving efforts (e.g., Mansfield, Milner and Rosendorff, 2002; Neumayer, 2002*a*; Mansfield and Pevehouse, 2006, 2008; Bättig and Bernauer, 2009; Lantis, 2009; Bernauer et al., 2010; Bernauer, Böhmelt and Koubi, 2013; Spilker and Koubi, 2016). The quote from Neumayer (2002*a*, p.139), i.e., “the spread of democracy around the world will lead to enhanced environmental commitment worldwide,” emphasizes this again. However, this does not explain why several democracies frequently decide not to participate in international environmental agreements, e.g., the US not ratifying the Kyoto Protocol or the Convention on Biological Diversity, Switzerland not participating in any of the United Nations Convention on the Law of the Sea agreements, or Israel (despite signing it) refraining from ratifying the Stockholm Convention on Persistent Organic Pollutants. We seek to address this puzzle by focusing more strongly on treaty design and democracies, thus analyzing variation in the degree of environmental agreements’ legalization as determined by democratic states’ participation in them more carefully and systematically than before.

3 Theoretical Argument

Governments as official state representatives can participate in international environmental agreements, implement them at their national level in turn, and they are those actors that can make the decision to leave a treaty. Hence, environmental treaty participation primarily involves the government of a state as the main actor (Wangler, Altamirano-Cabrera and Weikard, 2013).² However, a country’s executive is also influ-

²Participation, i.e., ratification, is thus usually initiated and completed by the executive. In several countries, however, state constitutions require explicit legislative approval for ratification decisions, making treaty participation depending on the final action of the legislative branch. Our argument focuses on the executive, however, as it is generally more plausible that

enced by its domestic constituency (e.g., Putnam, 1988) and, as Bernauer et al. (2010), for example, show, governments care about their reputation in the international arena. We argue in the following that these international and domestic constituencies impose costs on a government in case of non-compliance with an environmental treaty – and the design, i.e., the degree of legalization of an agreement as well as the form of government of a focal country determine the substance of these audience costs. Ultimately, we develop a theoretical argument that leads to the empirical implication that environmental agreements with a larger share of democratic members are less likely to be characterized by hard law due to a self-selection process into participation.

Starting with the design of an international environmental agreement, we focus on the distinction between hard law and soft law (e.g., Abbott et al., 2000; Abbott and Snidal, 2000; Shaffer and Pollack, 2010, 2011). These concepts pertain to the underlying dimension of the degree of legalization, and they are defined according to obligation, precision, and delegation (Abbott et al., 2000; Abbott and Snidal, 2000). Of course, there are potentially many different ways to design an institution and all of these features may perform different tasks. But their underlying latent dimension is about the degrees of commitment, bindingness, and constraint that are imposed on members. As a result, much of the previous literature (e.g., Goldstein and Martin, 2000; Skjærseth, Stokke and Wettestad, 2006; Bernauer et al., 2013; Spilker and Koubi, 2016) focuses on this soft vs. hard law distinction as a comparable and relatively easily measurable way to code the design of an international agreement. First, obligation is defined by an institution's degree of bondage and commitment. Second, there is precision, i.e., the unambiguous definition of states' required actions in an issue area. High levels of precision narrow down the "scope for reasonable interpretation" (Abbott et al., 2000, p.402). Finally, legalization entails delegation, which is about granting authority of implementation, interpretation, and rule application to a third party (Abbott et al., 2000, p.401f). Thereby, states lose some degree of sovereign decision-making. In light of this overview, an agreement is seen as "hard law," if it is highly legalized through (1) clear obligations, (2) precise and unambiguously defined rules, and (3) the delegation of (some) authority to a third party. Conversely, a treaty is characterized by "soft law," if some or all of these features are missing.

The degree of legalization of an international agreement has several implications for states' freedom in decision-making and sovereignty (see von Stein, 2008). In general, hard law allows for little flexibility due to its stronger commitment requirements and higher sovereignty costs: "hard law restricts actors" (Abbott and Snidal, 2000, p.422). Conversely, soft law is most often not associated with obligatory and precise commitments, but flexibility and few constraints on sovereignty and policy-making (see Downs, Rocke and Barsoom, 1996; Rosendorff and Milner, 2001; Rosendorff, 2005; Skjærseth, Stokke and Wettestad, 2006; Bernauer et al., 2013; Spilker and Koubi, 2016; Böhmelt and Spilker, 2016). More specifically, on one hand, more demanding obligations and stronger enforcement mechanisms limit states' freedom in decision-making,

a (democratic) government is unlikely to consider submitting an agreement for ratification to its legislative if rejection by the latter is to be anticipated.

and the delegation of power makes it more difficult to interpret an agreement in a self-serving manner (Rosendorff and Milner, 2001; Rosendorff, 2005). Furthermore, hard law may increase the reputational costs a state will incur if it reneges on its commitments. On the other hand, countries find it arguably easier to agree on a soft-law design, as it provides more opportunities for compromise. State leaders can then adapt an environmental agreement in light of particular needs, which allows for discretion and flexibility in implementing treaty commitments and to respond to unanticipated shocks or special domestic circumstances (Skjærseth, Stokke and Wettestad, 2006, p.115).

Eventually, hard law is potentially more costly and less attractive to *any* (potential) member, not only democracies (Downs, Rocke and Barsoom, 1996; Abbott and Snidal, 2000; Koremenos, Lipson and Snidal, 2001; Skjærseth, Stokke and Wettestad, 2006; von Stein, 2008; Spilker and Koubi, 2016).³ Goldstein and Martin (2000, p.620) make the same claim when stating that “if agreements are impossible to breach, either because of their level of obligation or because the transparency of rules increases the likelihood of enforcement, elected officials may find that the costs of signing such agreements outweigh the benefits.” However, *ex-ante*, this affects all states similarly, regardless of their form of government. What is the role of democracy then in this context? Why may particularly democratic forms of government be reluctant to select themselves into hard-law environmental agreements?

When subscribing to the claim that *any* political leader is primarily interested in retaining office and, hence, political survival (Bueno de Mesquita et al., 2005), policies should be made that are favorable to the *relevant* domestic audience, i.e., those citizens that a leader needs for gaining and staying in office. That is, leaders have to satisfy their selectorate and, more precisely, the winning coalition. The selectorate is the set of people who have the ability to choose a country’s leader, while the winning coalition signifies the portion of the selectorate that keeps a leader in power (Bueno de Mesquita et al., 2005). The crucial point is now that non-democratic regimes are generally characterized by smaller winning coalitions relative to the selectorate, while democracies have larger groups to please in order to stay in office. This is because citizens can participate more effectively in the leader-selection process: they can express their will on the performance of a government more effectively and directly in democratic states through, e.g., domestic institutions such as public referendums and elections. In turn, however, this implies that democratic leaders can also be removed from office more easily if the winning coalition is dissatisfied with their policies.

Against this background, we argue that a “democratic self-selection mechanism” has been overlooked by previous research: because of a democratic leader’s primary goal of retaining office and since there are higher

³This conclusion raises the question of why one would implement hard law at all. Why do states not always opt to design agreements according to soft law? Soft law cannot be enforced and does not provide clear targets, which induces a lack of credibility and makes soft law ill-suited for solving an underlying problem effectively. Hard law is potentially more effectively able to address an underlying problem as it is “more credible” and can enforce that states reach the policy goals they agreed on. Note that this points to the “rigidity and flexibility” trade-off widely discussed in the literature (see Downs, Rocke and Barsoom, 1996; Rosendorff and Milner, 2001; Rosendorff, 2005; Skjærseth, Stokke and Wettestad, 2006; Bernauer et al., 2013; Spilker and Koubi, 2016): “soft law may not necessarily be effective in solving an underlying problem. However, it should appear attractive to states due to its lower sovereignty costs. On the other hand, hard law is unlikely to be the most preferred option for states in decision-making, although it is potentially better suited to effectively address the problem an institution has been created for in the first place” (Böhmelt and Spilker, 2016, p.74).

costs stemming from international and, primarily, domestic audiences when not complying with international commitments, democracies have an extra incentive to select themselves only into those treaties they will find easier to comply with in the first place.⁴ That is, democracies do supposedly more likely and credibly fulfill their international environmental commitments (see Martin, 1993, 2000; Mansfield, Milner and Rosendorff, 2002). This also stems from the claim that they face higher audience costs if they do not keep their promises. If this applies, however, it is likely that democracies might be more careful in terms of selecting what exactly they commit to and participate in to begin with. In the words of Bättig and Bernauer (2009, p.303), democratic leaders “who promise more than they can implement experience political costs, for example an increasing risk of losing elections.” Correspondingly, we expect democracies to participate only in those environmental treaties, which are expectedly easy to comply with – but these are unlikely to be hard-law agreements.

In more detail, state governments and leaders, when considering tougher, i.e., hard-law standards while anticipating that they may face problems in complying with these, are likely to face at least two risks. First, violating such a treaty involves reputational costs for a country at the international level (*international audience costs*), since this would signal to present as well as potential cooperation partners that a country does not necessarily adhere to its international obligations (see also Hathaway, 2002). That is, not complying with a treaty in one context may negatively affect cooperation prospects in other areas – not only environmental ones, but also on trade, security, etc. – as the violating state might be seen as less reliable. Hence, agreement non-compliance makes it likely that other states will reply in a non-cooperative way as well, and a state that has previously violated an agreement will be less likely to participate in another treaty in the future. Any benefits from international cooperation are then at risk (see also Chiba, Johnson and Leeds, 2015, p.970). Due to the higher credibility of keeping international promises (Martin, 1993, 2000; Mansfield, Milner and Rosendorff, 2002), the reputational damage would be higher for democracies.

Second, treaty violation imposes *domestic audience costs*. People at the domestic level as well might be interested in having and keeping a positive reputation for their state in international affairs, including with regard to compliance with international environmental agreements. In case this reputation is damaged by, e.g., the violation of an international treaty, the public could be increasingly less supportive of the executive and more willing to replace a leader by a new one who has a higher credibility of keeping promises at the international level (Chiba, Johnson and Leeds, 2015, p.971). Recall here that it is easier and less risky to remove a leader in a democratic regime and, hence, “having sullied a state’s reputation has a greater likelihood of having negative consequences for a leader’s ability to stay in power in a democratic state than in a non-

⁴Clearly, however, the content of international environmental agreements and the issues they address may not be that salient to the (domestic) audience. In fact, it may be suggested that the majority of the electorate is indifferent to these policies. However, following Mattes, Leeds and Carroll (2015, p.283), we view states’ compliance patterns with international environmental agreements “as providing an indirect reflection of the foreign policy position of a state,” which then corresponds to the broad preferences of domestic groups for a good reputation in the international arena. Therefore, a country’s participation in and compliance with international environmental agreements “is a latent indicator of its foreign policy orientation [...]; it is a record of how the state wants to be seen by others, the international norms it finds acceptable, and the positions it is willing to take publicly on a wide variety of issues” (Mattes, Leeds and Carroll, 2015, p.283).

democratic state” (Chiba, Johnson and Leeds, 2015, p.971). And, in fact, recent research (e.g., Tomz, 2008, 2012) suggests that citizens concerned “with their state’s reputation for fulfilling past commitments will be less likely to reelect a leader that violates international commitments, thus providing incentives for democratic leaders to honor their international promises” (Chiba, Johnson and Leeds, 2015, p.968). As indicated above, although international environmental agreements may not be that salient to domestic audiences, states’ compliance patterns with international environmental agreements can provide “an indirect reflection of the foreign policy position of a state” (Mattes, Leeds and Carroll, 2015, p.283).

In fact, McGillivray and Smith (2008) show that citizens do benefit from punishing their leader and potentially removing her from office in the event of treaty non-compliance and reputational damage caused even if that treaty violation would lead to a better payoff for the country at large. It follows that when anticipating these risks and being aware of international and, in particular, domestic audience costs, democratic leaders – due to their higher degree of international accountability and stronger dependency on larger parts of the population for political survival (Bueno de Mesquita et al., 2005) – should be less likely to commit to standards that make treaty compliance more challenging: that is, hard law. Ultimately, a larger share of democracies among the states participating in an international environmental agreement will be more likely to have implemented a design alternative that lowers the risk of agreement non-compliance and thus avoids audience costs: that is, soft law.⁵ Hence, the empirical implication of our argument is that democracies are less likely to participate in hard-law (more binding, more constraining, and more precise) environmental agreements than soft law treaties.

4 Research Design

4.1 Data, Methodology, and Dependent Variable

The empirical test of our argument is based on the quantitative cross-sectional data set by Bernauer et al. (2013) that provides information on treaty design features and degrees of legalization for 213 international environmental agreements. According to Bernauer et al. (2013), these data focus on all international treaties that were open for ratification globally between 1950 and 2000, while the number of participating states per treaty is measured at the end of 2006. Agreements dealing only marginally with environmental issues or those not open for participation globally, since they cannot attract members from the same population of countries in a given year, are not part of the data. The variables in the data set have been compiled through the analysis of the original treaty documents and texts, which do essentially not change over time.⁶ The starting points for identifying the population of international environmental agreements for Bernauer et al. (2013) have been CIESIN (2006) and Mitchell (2008).

⁵Note that this argument does not suggest that non-democratic regimes do not consider international or domestic audience costs. However, these costs should be, *ceteris paribus*, higher in the case of democracies.

⁶Hence, the purely cross-sectional nature of the data is not an empirical shortcoming.

The treaty as such is the unit of analysis in this data set, which implies that the final data we employ also comprise 213 observations. Next to the “core agreements” (or framework conventions), the data also include protocols, but omit amendments as these are usually only minor adjustments to treaties.⁷ To the best of our knowledge, although Bernauer et al. (2013) have not updated their environmental treaty data since publication, their data are the only source with comprehensive and reliable information for our theoretical concepts of interests, i.e., most importantly treaty design features and participation statistics. In addition, next to our substantive interest in environmental politics, restricting the analysis to one policy area further allows us to control for the impact of unit heterogeneity to a large degree.

Against this background, to capture how democracies are associated with the degree of legalization (e.g., Abbott et al., 2000; Abbott and Snidal, 2000; Shaffer and Pollack, 2010, 2011), we rely on the modeling approach and methodology suggested in Chiba, Johnson and Leeds (2015). That is, next to the same unit of analysis, i.e., the agreement as such,⁸ we created a dependent variable (described below) that measures in a binary fashion whether a treaty is coded as hard law or soft law. Due to the dichotomous nature of this outcome variable, we use logistic regression models and employ robust standard errors to address heteroscedasticity. The main explanatory variable also follows Chiba, Johnson and Leeds (2015) in that we created an item on the proportion of democratic states that participate in a treaty by the end of 2006. We explain this variable’s operationalization below in detail as well. Finally, we also take into account that states must choose to participate in an environmental agreement in the first place, i.e., before considering the design characteristics of that institution, and make use of a two-part model to this end (Chiba, Johnson and Leeds, 2015). The results for that model are presented in the appendix.

Coming to our dependent variable, we rely on Abbott et al. (2000) and Abbott and Snidal (2000) who define legalization as a system of institutionalized rules, norms, and regulations that characterize a treaty along obligation, precision, and delegation. Spilker and Koubi (2016) argue that four variables in the data by Bernauer et al. (2013) capture these dimensions and, in turn, whether an environmental agreement can be classified as hard law or soft law. With regard to obligation, we use an item that measures whether the treaty itself establishes an enforcement mechanisms (1) or not (0) and whether the agreement has any monitoring provisions (1) or not (0), respectively. The rationale for using these variables is that treaties only impose a real obligation on their members when rule compliance can be monitored and enforced. Enforcement mechanisms exist for 65 out of 213 treaties, while monitoring devices are given for 66 agreements. The *Kyoto Protocol’s Subsidiary Body for Implementation*, for example, monitors and enforces its goals. Second, in terms of precision, we consider a dichotomous variable receiving the value of 1 if a treaty specifies quantitative targets or clear provisions. Ambiguous or no specifications at all of what has to be achieved are coded as 0. For instance, the *Montreal Protocol on Substances that Deplete the Ozone Layer* specifies that “from 1991 to 1992 its [chlorofluorocarbon] levels of consumption and production of the controlled substances in Group

⁷Note that the appendix provides a robustness check that also omits protocols.

⁸Chiba, Johnson and Leeds (2015) focus on the selection of democracies into certain types of military alliances.

I of Annex A do not exceed 150 percent of its calculated levels of production and consumption of those substances in 1986.” It is, therefore, a very precise agreement. In our sample, 160 out of 213 treaties are characterized as “precise.” Finally, delegation is captured by a variable on whether a treaty provides a third-party dispute settlement body. There are many different types of dispute settlement mechanisms: some agreements appoint external bodies, resolve issues through the *International Court of Justice*, or have internal negotiation procedures in place. Our variable receives a value of 1 if an agreement provides guidelines on how disputes should be dealt with (0 otherwise). 120 treaties have such provisions.

Based on these four variables, we created the aggregated index *Hard Law* that receives a value of 1 if any three of the four items or all four variables are coded as 1 (0 otherwise). In our sample, 104 out of 213 treaties (48.83 percent) are hard-law agreements. This aggregation approach is also based on Spilker and Koubi (2016) and, as we model variation in it, does clearly not assume that it is exogenously given.⁹ In fact, we seek to examine the endogeneity surrounding it, since we focus on the self-selection of democracies into agreements, depending on their degree of legalization. The following table illustrates the coding of our dependent variable via some prominent treaties in our data set (see also Spilker and Koubi, 2016, p.231).

Table 1: Examples of Hard Law / Soft Law Coding

Treaty Name	Hard Law	Enforcement	Monitoring	Precision	Delegation
UNFCCC Framework Conv.	0	0	1	0	1
UN Law of the Sea Conv.	1	0	1	1	1
Antarctic Treaty	1	0	1	1	1
International Protection of Birds Conv.	0	0	0	0	0
International Atlantic Tuna Conservation Conv.	0	0	1	1	0
Conv. on the High Seas	0	0	0	0	0
Conv. on Persistent Organic Pollutants	1	1	1	1	1
Conv. on Biological Diversity	1	0	1	1	1
Energy Charter Treaty	0	0	0	1	1

Conv. = Convention; 1 = Yes; 0 = No.

4.2 Proportion of Democracies and Control Covariates

Our main explanatory variable pertains to the share of democratic states that participate in a particular environmental agreement by 2006, i.e., have ratified it (and this decision is in force) by 2006. For this item’s operationalization, we counted the number of treaty members (ratifiers) in 2006 that are democratic and divided this by the total number of states that have participated in (ratified) an environmental agreement by the end of 2006. The rationale behind this operationalization is based on Chiba, Johnson and Leeds (2015) and Pevehouse (2005): democracies can influence treaty design according to their relative weight in membership, which Pevehouse (2005) calls “democratic density.” With a larger share of agreement membership, it is likely to be easier for democratic states to “impose” their design preferences (see also Grigorescu, 2007, 2010).

In order to identify democracies, we use the data from Cheibub, Gandhi and Vreeland (2010)¹⁰ who classify a regime as a democracy if *all* of the following criteria are met: (1) the chief executive must be chosen by

⁹We also return to this issue in the appendix when discussing the two-stage model.

¹⁰See also Przeworski et al. (2000).

popular election or by a body that was itself popularly elected; (2) the legislature must be popularly elected; (3) there must be more than one party competing in the elections; and (4) an alternation in power under electoral rules identical to the ones that brought the incumbent to office must have taken place (Cheibub, Gandhi and Vreeland, 2010, p.69). This main explanatory variable, *Proportion of Democracies*, ranges from 0 (only non-democratic states participate in an agreement by 2006) to 1 (only democracies participate in an environmental treaty by the end of 2006). The classification of states into democracies and non-democratic states is based on 2006 values, i.e., the year in which we measure countries' participation.¹¹

We also control for a broad set of alternative determinants of the degree of legalization and, hence, the design of environmental treaties as well as states' decision to participate in environmental treaties. These controls are primarily based on Bernauer et al. (2013) and Spilker and Koubi (2016), but also derived from earlier studies analyzing states' commitments to international environmental problem-solving efforts (e.g., Fredriksson and Gaston, 2000; Neumayer, 2002*a,b*; Murdoch, Sandler and Vijverberg, 2003; Beron, Murdoch and Vijverberg, 2003; Roberts, Parks and Vásquez, 2004; Fredriksson, Neumayer and Ujhelyi, 2007; von Stein, 2008; Bernauer et al., 2010; Perrin and Bernauer, 2010; Bernauer et al., 2013; Mansfield, Milner and Rosendorff, 2002; Mansfield and Pevehouse, 2006, 2008; Lantis, 2009; Lupu, 2014; Pollack, 2015). First, different treaties became open to ratification at different points in time and, thus, vary in the time elapsed in which joining an agreement was possible. Controlling for the age of a treaty seems also crucial when assuming that states' willingness or capacity to implement hard-law designs may have changed over time. Therefore, we control for the age of an environmental agreement, which is operationalized as the time elapsed since a treaty was open for ratification until 2006. We additionally include the squared term of *Treaty Age* to allow for a curvilinear impact on the likelihood of hard-law design (see Carter and Signorino, 2010).

Second, we control for the total number of countries that participate in an environmental agreement. This item is based on the data from Bernauer et al. (2013) who have coded the number of states that joined a treaty by the end of 2006. States' participation decisions might be influenced by other countries' choices (e.g., Bernauer et al., 2010; Perrin and Bernauer, 2010). Due to the diffusion mechanisms of learning, emulation, and perhaps even competition, a state might find continued participation more attractive if a large number of other states do so (see, e.g., Gilardi, 2010, 2012).

Finally, we include binary variables that control for specific issue areas. This set of control variables is based on the claim that an institution's underlying problem structure influences the design of an agreement and participation patterns (e.g., Koremenos, Lipson and Snidal, 2001; Mitchell, 2006). Miles et al. (2001), for instance, use incongruity, asymmetry, and the cumulative cleavage structure to determine the level of "malignancy," which they combine with "uncertainty" in order to operationalize environmental problems (see

¹¹Ideally, we would focus on ratifications at the time of drafting an agreement or only of those states that participated in designing a treaty. The lack of coding in Bernauer et al. (2013) prevents us from doing so, however. Still, as countries have the possibility of leaving international agreements or changing their design (Chiba, Johnson and Leeds, 2015; Pevehouse, 2005), analyzing their participation in a treaty by the end of 2006 fulfills the same purpose and should equally allow us to assess whether environmental agreements with a larger share of democratic members are less likely to be characterized by hard law due to a self-selection process into participation.

also Böhmelt and Pilster, 2010). While the data from Bernauer et al. (2013) do not include variables that measure, e.g., the level of malignancy or uncertainty directly, they contain information on the respective issue area an institution deals with. More specifically, we include dummy variables that indicate whether a treaty addresses (1) matters of environmental pollution, (2) the protection of endangered species, microorganisms, and wildlife, (3) nuclear energy issues within the environmental sphere, and (4) particular ecosystems such as desertification, barren land, or wetlands. We use these variables as proxies for the different problem structures environmental treaties may have, since Miles et al. (2001) show that an institution's underlying problem structure does indeed vary over issues. In turn, participation and design might be influenced by these issue areas. For example, nuclear energy issues have been a particular salient topic especially during the early decades of our observation period. It may then be less likely that agreements dealing with this issue area are characterized by hard law as it constrains countries' decision-making power and sovereignty more than soft law does.

5 Empirical Findings

Table 2 summarizes the main models of our empirical analysis. The first model focuses on *Proportion of Democracies* as the only explanatory variable. Clarke (2005, 2009), for example, argues that control variables may increase the bias in model estimates, and not decrease it, under specific circumstances. Model 2 then drops the main independent variable and incorporates the control covariates only. Finally, Model 3 constitutes our core model as both the main explanatory item and the controls are jointly considered. For assessing the models' fit, we report logarithmic (pseudo) likelihoods, χ^2 test statistics, and the area under the Receiver Operator Characteristic (ROC) curve. The latter is based on an in-sample prediction approach and theoretically varies between 0.5 (no predictive power) and 1.0 (perfect predictive power). Since coefficients in non-linear models such as the logistic regression we use cannot be directly interpreted in terms of their substance, we report first difference estimates in Table 3 (for the control variables) and predicted probabilities of hard law in Figure 1 (for *Proportion of Democracies*). To assess the robustness of our results, we examined various alternative model specifications, which are summarized in the appendix. The findings from these robustness checks further support the results discussed in the following.

First, the models in Table 2 provide strong support for our theory. Regardless of the model specification, *Proportion of Democracies* exerts a negative and highly significant impact on the likelihood of hard law. Our main explanatory variable also contributes to the model fit as demonstrated by the difference in the area-under-curve statistics. For example, this statistic increases by 0.045 units when changing from Model 2 to Model 3. In more substantive terms, Figure 1 shows the predicted probabilities for *Hard Law*=1 under two different scenarios: first, when *Proportion of Democracies* receives the value of 1, i.e., an environmental treaty comprises only democracies; and, secondly, when *Proportion of Democracies*=0, i.e., when there are no democratic members at all in an institution. We calculated these substantive quantities of interest while

Table 2: Hard-Law Treaties and the Proportion of Democracies

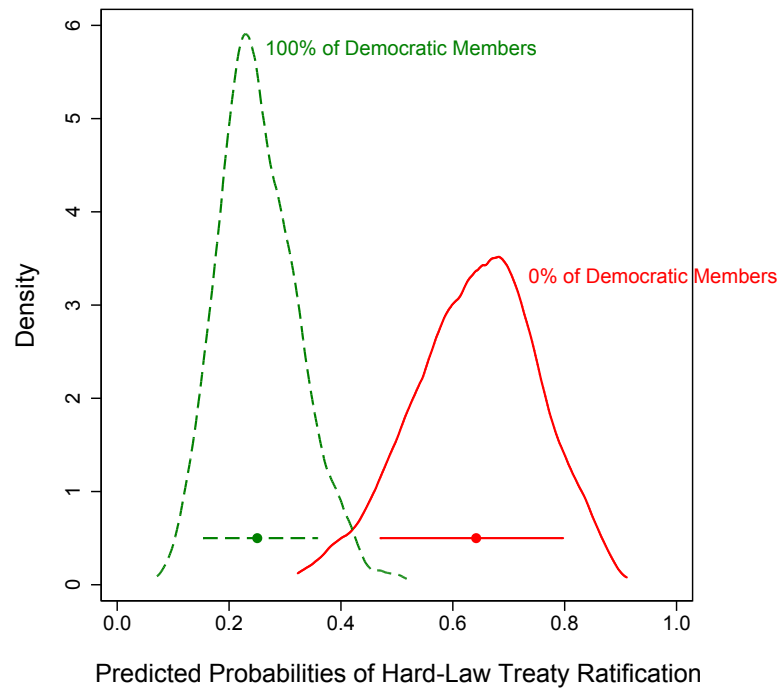
	Model 1	Model 2	Model 3
Proportion of Democracies	-1.812*** (0.542)		-1.743*** (0.606)
Treaty Age		-0.094** (0.042)	-0.107** (0.046)
Treaty Age ²		0.001* (0.001)	0.002* (0.001)
Treaty Group Size		0.001 (0.004)	0.000 (0.004)
Pollution		0.685** (0.330)	0.673** (0.326)
Habitat		0.816** (0.353)	0.815** (0.363)
Nuclear		0.151 (0.435)	0.207 (0.453)
Species		-0.401 (0.367)	-0.367 (0.367)
Constant	1.252*** (0.411)	0.849 (0.580)	2.195*** (0.837)
Observations	213	213	213
Log Pseudolikelihood	-141.897	-133.471	-128.923
Prob > χ^2	0.001	0.001	0.001
Area under ROC Curve	0.611	0.700	0.745

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Robust standard errors in parentheses

holding all other variables constant at their median values along the lines of King, Tomz and Wittenberg (2000). As the probabilities are therefore simulated parameters, we present density plots that capture their distribution, and the horizontal bars at the bottom of Figure 1 signify the point estimates of the two scenarios' probabilities and their 90 percent confidence intervals. When all states that have participated in an international environmental agreement by the end of 2006 were democratic, the predicted probability for this treaty being of a hard-law nature is around 25 percent. Conversely, this probability increases by about 39 percentage points to 64 percent when there was not a single democracy among the members of an environmental agreement in 2006, i.e., when changing *Proportion of Democracies* to 0. Note that the horizontal bars for the probabilities' point estimates and confidence intervals do not overlap, which means that the difference between the two scenarios' predicted probabilities is statistically significant.

Ultimately, we conclude that our empirics strongly and robustly suggest that democratic leaders may expect to experience higher costs, internationally and even more so at the domestic level, for violating environmental agreements than non-democratic regimes. Hence, they are more inclined to participate in international commitments that can be complied with more easily – and, thus, they only implement or participate in treaty designs that are less binding, less precise, and more flexible, i.e., all sorts of characteristics that are *not* compatible with hard law. And this induces that the proportion of democratic members in an environmental agreement is negatively associated with hard-law treaty designs due to the self-selection mechanism we outlined in the theory section above.

Figure 1: Predicted Probabilities of Hard Law for Minimum and Maximum Values of *Proportion of Democracies*

Note: First difference estimate, i.e., the predicted probability of hard law when moving *Proportion of Democracies* from its minimum to its maximum while holding all other variables at their median values, is at -0.387 (90 percent confidence interval: [-0.587; -0.171]). Mean point estimate for *Proportion of Democracies*=0 is at 0.640 (90 percent confidence interval: [0.445; 0.820]). Mean point estimate for *Proportion of Democracies*=1 is at 0.253 (90 percent confidence interval: [0.144; 0.386]). Estimates are based on simulations ($N=1,000$ of simulated parameters), while holding all other variables at their median values. Horizontal bars in the figure pertain to 90 percent confidence intervals of probabilities' point estimates.

Coming to our control variables, Table 2 demonstrates that *Pollution* and *Habitat* achieve conventional levels of statistical significance. All else equal, particularly treaties dealing with these kinds of underlying problems are more likely to be characterized by hard law. More substantively, Table 3 shows that *Pollution* has a first difference estimate of 0.157, i.e., the probability of hard-law design increases by about 16 percentage points when raising *Pollution* from 0 to 1 (the value of 0 constitutes the reference category, i.e., mixed problem types). Similarly, when increasing *Habitat* from 0 to 1, the likelihood of having a hard-law agreement is raised by 19 percentage points. Somewhat surprisingly, *Treaty Group Size* is associated with an insignificant coefficient estimate. Having said that, note that *Treaty Group Size* and *Proportion of Democracies* are interlinked with each other as *Treaty Group Size* necessarily increases with the number of democratic states that participated by the end of 2006.¹² To examine the relationship between the two variables and their impact on *Hard Law* more thoroughly, we thus interacted *Treaty Group Size* and *Proportion of Democracies*. That is, we multiplied both variables and included the multiplicative term next to the other covariates into our core model (see ?). However, the negative impact of *Proportion of Democracies* on *Hard Law* prevails even with an interactive specification. Finally, the results for the treaty-age items are discussed in the appendix.

¹²We discuss the issue of multicollinearity further in the appendix.

Table 3: Control Variables – Substantive Quantities of Interest

	First Difference	Confidence Interval
Treaty Group Size	0.150	[-0.227; 0.271]
Pollution	0.157	[0.025; 0.277]
Habitat	0.193	[0.054; 0.329]
Nuclear	0.046	[-0.117; 0.217]
Species	-0.073	[-0.189; 0.047]

Calculations are based on Model 3.

Table entries are first difference estimates.

Calculations done while holding all other variables constant at their median values.

6 Conclusion

The empirical findings confirm our theoretical expectation that environmental agreements with a larger share of democratic members are less likely to be characterized by hard law due to a self-selection process into participation. Our argument explicitly sought to link agreements' degrees of legalization with regime type and to examine variation in treaties' design (e.g., Abbott et al., 2000; Abbott and Snidal, 2000; Shaffer and Pollack, 2010, 2011). Eventually, our theory focused on international and, particularly, domestic audience costs, which are likely to be higher in democratic states when violating international agreements. Democratic leaders are likely to anticipate this and will participate only in those treaty designs that allow for more flexibility, which constrain less in terms of sovereignty, and that impose fewer costs in case of non-compliance: and these are soft-law agreements.

The empirical analysis built on data by Bernauer et al. (2013) that provide information on 213 global environmental treaties since 1950. While controlling for several alternative determinants of hard-law design and treaty participation (ratification), the main analyses and the additional checks in the appendix provide robust support for a negative impact of *Proportion of Democracies* on *Hard Law*. Several important implications follow from our work both for the academic literature and policymakers. First, our statistical models address associations between variables, not causation. We also studied the macro-level or net implications of a phenomenon in the context of environmental politics and, particularly, democracies' ratification of international agreements. To this end, we concentrated on a macro-level theoretical framework that attempts to explain events essentially consisting of a series of individual decisions. The empirical findings are, in principle, consistent with our arguments, but it may also be the case that factors like more neoliberal types of governance or voluntarism play important roles. While it is beyond the scope of this paper to successfully link macro-level theories to individual-level assessments of motives and preferences, a more detailed empirical analysis at the micro, i.e., individual, level seeking to address more thoroughly the underlying causal mechanisms could further improve our knowledge of democracies' attitudes toward hard and soft law, and how this relationship affects treaty participation.

Second, while our work focuses on international environmental agreements, the findings could possibly be extended to other issue areas. Chiba, Johnson and Leeds (2015), for instance, show that similar patterns are at work for military alliances. That said, additional empirical analyses in the context of trade or human-

rights treaties might be an effort worth making, as the dynamics, interests, and decision-making processes there might fundamentally differ from the environmental area we have focused on (see, e.g., Hathaway, 2002). Moreover, our analysis is based on treaties for the time period from 1950 to 2000, while members' participation in these agreements has been coded until 2006. While it is unlikely that our results would change when taking more recent data into account, updating the data set from Bernauer et al. (2013) seems an effort worth making.

Third, our research demonstrates that the statement by Neumayer (2002*a*, p.139) only holds under some conditions: "the spread of democracy around the world will lead to enhanced environmental commitment worldwide." Soft law is positively associated with democratic forms of government, hard law is not. In light of this finding and when subscribing to the claim that hard law is generally more conducive to effectively addressing environmental problems, our work also contributes to explaining why we sometimes observe a significant "words-deeds" gap in environmental policy-making (Bättig and Bernauer, 2009). That is, democracies are more likely to avoid hard-law commitments and pursue soft law instead, although the latter is usually more likely to be less suitable for addressing environmental problems effectively (see Downs, Rocke and Barsoom, 1996; Rosendorff and Milner, 2001; Rosendorff, 2005; Skjærseth, Stokke and Wettstad, 2006; Bernauer et al., 2013; Spilker and Koubi, 2016). In the words of Chiba, Johnson and Leeds (2015, p.979), "[w]hat is an advantage for democratic states in making their commitments credible (and thus attracting partners to their cooperative endeavors) may simultaneously make democratic leaders reluctant to join international commitments that require particularly broad or deep cooperation." In addition, non-democratic regimes might select themselves more often into hard law, but they lack either willingness or capacity to uphold their claims. Ultimately, democracies tend to make promises that are shallow to begin with, while non-democracies cannot or will not ensure compliance; this induces a net discrepancy between what countries promise internationally and what is being delivered.

More generally, we thus add to the debate on "constraining and screening effects" of international institutions (von Stein, 2008): while democracies may be more credible and reliable in terms of upholding their commitments, they carefully screen agreements first and systematically seek to avoid treaties that may seem overly constraining. Separating these effects may be even more difficult, since screening is endogenous to constraint (see also Chiba, Johnson and Leeds, 2015), but our research provides an explanation for why so many democratic states are not associated with environmental improvement at the outcome level (Ward, 2008)¹³ – as they avoid hard-law treaties and soft-law agreements may be less adequate for having a significant impact on environmental quality as such. That being said, our research also implies that if a democratic leader actually does select her country into a hard-law agreement, she must be relatively certain about the compliance with that agreement (see also Chiba, Johnson and Leeds, 2015, p.979).

Finally, for effectively increasing the attractiveness of more legalized international environmental agree-

¹³In the words of Ward (2008, p.386), "[a]lthough theory strongly suggests that liberal democracies should perform better than autocracies on sustainability indicators, the empirical evidence is unclear."

ments – even in the eyes of democratic leaders – and, potentially, to improve their effectiveness, theoretical and empirical work should seek to study more thoroughly, which design features are seen as most desirable and implementable. To this end, we would obtain a better understanding of the conditions under which democratic states do participate in hard-law treaties and, as a result, also the conditions under which audience costs deter democracies from entering arrangements. Ultimately, one might want to design treaty features that more positively affect states' incentive structures and, therefore, contribute to agreement participation in and eventually the effectiveness of an institution. Such an analysis could also focus directly on international bargaining processes and their timing with respect to relevant domestic policy-making processes.

We conclude this article by highlighting that the proportion of democratic states participating in an international environmental agreement is negatively associated with hard-law treaty designs. The effect is both significant and substantial. Further research should take this finding into account for analyzing screening and selection effects in the context of international institutions more directly and jointly, and when exploring design features that may eventually cancel out the negative impact on hard law that we identified.

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